Adusumilli Gopala krishnaiah& Sugar Cane Growers Siddhartha Degree College ofArts & Science, Vuyyuru, Krishna District, Andhra Pradesh
(An Autonomous College in the Jurisdiction of Krishna University, Machilipatnam)
Accredited by NAAC with "A" GradeISO 9001:2015 Certified Institution

DEPARTMENT OF BOTANY

HIGHLIGHTED SYLLABUS OF BOTANY

2020-21

Syllabus in Relevance to Employability, Skill Development and Entrepreneurship is highlighted as mentioned: Employability in yellow Color, Skill Development in Sky blue colour and Entrepreneurship in Green colour

Employability   🟨

Skill-Development   🟦

Entrepreneurship   🟩

A.G.& S.G. SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE

Vuyyuru- 521165.
NAAC reaccredited at 'A' level
Autonomous -ISO 9001 – 2015 Certified

Title of the Paper:Fundamentals of Microbes and Non-vascular Plants
Course Code:BOT101C
Semester: I

SYLLABUS

UNIT – I	**Origin of life and viruses** Origin of life, concept of primary Abiogenesis; Miller and Urey experiment. Five kingdoms classification of R.H. Whittaker. Discovery of microorganisms, Pasteur experiments, germ theory of diseases. Shape and symmetry of viruses; structure of TMV and Gemini virus;multi plication of TMV, a brief account of Prions and Viroids A general account on symptoms of plant diseases caused by Viruses.Transmission of plant virusesand their control. Significanceof viruses in vaccine production, bio-pesticides
UNIT – II	**Special groups of Bacteria and Eubacteria** Brief account of Archaebacteria, Actinomycetes and Cyanobacteria. Cell structure and nutrition of Eubacteria. Reproduction- Asexual (Binary fission and endospores) and bacterial recombination (Conjugation, Transformation, Transduction). Economic importance of Bacteria with reference to their role in Agriculture and industry (fermentation and medicine) A general account on symptoms of plant diseases caused by Bacteria; Citrus canker.
UNIT – III	**Fungi & Lichens** eral characteristics of fungi and Ainsworth classification (upto classes). cture, reproduction and life history of(a)*Rhizopus* (Zygomycota) and (b) *Puccinia*(Basidiomycota). Economic uses of fungi in food industry, pharmacy and agriculture.A general account on symptoms of plant diseases caused by Fungi; Blast of Rice. Lichens- structure and reproduction.
UNIT – IV	General characteristics of Algae (pigments, flagella and reserve food material), Fritsch classification (upto classes). Thallus organization and life cycles in Algae. Occurrence, structure, reproduction and life cycle of a) *Spirogyra* (Chlorophyceae) and (b) *Polysiphonia* (Rhodophyceae). Economic importance of Algae
UNIT – V	**Bryophytes** General characteristics of Bryophytes; classification upto classes. Occurrence, morphology, anatomy, reproduction (developmental details are not needed) and life cycle of (a) *Marchantia* (Hepaticopsida) and (b) *Funaria* (Bryopsida). General account on evolution of sporophytes in Bryophyta.

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BOTANY	BOT-301C	w.e.f. 2020-21	B. Sc. (BZC)

SEMESTER - III   II B. Sc - BOTANY   PAPER – III

Plant Taxonomy and Plant Physiology

Hours: 60 @ 4 hrs per week   **Credits: 3**

UNIT – I: Introduction to Plant Taxonomy   **(12 hrs)**

1. Fundamental components of taxonomy (identification, nomenclature, classification types and phylogeny)

2. Salient features of Bentham& Hooker classification.

3. Role of chemotaxonomy, cytotaxonomy and Embryology in relation to Taxonomy.

4. APG IV System of Classification – 2016.

UNIT –II: Systematic Taxonomy   **(12 hrs)**

1. Nomenclature and Taxonomic resources:An introduction to International Code of Botanical Nomenclature; Principles, Rules and Recommendations.

2. Systematic study and economic importance of plants belonging to the following families: Annonaceae, Capparidaceae, Rutaceae, Cucurbitaceae and Apiaceae.

UNIT –III: Systematic Taxonomy   **(12 hrs)**

1. Systematic study and economic importance of plants belonging to the following families: Asteraceae, Asclepiadaceae, Lamiaceae, Euphorbiaceae, Orchidaceae and Poaceae.

Plant Physiology

UNIT – IV: Plant – Water relations   **(12 hrs)**

1. Importance of water to plant life, physical properties of water,

2. Diffusion, Imbibition and osmosis; water potential, osmotic potential and pressure potential.

3. Absorption, transport of water, ascent of sap.

4. Transpiration – types, stomata structure, movements and significance.

UNIT –V: Mineral nutrition, Fertilizers and Enzymes   **(12 hrs)**

1. Mineral Nutrition**:** Essential macro and micro mineral nutrients and their role, mineral uptake (active and passive), deficiency symptoms.

2. Nitrogen cycle- biological nitrogen fixation.

3. Enzymes**:** Nomenclature, characteristics, mechanism and regulation of enzyme action, enzyme kinetics, factors regulating enzyme action.

UNIT –VI (Competitive Syllabus)

1. Definitions of Growth and Classification Based on Growth Habits.

2. Fruitarianism – Introduction, Varieties, Nutrition and Nutritional effects Vitamin B12

3. Biological Nitrogen Fixation.

BOTANY	BOT-501C	2020-2021	B.Sc. (BZC)

PAPER – V **SEMESTER-V** (2020-2021)
Cell Biology, Genetics and Plant Breeding
Total Hours of teaching 60 hrs @ 6 hrs for Week Credits: 03

UNIT-I Cell Biology(12 hrs)

1. Cell, Ultra Structure and functions of cell wall.

2. Molecular Organization of cell membranes.

3. Chromosomes; morphology, organization of DNA in a chromosome (Nucleosome

   model)Euchromatin and Heterochromatin.

UNIT-II Genetic Material(12 hrs)

1. DNA as the Genetic Material: Griffith's and Avery's Transformation Experiment.
   Hershey - Chase Bacteriophage experiment.
2. DNA Structure (Watson & crick model) and replication of DNA (Semi Conservative).
3. Types of RNA (mRNA, tRNA, rRNA), their structure and function.

UNIT-III Mendelian Inheritance(12 hrs)

1. Mendelian Inheritance (Mono – Di-hybrid Crosses), Back cross and Text cross.

2. Linkage: concept, complete and In-complete Linkage, Coupling and Repulsion; Linkage

   Maps Based on Two and Three Point cross.

3. Crossing over concept and significance.

UNIT-IV Gene Expression(12 hrs)

1. Organization of gene, Transcription and Translation.
2. Mechanism and regulation of Gene Expression in Prokaryotes (Lac operon).
3. Mutations: Chromosomal Aberrations, Gene Mutations and Transposable Elements.

UNIT-V Plant Breeding(12 hrs)

1. Introduction and objectives of Plant Breeding.

2. Methods of Crop Improvement: Procedure, Advantages and limitations of Introduction,
Selection and Hybridization (Out lines only).

BOTANY	BOT-502	2020-2021	B.Sc. (BZC)

SEMESTER-V (2020-2021)   **PAPER – VI**

PLANT ECOLOGY & PHYTOGEOGRAPHY   Credits-03

Total Hours of teaching 60 hrs @ 6 hrs for Week

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UNIT-I.ELEMENTS OF ECOLOGY(12 hrs)

1. Ecology: Definition, branches and significance of ecology.

2. Claimatic factors: Light, Temperature.

3. Edaphic factor: Origin, formation, composition and soil profile.

4. Biotic factor, Ecological adaptations of Plants.

Unit– II. Ecosystem Ecology(12 hrs)

1. Ecosystem: concept and components, energy flow, food chain, food web, Ecological Pyramids.
2. Productivity of ecosystem-Primary, Secondary and Net productivity.
3. Biogeochemical cycles- Carbon, Nitrogen and Phosphorous.

Unit –III Population & Community ecology.(12 hrs)

1. Population-defination, characteristics and importance (Density,Natality, Mortality, Growth Curves) outlines-ecotypes.
2. Plant communities- characters of a community, outlines – Frequency, density, cover, life forms, Biological Spectrum.
3. Ecological Succession: Hydrosere and Xerosere

Unit-IV Phytogeography(12 hrs)

1. Principles of Phytogeography, Distribution (Wides, Endemic, Discontinous species.

2. Phytogeographic regions of India.

3. Endemism – types and Causes.

Unit-V Plant Biodiversity and its Importance(12 hrs)

1. Definition, Levels of Biodiversity – genetic, species and ecosystem.

2. Biodiversity and Hot-spots of India: North Eastern, Himalayas and Western Ghats.

3. Loss of Biodiversity-causes and Conservation (In-situ and Ex-Situ Methods).

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BOTANY	PNT - 501	w.e.f. 2020-21	B. Sc. (BZC),Aqua

SEMESTER - I   SKILL DEVELOPMENT COURSE   **Credits: 02**

Paper title: **PLANT NURSERY**

Total 30hrs (02h/wk)   Max Marks:50

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Learning Outcomes:

On successful completion of this course students will be able to;

1. **Understand the importance of a plant nursery and basic infrastructure to establishit.**
2. **Explain the basic material, tools and techniques required fornursery.**
3. **Demonstrate expertise related to various practices in anursery.**
4. **Comprehend knowledge and skills to get an employment or to become an entrepreneur in plant nurserysector.**

Syllabus:

Unit-1: Introduction toplantnursery   **06 Hrs.**

1. Plant nursery: Definition,importance.
2. Different types of nurseries –on the basis of duration, plants produced, structureused.
3. Basic facilities for a nursery; layout and components of a goodnursery.
4. Plant propagation structures inbrief.
5. Bureau of Indian Standards (BIS-2008) related tonursery.

Unit- 2: Necessitiesfornursery   **09 Hrs.**

1. Nursery beds – types and precautions to be taken duringpreparation.
2. Growing media, nursery tools and implements, and containers for plant nursery, in brief.
3. Seeds and other vegetative material used to raise nursery. Inbrief.
4. Outlines of vegetative propagation techniques to produce plantingmaterial.
5. Sowing methods of seeds and plantingmaterial.

Unit-3: Managementofnursery   **09 Hrs.**

1. Seasonal activities and routine operations in anursery.
2. Nursery management – watering, weeding and nutrients; pests anddiseases.
3. Common possible errors in nurseryactivities.
4. Economics of nursery development, pricing and recordmaintenance.
5. Online nursery information and salessystems.

ADUSUMILLI GOPALAKRISHNAIAH & SUGAR CANE GROWERS SIDDHARTHA DEGREE

COLLEGE OF ARTS & SCIENCE, VUYYURU-521165, KRISHNA Dt., A.P. (AUTONOMOUS).

NAAC reaccredited at 'A 'level

DEPARTMENT OF BOTANY

ACADEMIC YEAR - (2020-21)

EVEN SEM –II, IV &VI

SEMESTER - III
Basics of Vascular plants andPhytogeography
(Pteridophytes, Gymnosperms,Taxonomy of Angiosperms and Phytogeography)
Course Code: BOT-201C
 Unit–1: Pteridophytes 12 Hrs.
 1. General characteristics of Pteridophyta; classification of Smit(1955) upto divisions.
2. Occurrence, morphology, anatomy, reproduction (developmental details are noneeded) and lifeHistoryof
(a) *Lycopodium* (Lycopsida) and (b) *Marsilea* (Filicopsida).
3. Stelar evolution inPteridophytes;
4. Heterospory and seedhabit.
Unit:-2Gymnosperms: 14hrs.
1. General characteristics of Gymnosperms; Sporneclassification uptoclasses.
2. Occurrence, morphology, anatomy, reproduction (developmental details are not needed)
and life history of (a) *Cycas*(Cycadopsida) and (b) *Gnetum*(Gnetopsida).
3. Outlines of geological timescale.
4. A brief account on Cycadeoidea.
Unit – 3: Basic aspectsof Taxonomy   13Hrs.
1. Aim and scope of taxonomy; Species concept: Taxonomic hierarchy,species, genus andfamily.
2. Plant nomenclature: Binomial system, ICBN- rules fornomenclature.

3. Herbarium and its techniques, BSI herbarium and Kew herbarium; concept ofdigitalherbaria.

4. Bentham and Hooker system of classification;

5. Systematic description and economic importance of the followingfamilies:

(a) Annonaceae (b)Curcurbitaceae.

Unit – 4: SystematicTaxonomy   13 Hrs.
1. Systematic description and economic importance of the followingfamilies:

(a) Asteraceae (b) Asclepiadaceae (c) Amaranthaceae (d)Euphorbiaceae

(e) Arecaceaeand (f) Poaceae

2. Outlines of Angiosperm Phylogeny Group (APGIV).
Unit–5:Phytogeography   08 Hrs.

1. Principles of Phytogeography, Distribution (wides, endemic, discontinuousspecies)

2. Endemism – types andcauses.

3. Phytogeographic regions of India.

4. Vegetation types in AndhraPradesh.
Unit–6:Competitive syllabus: (Economic Botany)
1. Edible oils: ground nut, coconut &sesamum.
2. Sugar & Startch: sugar cane, beetroot, potato.
3. Paper & Pulp: Bamboo,& Eucalyptus
4. Medicinal & Aromatic: Ashwagandha, Aloevera, holy basil, amla, mint, Lavender.

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BOTANY	BOT-401C	w.e.f. 2020-21	B. Sc. (BZC)

SEMESTER – IV   **II B. Sc - BOTANY SYLLABUS**   PAPER – IV

Plant Embryology and Plant Metabolism
Hours: 60 @ 4 hrs per week

UNIT – I: EMBRYOLOGY (12hrs)

1. Introduction:History and Importance of Embryology.

2. Anther structure, Microsporogenesis and development of male gametophyte.

3. Ovule structure and types; Megasporogenesis; Monosporic; Bisporic and   Tetrasporic types of female gametophyte / embryosac development.

4. Pollination -Types, Fertilization.

UNIT –II: EMBRYOLOGY AND PALYNOLOGY   (12 hrs)

1. Endosperm Development and types.

2. Embryo - development and types.

3. Polyembryony and Apomixis - an outline.

4. Palynology: Principles and applications.

UNIT –III: PLANT METABOLISM- I   (12 hrs)

1. Photosynthesis: Electromagnetic spectrum, absorption and action spectra; Red drop and Emerson enhancement effect, concept of Z scheme in photosystems, Photosynthetic pigments, mechanism of photosynthetic electron transport and evolution of oxygen, photo phosphorylation, carbon assimilation pathways: C_3, C_4& CAM and Photorespiration.

2. Translocation of organic substances: Mechanism of phloem transport, source-sink relationships.

UNIT –IV: PLANT METABOLISM- II   (12 hrs)

1.Respiration: Aerobic and Anaerobic, Glycolysis, Krebs cycle, electron transport system, mechanism of oxidative phosphorylation, pentose phosphate pathway.

2. Lipid Metabolism**:** Structure and functions of lipids, conversion of lipids to carbohydrates, Beta-oxidation.

UNIT –V: GROWTH AND DEVELOPMENT (12 hrs)

1. Growth and development: Definition, phases and kinetics of growth, Physiological effects of phytohormones - auxins, gibberellins, cytokinins, ABA and ethylene

2. Physiology of flowering and photoperiodism, role of phytochrome in flowering.

3. Stress Physiology: Concept and plant responses to water, salt and temperature stresses.

UNIT –VI: Competitive syllabus:

1. Biofertilizers: Components of biofertilizers- bio compost tricho –card, azotobacter, phosphours, vermin compst importance of biofertilizers, applications of biofertilizers.

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BOTANY	BOT-601 (GE)	2020-2021	B.Sc. (BZC)

PAPER – VII **ELECTIVE- C** **SEMESTER- VI**
Plant tissue culture and its Biotechnological applications
Total hours of teaching 45hrs @ 3hrs per week **Credits: 3**

Unit I: PLANT TISSUE CULTURE – 1 **(12hrs)**

1. History of plant tissue culture research - basic p rinciples of plant tissue callus culture, meristems culture, organ culture, Totipotency of cells

2. Sterilization procedures, culture medium composition and preparations of explanats. Murashige and Skoog' (MS medium), Cell and protoplast culture.

3. Somatic Hybrids and Cybrids (out lines), Artificial Seeds, Somaclonal variations. Applications of Tissue culture (Brief account).

UNIT-II: Plant Tissue culture -2 **(12hrs)**

1. Endosperm culture – Embryo culture -culture requirements – applications, embryo rescue technique.

2. Cryopreservation; Germ plasm conservation.

Unit III: Recombinant DNA technology **(12hrs)**

1. r-DNA technology: Steps in r-DNA technology and tools

2. Cloning Vectors: Prokaryotic (pBR322, Ti plasmid and Lambda phage, Eukaryotic Vectors (YAC and briefly PAC).

3. Gene cloning (Bacterial Transformation and selection of recombinant clones, PCR Mediated gene cloning)

Unit IV: Methods of gene transfer **(12hrs)**

1. Methods of gene transfer- Agrobacterium-mediated, direct gene transfer By Electroporation, Microinjection, Micro projectile bombardment.

2. Selection of transgenics– selectable marker and reporter genes (Luciferase, GUS, GFP).

Unit V: Applications of Biotechnology **(12 hrs)**

1. Applications of Plant Genetic Engineering – crop improvement, herbicide resistance, insect resistance, virus resistance.

2. Genetic modification – transgenic plants for pest resistant (Bt-cotton);

herbicide resistance (Round Up Ready soybean); improved agronomic traits flavrSavr tomato,

Golden rice.

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III-BZC(B. Sc)	BOTANY-VIII	BOT-602 (CE)	2020-21

Paper – VIII-A-1: PLANT DIVERSITY AND HUMAN WELFARECredits: credits: 3

Total hours of teaching 60hrs @ 6hrs per week

Unit- I: Plant diversity and its scope: **(12hrs)**

1. Genetic diversity, Species diversity, Plant diversity at the ecosystem level,
2. Agro biodiversity and Vavilov Crop centers.
3. Values and uses of biodiversity: Ethical and aesthetic values, Uses of plants.

Unit -II: Loss of biodiversity:**(12hrs)**

1. Loss of genetic diversity, Loss of species diversity, Loss of   ecosystem diversity,
   Loss of agro biodiversity, projected scenario for biodiversity loss.
2. Management of plant biodiversity: Organizations associated with biodiversity
   Management-Methodology for execution-IUCN, UNEP, UNESCO, WWF, NBPGR;
   Biodiversity legislation and conservations, Biodiversity information management and
   Communication.

Unit-III: Contemporary practices in resource management:**(12hrs)**

1. Environmental Impact Assessment (EIA), Geographical Information System GIS,
2. Solid and liquid waste management.

Unit -IV: Conservation of biodiversity   (12hrs)

1. Conservation of genetic diversity, species diversity.
2. Social approaches to conservation, Biodiversity awareness
   Programmes,Sustainable development.

Unit- V: Role of plants in relation to Human Welfare   (12hrs)

1 Importance of forestry, their utilization and commercial aspects-
   a) Avenue trees, b) ornamental plants of India.
2 Fruits and nuts: Important fruit crops their commercial importance.
   Wood,fiber and their uses.

III. BZC (B. Sc)	BOTANY-VIII	BOT- 603 (CE)	2020-21

Paper – VIII-A-2   Credits: 3

ETHNOBOTANY AND MEDICINAL BOTANY

Total hours of teaching 60hrs @ 6hrs per week

Unit–I:Ethnobotany   **(12hrs)**

1. Introduction, concept, scope and objectives

2. Major and minor ethnic groups or Tribal's of India, and their lifestyles.
3. Plants used by the tribal populations:
a) Food plants, b) Intoxicants   c) Beverages,   d) Resins and oils and miscellaneous uses.

Unit -II:Role of ethnobotany in modern Medicine(12hrs)

1. Role of Ethnobotany in modern medicine with special example; Rauvolfiasrepentina,
   Artemisia annua, Withaniasomnifera.
2. Significance of the following plants in ethno botanical practices (along with their habitat
   and morphology)

   a)Azadirachtaindica, b)Vitexnegundo,c)Ocimum sanctum,,d) phyllanthus niruri
3. Medico-Ethnobotanical Sources of India.

Unit-III: Ethno botany as a tool to protect interests of ethnic groups(12hrs)

1. Sharing of wealth concept with few examples from India.

2. Biopiracy, Intellectual Property Rights and Traditional Knowledge.

Unit -IV:History, Scope and Importance of Medicinal Plants, Indigenous Medicinal Sciences(12hrs)

1. Definition and Scope-Ayurveda: History, origin, panchamahabhutas, saptadhatu and

   tridosha concepts, Rasayana, plants used in ayurvedic treatments.

2 Homeopathy: Origin of Homeopathy medicinal systems, Basis of Homeopathy, plants used

   in Homeopathy medicine.

Unit -V: Conservation of endangered and endemic medicinal plants(12hrs)

1. Definition: endemic and endangered medicinal plants,

2. Red list criteria

3. In situ conservation: Sacred groves, National Parks

4. Ex situ conservation: Botanical Gardens, Seed Banks.

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III-BZC B.Sc	BOTANY-VIII	BOT-604- (CE)	2020-21

SEM-VI: **Pharmacognosy and Phytochemistry**   Credits: 3
 Total hours of teaching 60hrs @ 6hrs per week   --------

Unit-I: Pharmacognosy: **(12hrs)**
1. Definition, Importance
2. Classification of drugs - Chemical and Pharmacological
3. Drug evaluation methods

Unit –II: Organoleptic and microscopic studies: (**12hrs**)

1. Organoleptic and microscopic studies with reference to nature of active principles
and common adulterants of
2. a) Adhatoda vasica(leaf) b) Strychnosnuxvomica (seed),
c)Rauwolfia serpentina(root) d)Zinziberofficinalis e)Catharanthusroseus.

Unit-III: Secondary Metabolites:(12hrs)

1. Definition of primary and secondary metabolites and their differences, Major types -
terpenes, Phenolics, alkaloids, terpenoids, steroids.
2. A brief idea about extraction of alkaloids. Origin of secondary metabolites–detailed
account of Mevalonate pathway,Shikimate pathway.

UNIT-IV: Phytochemistry: **(12hrs)**
Biosynthesis and sources of drugs:
1. Structural type biosynthesis importance of simple Phenolic compounds, coumarins,
Flavonoids.
2. Steroids, sterols: Biosynthesis, commercial importance.
3. Alkaloids: Different groups, biosynthesis, bioactivity.
4 .Volatile oils, aromatherapy.

UNIT-V: Enzymes, proteins and amino acids as drugs: **(12hrs)**

1. Vaccines, toxins and toxoids, immune globulins, antiserums,
2. Vitamins, Antibiotics – chemical nature, mode of action.
3. Pharmacological action of plant drugs – tumor inhibitors, PAF antagonists,
antioxidants,phytoestrogens and others.

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BOTANY	PNT - 501	w.e.f. 2020-21	B. Sc. (BZC),Aqua

SEMESTER - I   **SKILL DEVELOPMENT COURSE**   **Credits: 02**

Paper title: **PLANT NURSERY**

Total 30hrs (02h/wk)   Max Marks:50

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Syllabus:

Unit-1: Introduction toplantnursery

1. Plant nursery: Definition,importance.
2. Different types of nurseries –on the basis of duration, plants produced, structureused.
3. Basic facilities for a nursery; layout and components of a goodnursery.
4. Plant propagation structures inbrief.
5. Bureau of Indian Standards (BIS-2008) related tonursery.

Unit- 2: Necessitiesfornursery

1. Nursery beds – types and precautions to be taken duringpreparation.
2. Growing media, nursery tools and implements, and containers for plant nursery, in brief.
3. Seeds and other vegetative material used to raise nursery. Inbrief.
4. Outlines of vegetative propagation techniques to produce plantingmaterial.
5. Sowing methods of seeds and plantingmaterial.

Unit-3: Managementofnursery

1. Seasonal activities and routine operations in anursery.
2. Nursery management – watering, weeding and nutrients; pests anddiseases.
3. Common possible errors in nurseryactivities.
4. Economics of nursery development, pricing and recordmaintenance.
5. Online nursery information and salessystems.

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DEPARTMENT OF CHEMISTRY

HIGHLIGHTED SYLLABUS OF CHEMISTRY

2020-21

Syllabus in Relevance to Employability, Skill Development and Entrepreneurship is highlighted as mentioned: Employability in yellow Color, Skill Development in Sky blue colour and Entrepreneurship in Green colour

Employability

Skill-Development

Entrepreneurship

SEMESTER-I	PAPER CODE : CHE-101C
PAPER TITLE : INORGANIC & PHYSICAL CHEMISTRY, PAPER – I	

TOTAL PEROIDS - 60 (4hrs/week) Credits – 3

INORGANIC CHEMISTRY

UNIT –I   (M.W-10 + 10 + 5)   10h
Chemistry of P-block elements:
Inorganic polymers : Inert pair effect, types of inorganic polymers, comparison with organic polymers, synthesis & structure aspects and applications of,Borazines, Silicones, Silicates and Phosphazenes, Structures of Oxides and Oxoacids of Sulphur. Structures of Inter halogen compounds &Pseudo halogens .

UNIT –II

1. Transition Elements: (M.W-10 +5)   6hrs
        Characteristics of d-block elements with special reference to electronic configuration,
Variable valence, magnetic properties, catalytic properties and ability to form complexes.
Stability of various oxidation states.

2. Inner transition Elements: (M.W – 5+5)   6 hrs
        Chemistry of lanthanides - electronic configuration, oxidation states, lanthanide contraction &
Its Consequences, Magnetic properties. Chemistry of actinides -Electronic configuration, Oxidation states,
Actinide contraction, Comparison of Lanthanides and Actinides.

PHYSICAL CHEMISTRY

UNIT-III
1. Solid State: (M.W-10+5)   10h
        Characteristics of the Solid state, Law of constancy of interfacial angles, Law of rationality of
indices. Miller indices, Symmetry in crystals. Definition of Lattice point, Space lattice, Unit cell .Seven crystal
systems and 14 Bravais lattices, X-ray diffraction, Bragg's law. Defects in crystals.

2. Gaseous state: (M.W-10)   5h
        Vander Waal's equation of state. Andrew's isotherms of Carbon dioxide, Continuity of state. Critical
phenomena. Relationship between critical constants and Vander Waal's constants. Law of corresponding states.

UNIT-IV
1. Liquid Crystals: (M.W-10)   4 h
        Liquid crystals, Mesomorphic state. Classification of liquid crystals into Smectic and Nematic
Differences between liquid crystal and solid/liquid. Application of liquid crystals as LCD devices.

2. Liquid Mixtures: (M.W-10+5)   10
        Definition, Types of liquid mixtures, Examples. Miscible liquid mixture- Azeotropes -HCl-H_2O
Ethanol-water systems. Partially miscible liquid mixture-Phenol –Water, Critical Solution temperature- Effec
of impurity on Consulate temperature. Immiscible liquid mixtures-steam distillation, Nernst distribution law
calculation of partition coefficient & its applications.

UNIT-V

1. Colligative Properties: (M.W-10+5) 6h

      Colligative properties. Relative lowering of vapour pressure, Elevation of boiling point -Experimen method –Cottrell's method, Depression in freezing point- Experimental method – Beckmann's method, Osmosis, Osmotic pressure- Experimental method-Berkeley-Hartley method. Abnormal Colligative proper Van't Hoff factor.

2. Ionic Equilibrium: (M.W-5) 3h

Common ion effect , Ionic product, solubility and solubility product.calculations based on solubility produ

List of Text Books

1. Selected topics in inorganic chemistry by W.D.Malik, G..D.Tuli,R.D.Madan
2. Inorganic Chemistry J E Huheey, E A Keiter and R L Keiter
3. Inorganic Chemistry by J.E.Huheey
4. Basic Inorganic Chemistry by Cotton and Wilkinson
5. Advanced Physical chemistry by Guru deep Raj
6. Advanced Physical chemistry by Bahl & Tuli
7. Text book of Physical Chemistry by S.Glasstone
8. Solid state Chemistry & its applications by Anthony R.West

Simple Salt Analysis	PAPER CODE : CHE-101P

Salt mixture Analysis

30 hrs (2h / w)   Credits: 2

Analysis of salt mixture containing two anions and two cations from the following.

Anions: Carbonate, acetate, chloride, bromide, nitrate, sulphate, borate, phosphate

Cations: Lead, copper, iron, aluminum, zinc, manganese, nickel, calcium, Strontium, barium, potassium and ammonium.

1. **Analysis of simple salt-I**

2. **Analysis of simple salt-II**

3. **Analysis of simple salt-III**

4. **Analysis of simple salt-IV**

5. **Analysis of simple salt-V**

6. **Analysis of simple salt-VI**

SEMESTER – III	SUBJECT: CHEMISTRY	PAPER CODE: CHE-301C
PAPER TITLE : INORGANIC, ORGANIC PHYSICAL CHEMISTRY, PAPER - III		

INORGANIC CHEMISTRY 60 hrs (4 h / w) Credits - 3

UNIT – I
Theories of bonding in metals:
- Metallic properties and its limitations, Valence bond theory, Free electron theory, Explanation of thermal and electrical conductivity of metals, limitations,
- Band theory, formation of bands, explanation of conductors, semiconductors and insulators.

UNIT – II
1. Metal carbonyls
- Effective atomic number(EAN),Calculation of EAN of metal atom.classification of metal carbonyls, structures and shapes of metal carbonyls of V, Cr, Mn, Fe, Co and Ni.

2. Organometallic Chemistry
- Definition - classification of Organometallic compounds - nomenclature, preparation and applications of alkyls of Li and Mg.

ORGANIC CHEMISTRY

UNIT-III
Carbonyl compounds
- Nomenclature of aliphatic and aromatic carbonyl compounds, structure of the carbonyl group. Synthesis of aldehydes from acid chlorides, synthesis of aldehydes and ketones using 1,3-dithianes, synthesis of ketones from nitriles and from carboxylic acids.
- **Physical properties**: Reactivity of carbonyl group in aldehydes and ketones.
- **Nucleophilic addition reaction** with a) $NaHSO_3$, b) HCN, c) RMgX, d) NH_2OH, e)$PhNHNH_2$, f) 2-4 DNPH, g) Alcohols-formation of hemiacetal and acetal.
- **Base catalysed reactions**: a) Aldol, b) Cannizzaro reaction, c) Perkin reaction, d) Benzoin condensation, e) Haloform reaction, f) Knoevenagel reaction.
- Oxidation of aldehydes- Baeyer-Villiger oxidation of ketones.
- **Reduction**: Clemmensen reduction, Wolf-Kishner reduction, MPV reduction, reduction with $LiAlH_4$ and $NaBH_4$.
- **Analysis of aldehydes and ketones** with a) 2,4-DNT test, b) Tollen's test, c) Fehling test, d) Schiff's test, e) Haloform test (with equation)

1. **Carboxylic acids and derivatives**

- Nomenclature, classification and structure of carboxylic acids.
  Methods of preparation by a) Hydrolysis of nitriles, amides
  b) Hydrolysis of esters by acids and bases with mechanism
  c) Carbonation of Grignard reagents.
- Special methods of preparation of aromatic acids by
  a) Oxidation of side chain.
  b) Hydrolysis by benzotrichlorides.
  c) Kolbe reaction.
- **Physical properties**: Hydrogen bonding, dimeric association, acidity- strength of acids with examples of trimethyl acetic acid and trichloroacetic acid. Relative differences in the acidities of aromatic and aliphatic acids.
- **Chemical properties**: Reactions involving H, OH and COOH groups- salt formation, anhydride formation, acid chloride formation, amide formation and esterification(mechanism). Degradation of carboxylic acids by Huns-Diecker reaction, decarboxylation by Schimdt reaction, Arndt-Eistert synthesis, halogenation by Hell-Volhard- Zelinsky reaction.

2. Active methylene compounds

- **Acetoacetic esters**: keto-enol tautomerism, preparation by Claisen condensation, Acidhydrolysis and ketonic hydrolysis.
- Preparation of a) monocarboxylic acids(Acetic acid, Propaonic acid).
  b) Dicarboxylic acids(Succinic acid, Adipic acid).C)Reaction with urea
- **Malonic ester**: preparation from acetic acid.
  Synthetic applications: Preparation of   a) monocarboxylic acids (propionic acid and n-butyric acid). b) Dicarboxylic acids (succinic acid and adipic acid)
  c) α,β-unsaturated carboxylic acids (crotonic acid).Reaction with urea.

PHYSICAL CHEMISTRY

UNIT-V

Dilute solutions

- Colligative properties. Raoult's law, relative lowering of vapour pressure, its relation to molecular weight of non-volatile solute. Experimental method-Ostwald method.
- Elevation of boiling point , Derivation of relation between molecular weight and elevation in boiling point, Experimental method –Cottrell's method
- Depression in freezing point. Derivation of relation between molecular weight and depression in freezing point, Experimental method – Beckmann's method.
- Osmosis,osmotic pressure, Determination of molecular weight of non-volatile solute from osmotic pressure. Experimental method-Berkeley-Hartley method. Abnormal Colligative properties- Van't Hoff factor.

Organic qualitative analysis-I	PAPER CODE : CHE-301 P

PRACTICAL SYLLABUS

30 hrs. (2h / w),   Credits-2

Organic Qualitative Analysis: 50M

Analysis of an organic compound through systematic qualitative procedure for functional group identification including the determination of melting point and boiling point .
Alcohols, Phenols, Aldehydes, Ketones, ,Carboxylic acids,

INORGANIC CHEMISTRY

UNIT – I
Coordination Chemistry:
IUPAC nomenclature - bonding theories - Review of Werner's theory and Sidgwick's Concept of coordination - Valence bond theory - geometries of coordination numbers 4-tetrahedral and square planar and 6-octahedral and its limitations,crystal filed theory - Splitting of d-orbitals in octahedral, tetrahedral and square-planar complexes - low spin and high spin complexes - factors affecting crystal-field splitting energy, merits and demerits of crystal-field theory. Isomerism in coordination compounds – structural isomerism and stereo isomerism, stereochemistry of complexes with 4 and 6 coordination numbers
UNIT-II
1. Spectral and magnetic properties of metal complexes:
Types of magnetic behavior, spin-only formula, calculation of magnetic moments, experimental determination of magnetic susceptibility-Gouymethod.

2. Stability of metal complexes:
Thermodynamic stability and kinetic stability, factors affecting the stability of metal complexes, chelate effect, determination of composition of complex by Job's method and mole ratio method.

ORGANIC CHEMISTRY
UNIT- II
Nitro hydrocarbons:
Nomenclature and classification-nitro hydrocarbons, structure -Tautomerism of nitroalkanes leading to aci and keto form, Preparation of Nitroalkanes, reactivity - halogenation, reaction with HONO (Nitrous acid),Nef reaction and Mannich reaction leading to Micheal addition and reduction.
UNIT – IV
Nitrogen compounds:
Amines (Aliphatic and Aromatic): Nomenclature, Classification into $1°$, $2°$, $3°$ Amines and Quarternary ammonium compounds. Preparative methods –1.Ammonolysis of alkyl halides 2. Gabriel synthesis 3. Hoffman's bromamide reaction (mechanism). Reduction of Amides and Schmidt reaction. Physical properties and basic character - Comparative basic strength of Ammonia, methyl amine, dimethyl amine, trimethyl amine and aniline - comparative basic strength of aniline, N-methylaniline and N,N-dimethyl aniline (in aqueous and non-aqueous medium), steric effects and substituent effects. Chemical properties: a) Alkylation b) Acylation c) Carbylamine reaction d) Hinsberg separation e) Reaction with Nitrous acid of $1°$, $2°$, $3°$ (Aliphatic and aromatic amines). Electrophillic substitution of Aromatic amines – Bromination and Nitration. Oxidation of aryl and Tertiary amines, Diazotization.

PHYSICAL CHEMISTRY
UNIT- V
Thermodynamics
The first law of thermodynamics-statement, definition of internal energy and enthalpy. Heat capacities and their relationship. Joule-Thomson effect- coefficient. Calculation of w, for the expansion of perfect gas under isothermal and adiabatic conditions for reversible processes. State function. Temperature dependence of enthalpy of formation- Kirchoff s equation. Second law of thermodynamics. Different Statements of the law. Concept of entropy, entropy as a state function, entropy changes in reversible and irreversible processes. Entropy changes in spontaneous and equilibrium processes.

Practical Paper – V **Organic Qualitative Analysis**	**PAPER CODE : CHE-501 P**

30 hrs (2 h/W)   Credits: 2

Organic Qualitative Analysis: 50M
Analysis of an organic compound through systematic qualitative procedure for functional group identification including the determination of melting point and boiling point .

Alcohols, Phenols, Aldehydes, Ketones, Carbohydrates,
 Carboxylic acids, Aromatic Primary Amines.

INORGANIC CHEMISTRY

UNIT-I
1. Reactivity of metal complexes:
Labile and inert complexes, ligand substitution reactions - SN^1 and SN^2, substitution reactions of square planar complexes - Trans effect and applications of trans effect.
2.Bioinorganic chemistry:
Essential elements, biological significance of Na, K, Mg, Ca, Fe, Co, Ni, Cu, Zn and Cl^-.
Metalloporphyrins – Structure and functions of hemoglobin, Myoglobin and Chlorophyll.

ORGANIC CHEMISTRY

UNIT- II

Heterocyclic Compounds
Introduction and definition: Simple five membered ring compounds with one hetero atom
Ex. Furan. Thiophene and pyrrole - Aromatic character – Preparation from 1,4,- dicarbonyl compounds, Paul-Knorr synthesis. Properties : Acidic character of pyrrole - electrophillic substitution at 2 or 5 position, Halogenation, Nitration and Sulphonation under mild conditions - Diels Alder reaction in furan. Pyridine – Structure - Basicity - Aromaticity - Comparison with pyrrole - one method of preparation and properties - Reactivity towards Nucleophilic substitution reaction.

UNIT-III

Carbohydrates
Monosaccharides: **Glucose** (aldo hexose) - Evidence for cyclic structure of glucose (some negative aldehydes tests and mutarotation) - Proof for the ring size (methylation, hydrolysis and oxidation reactions) - Pyranose structure (Haworth formula and chair conformational formula).

Fructose (ketohexose) - Evidence of 2 - ketohexose structure (formation of pentaacetate, formation of cyanohydrin its hydrolysis and reduction by HI). Cyclic structure for fructose (Furanose structure and Haworth formula) - osazone formation from glucose and fructose – Definition of anomers with examples.
Interconversion of Monosaccharides: Aldopentose to Aldohexose (Arabinose to D- Glucose, D-Mannose) (Kiliani - Fischer method). Epimers, Epimerisation - Lobry de bruyn van Ekenstein rearrangement. Aldohexose to Aldopentose (D-Glucose to D- Arabinose) by Ruff degradation. Aldohexose to Ketohexose [(+) Glucose to (-) Fructose] and Ketohexose to Aldohexose (Fructose to Glucose)

UNIT- IV
Amino acids and proteins
Introduction: Definition of Amino acids, classification of Amino acids into alpha, beta, and gamma amino acids. Natural and essential amino acids - definition and examples, classification of alpha amino acids into acidic, basic and neutral amino acids with examples. Methods of synthesis: General methods of synthesis of alpha amino acids (specific examples - Glycine, Alanine, valine and leucine) by following methods: a) from halogenated carboxylic acid b) Malonic ester synthesis c) strecker's synthesis.

Physical properties: Zwitter ion structure - salt like character - solubility, melting points, amphoteric character, definition of isoelectric point.
Chemical properties: General reactions due to amino and carboxyl groups - lactams from gamma and delta amino acids by heating peptide bond (amide linkage). Structure and nomenclature of peptides and proteins.

PHYSICAL CHEMISTRY

UNIT-V
1. Chemical kinetics
  Rate of reaction - Definition of order and molecularity. Derivation of rate constants for first, second, third and zero order reactions and examples. Derivation for time half change. Methods to determine the order of reactions. Effect of temperature on rate of reaction, Arrhenius equation, concept of activation energy.

2. Photochemistry
Difference between thermal and photochemical processes. Laws of photochemistry- Grothus-Draper's law and Stark-Einstein's law of photochemical equivalence. Quantum yield-Photochemical reaction mechanism- hydrogen- chlorine, hydrogen- bromine reaction. Qualitative description of fluorescence, phosphorescence, Photosensitized reactions- energy transfer processes (simple example)

PRACTICAL SYLLABUS

Practical Paper –VI **Physical Chemistry**	**COURSE CODE : CHE-502 P**

30 hrs (2 h/W)   Credits: 2

1. Determination of rate constant for acid catalyzed ester hydrolysis.
2. Determination of molecular status and partition coefficient of benzoic acid in Benzene and water.
3. Determination of Surface tension of liquid
4. Determination of Viscosity of liquid.
5. Adsorption of oxalic acid on silica gel , verification of Freundlisch isotherm.

SEMESTER – II
PAPER CODE : CHE-201
PAPER TITLE : ORGANIC AND GENERAL CHEMISTRY

ORGANIC CHEMISTRY

UNIT-I
Saturated Hydrocarbons
Alkanes: Preparation methods-Wurtz and Wurtz-Fittig reaction-Physical properties and Chemical Properties-Free radical substitution –Halogenation of Propane-concept of relative Reactivity vs Selectivity, Conformational analysis of Ethane-Propane.

Cycloalkanes: General Formula-Relative Stability of Cycloalkanes -Bayer's Strain theory-Conformational analysis of Cyclohexane and mono substituted Cyclohexane (Methyl cyclohexane).

UNIT-II
Unsaturated Hydrocarbons
Alkenes: Introduction to Alkenes, Chemical Properties: Markonikov's rule, Anti - Markonikov's rule. Elimination reactions-E_1, E2, E_1cb reactions. Types of Dienes-Diel's - Alder reaction - 1, 2 and 1, 4 additions of HBr in 1,3-butadiene.
Alkynes: Acidity of acetylenic hydrogens-Electrophilic and Nucleophilic addition reactions-formation of carbonyl compounds-alkylation of terminal alkynes.

UNIT-III
Benzene and its reactivity
Concept of aromaticity - Huckel's rule - application to Benzenoid (Benzene, Naphthalene) and Non - Benzenoid compounds (cyclopropenyl cation, cyclopentadienyl anion and tropylium cation)
Reactions - General mechanism of electrophonic substitution, mechanism of nitration, Friedel Craft's alkylation, Friedel Craft's acylation.
 Orientation of aromatic substitution –ortho, para and meta directing groups. Ring activating and deactivating groups with examples (Electronic interpretation of various groups like NO_2 and Phenolic).Orientation of (i) Amino, methoxy and methyl groups (ii) Carboxy, nitro, nitrile, carbonyl and sulphonic acid groups (iii) Halogens (Explanation by taking minimum of one example from each type)

GENERAL CHEMISTRY

UNIT-IV

l. Surface Chemistry

Colloids: Characteristic of Colloids, Coagulation of Colloids, Hardy-Schulze law, Stability of colloids, protection of colloid, Gold number.

Adsorption: Physical and Chemical adsorption, Langmuir adsorption isotherms. Applications of adsorption.

2. Chemical Bonding

Valence bond theory, hybridization, VB theory as applied to ClF_3, Ni $(CO)_4$. Molecular orbital theory - LCAO method, construction of M.O. diagrams for homo-nuclear and hetero-nuclear diatomic molecules (N_2, O_2, CO and NO).

UNIT-V

Stereochemistry of Carbon compounds

Molecular representations- Wedge, Fischer, Newman and Saw-Horse formulae. Optical isomerism: Optical activity- wave nature of light, plane polarized light, optical rotation and specific rotation. Chiral molecules- definition and criteria (Symmetry elements) - Definition of enantiomers and diastereomers – Explanation of optical isomerism with examples Glyceraldehyde, Lactic acid, Alanine, Tartaric acid, 2,3-dibromopentane. D, L and R, S configuration methods and E, Z- configuration with examples. Racemic mixture- Resolution techniques.

A.G. & S.G.SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE (AUTONOMOUS), VUYYURU.

(Accredited at "A" Grade by NAAC, Bangalore)

PRACTICAL SYLLABUS ACADEMIC YEAR-2020-21

Volumetric analysis	Paper code : CHE-201

30 hrs (2 h /w)   Credits: 2

1. **Estimation of carbonate ion and bicarbonate ion present in a mixture.**
2. **Determination of Fe (II) using $KMnO_4$ with Oxalic acid as primary standard.**
3. **Determination of Cu (II) using Hypo solution with $K_2Cr_2O_7$ as primary standard.**
4. **Estimation of water of crystallization in Mohr's salt by titrating with $KMnO_4$.**

SEMESTER – IV
PAPER CODE: CHE-401
PAPER TITLE : SPECTROSCOPY & PHYSICAL CHEMISTRY
SPECTROSCOPY
UINT-I
1. Spectrophotometry
General features of absorption - Beer-Lambert's law and its limitations, transmittance, Absorbance, and molar absorptivity. Single and double beam spectrophotometers. Application of Beer-Lambert law for quantitative analysis of 1. Chromium in $K_2Cr_2O_7$ 2. Manganese in Manganous sulphate.
2. Electronic spectroscopy:
Interaction of electromagnetic radiation with molecules and types of molecular spectra. Energy levels of molecular orbitals (σ, π, n). Selection rules for electronic spectra. Types of electronic transitions in molecules effect of conjugation.Concept of chromophore and auxochrome
UNIT-II
1. Infra red spectroscopy
Different Regions in Infrared radiations. Modes of vibrations in diatomic and polyatomic molecules. Characteristic absorption bands of various functional groups. Interpretation of spectra-Alkanes, Aromatic, Alcohols carbonyls, and amines with one example to each.
2. Proton magnetic resonance spectroscopy (H^1-NMR)
Principles of nuclear magnetic resonance, equivalent and non-equivalent protons, position of signals. Chemical shift, NMR splitting of signals - spin-spin coupling, coupling constants. Applications of NMR with suitable examples - ethyl bromide, ethanol, acetaldehyde, 1,1,2-tribromo ethane, ethyl acetate, toluene and acetophenone.
PHYSICAL CHEMISTRY
UNIT-III
Photochemistry
Difference between thermal and photochemical processes. Laws of photochemistry- Grothus-Draper's law and Stark-Einstein's law of photochemical equivalence. Quantum yield-Photochemical reaction mechanism- hydrogen- chlorine, hydrogen- bromine reaction. Qualitative description of fluorescence, phosphorescence, Photosensitized reactions- energy transfer processes (simple example)
UNIT-IV
Electrochemistry
Specific conductance, equivalent conductance. Variation of equivalent conductance with dilution. Application of conductivity measurements- conductometric titrations. Arrhenius theory of electrolyte dissociation and its limitations. Ostwald's dilution law. Debye-Huckel-Onsagar's equation for strong electrolytes (elementary treatment only).Definition of transport number, determination by Hittorfs method. Single electrode potential, Nernst equation, Reversible and irreversible cells, Types of electrode-Standard Hydrogen electrode, calomel electrode, Indicator electrode, metal – metal ion electrode, Inert electrode. Applications of EMF measurements -Potentiometric titrations.
UINT-V
Phase rule   **(10+5) marks**   **5h**
Concept of phase, components, degree of freedom. Derivation of Gibbs phase rule-reduced phase equation. Phase equilibrium of one component (water system). Phase equilibrium of two- component system(Ag-Pb system), desilverisation of lead. Freezing mixtures.

PRACTICAL SYLLABUS

Physical Chemistry and IR Spectral Analysis	PAPER CODE : CHE - 401 P

30 hrs (2h /w) Credits-2

Physical Chemistry

1. Potentiometric titration of a Mohr's solution with KMnO4 Solution.

2. Potentiometric titration of a Mohr's solution with $K_2Cr_2O_7$ solution.

3. Conductometric titration of a strong acid (HCl)) with a strong base(NaOH).

4. Conductometric titration of a weak acid (CH_3COOH) with a strong base (NaOH).

5. Conductometric titration of a mixture of a strong acid (HCl) and weak acid (CH_3COOH) with a strong base (NaOH)

Student study Project-(IR Spectral Analysis)

IR Spectral Analysis of the following functional groups with examples
   a) Hydroxyl groups
   b) Carbonyl groups
   c) Amino groups
   d) Aromatic groups

UNIT-I
Quantitative analysis:
Methods of different types of chemical analysis**,** Principle of volumetric analysis. Theories of acid-base, redox, complexometric, iodometric and   precipitation titrations - choice of indicators for these titrations.

UNIT-II
Treatment of analytical data:
Types of errors, significant figures and its importance, accuracy - methods of expressing accuracy, error analysis and minimization of errors, precision - methods of expressing   precision, standard deviation and confidence limit.

UNIT-III
Separation Techniques in Chemical analysis
Solvent extraction: Introduction, principle, techniques, factors affecting solvent Extraction, Batch extraction, continuous extraction. Synergism. Application - Determination of Iron (III), organic mixture analysis.

UNIT – IV
Chromatography
Classification of chromatography methods, principles of differential migration adsorption phenomenon, Nature of adsorbents, solvent systems, Rf values, factors effecting Rf values.
Ion exchange Chromatography: Introduction, action of ion exchange resins,
separation of inorganic mixtures, applications.

Paper Chromatography : Principle, experimental procedures, choice of paper   and solvent systems, developments of chromatogram - ascending, descending and radial.Two dimensional chromatography, applications.

UNIT -V
Thin layer Chromatography (TLC):
Principles, Experimental procedures. Adsorbents and solvents.
Preparation of plates. Development of the chromatogram. Detection of the spots. Applications.

Column Chromatography: Principles, experimental procedures, Stationary and mobile Phases, Separation technique. Applications.

GC: Principle and applications,**HPLC**: Basic principle and applications.

PRACTICAL SYLLABUS

Paper title: Chromatography & Volumetric analysis	Paper code : CHE-601GE-P

30 hrs (2h /w) Credits-2

1. Identification of amino acids by paper chromatography.

2. Determination of Zn using EDTA

3. Determination of Mg using EDTA

4. Hardness of water.

PAPER TITLE : ORGANIC SPECTROSCOPIC TECHNIQUES

UNIT-I
NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY
Nuclear spin, Principles of NMR-Classical and Quantum Mechanical methods,
Larmour Frequency. Instrumentation. Saturation, Relaxation spin-spin & spin lattice relaxation.
Chemical shifts -Factors influencing Chemical shift, Shielding and De-shielding mechanism.

UNIT-II
NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY
Spin-Spin interactions-factors affecting spin-spin interactions, Deuterium exchange (H^+)
Coupling constant- types of coupling constant-vicinal, Geminal and long range coupling constant-Factors influencing coupling constants. Types of PMR Spectrums –AX, AX_2 and AB type with one example.

UNIT-III
Electron Spin Resonance Spectroscopy
Basic Principles, Theory of ESR, Comparison of NMR & ESR.Instrumentation, Factors affecting the 'g' value, determination of 'g' value. Isotropic and Anisotropic constants. Splitting hyper fine splitting coupling constants. Line width, Zero field splitting and Kramer degeneracy. Crystal field splitting,Crystal field effects.Applications:- Detection of free radicals, ESR spectra of (a) H^-- radical (b)Deuterium radical (c) Methyl radical(CH_3) (d) Benzene anion (C_6H_6) (e) $[Cu(H_2O)_6]^{+2}$

UNIT-IV
UV & VISIBLE SPECTROSCOPY
Electronic spectra of diatomic molecules. The Born- oppenheimer approximation.
Vibration coarse structure: Intensity of Vibrational-electronic spectra:
The Franck-Condon principle.Electronic structure of diatomic molecules.
Types of transitions, Chromophores, Auxochrome, types of shifts in UV Visible spectrum, Conjugated dienes, trienes and polyenes, unsaturated carbonyl compounds-Woodward – Fieser rules.

UNIT-V
Electronic spectra of polyatomic molecules
Chemical analysis by Electronic Spectroscopy – Beer-Lambert's Law.
Deviation from Beer's law. Quantitative determination of metal ions (Mn^{+2}, Fe^{+2}).
Simultaneous determination of Chromium and Manganese in a mixture.

SEMESTER – VI	**SUBJECT: CHEMISTRY**	**PAPER CODE:CHE-603CE**

PAPER TITLE : ADVANCED ORGANIC REACTIONS,   Cluster Elective Paper – IX

60hrs (4h / w) Credits-3

UNIT – I
ORGANIC PHOTOCHEMISTRY   (10+10+5)   **10hrs**
Organic photochemistry: Molecular orbitals, carbonyl chromophore–Jablonski diagram,
Photochemical reactions- Photo reduction-mechanism, example-aromatic compounds.
sensitizer and influence of sensitizer.

UNIT – II
ORGANIC PHOTOCHEMISTRY   (10+10+5)   **12hrs**
Norrisch cleavages, type -I: Mechanism, acyclic cyclic diones, Photo Fries rearrangement.
Norrisch type II cleavage: Mechanism and stereochemistry, Type- II reactions of esters: 1: 2
diketones, photo decarboxylation, Di - π methane Rearrangement,
Photochemistry – of conjugated dien
es, Decomposition of nitrites –Barton reaction.

UNIT – III
PROTECTING GROUPS AND ORGANIC REACTIONS   (10+10+5+5)   **15hrs**
Principles of (1) Protection of alcohols – ether formation including silyl ethers – ester formation, (2) Protection of diols – acetal,ketal and carbonate formation, (3) Protection of carboxylic acids – ester formation, benzyl and t–butyl esters, (4) Protection of amines– acetylation, benzoylation, benzyloxy carbonyl, triphenyl methyl groups and fmoc, (5)Protection of carbonyl groups – acetal, ketal, 1,2– glycols and 1,2–dithioglycols formation.

UNIT – IV
SYNTHETIC REACTIONS: (10+5+5)   **8hrs**
Mannich reaction – Mannich bases – Robinson annulations. The Shapiro reaction, Stork–enamine reaction. Use of dithioacetals – Umpolung, phase transfercatalysis – mechanisms and use of benzyl trialkyl ammonium halides. Witting reaction.

UNIT –V : NEW SYNTHETIC REACTIONS(10+5)   15hrs
Define with example and mechanism- Suziki coupling, Click reaction,Baylis–Hillman reaction,RCM olefm metathesis, Mukayama aldol reaction.
Define with one example: (Mechanism not required) Mitsunobu reaction, McMurrey reaction, Julia–Lythgoe olefination, Stille coupling and Heck reaction.
Recommended Books
1. Molecular reactions and Photochemistry by Charles Dupey and O.L. Chapman.
2. Molecular Photochemistry by Turru.
3. Importance of antibonding orbitals by Jaffe and Orchin.
4. Text Book of Organic Chemistry by Cram,. Hammand and Henrickson.
5. Some modern methods of organic synthesis by W. Carruthers.
6. Guide Book to Organic Synthesis by R.K. Meckie, D.M. Smith and R.A. Atken.

7. Organic Synthesis by O.House.

SEMESTER – VI	**SUBJECT: CHEMISTRY**	**PAPER CODE:CHE-604CE**

PAPER TITLE : PHARMACEUTICAL AND MEDICINAL CHEMISTRY, Cluster Elective Paper –X

60hrs (4h / w) Credits-3

UNIT-I (10+5+5)   **12h**
Pharmaceutical chemistry Terminology: Pharmacy, Pharmacology, Pharmacophore,
Pharmacodynamics, Pharmacokinetics (ADME, Receptors - brief treartment)
Metabolites and Anti metabolites.

UNIT-II (10+10+5)
Drugs: **10h**
Nomenclature: Chemical name, Generic name and trade names with 10-examples
Classification based on structures and therapeutic activity with one example each.

UNIT-III
Synthesis and therapeutic activity of the compounds: **18h**
Chemotheraputic Drugs (10+10+5)
l.Sulphadrugs(Sulphamethoxazole) 2.Antibiotics - β-Lactam Antibiotics-Isolation of
Pencilline by submerged culture method, 3. Anti malarial Drugs (chloroquine)
Psycho therapeutic Drugs: (10+5)
1.Anti pyretics (Paracetamol) 2.Hypnotics, 3.Tranquilizers(Diazepam) 4.Levodopa

UNIT-IV
Pharmacodynamic Drugs: (10+5)   **8h**
1.Antiasthma Drugs (Solbutamol) 2. Antianginals (Glycerol Trinitrate) 3.Diuretics (Frusemide)

UNIT-V
HIV-AIDS: (10+5)   **12h**
Immunity - CD-4cells, CD-8cells, Retro virus, Replication in human body, Investigation available,
prevention of AIDS, Drugs available - examples with structures: PIS: Indivanir (crixivan),
Nelfinavir(Viracept).

List of Reference Books:
1. Medicinal Chemistry by Dr. B.V.Ramana
2. Synthetic Drugs by O.D.Tyagi & M.Yadav
3. Medicinal Chemistry by Ashutoshkar
4. Medicinal Chemistry by P.Parimoo
5. Pharmacology& Pharmacotherapeutics R.S Satoshkar & S.D.Bhandenkar

Practical syllabus

Paper title: Preparations of Organic compounds	Paper code : CHE-602CE-P

30 hrs (2 h / W) Credits-2

1. Preparation of Aspirin.
2. Preparation of Paracetamol.
3. Preparation of Acetanilide
4. Preparation of Barbutiric Acid.
5. Preparation of Phenyl Azo β-naphthol.

Practical syllabus

Paper title: Preparations of Organic compounds by Green procedure	Paper code : CHE-603CE-P

30 hrs (2h / W), Credits-2

1. Green procedure for organic qualitative analysis: Detection of N, S andhalogens

2. Acetylation of 1^0 amine by green method: Preparation of acetanilide

3. Rearrangement reaction in green conditions: Benzil-Benzilic acid rearrangement

4. Electrophilic aromatic substitution reaction: Nitration of phenol

5. Radical coupling reaction: Preparation of 1, 1-bis -2-naphthol

6. Green oxidation reaction: Synthesis of Adipic acid

7. Green procedure for Diels Alder reaction between furan and Maleic anhydride

Department of Chemistry

Paper title: **Project work**	Paper code : CHE-604CE-P

        The students have chosen chemistry as cluster elective. "Laboratory Reagents" is selected as a project work to the students for this academic year.

(Accredited at "A" Grade by NAAC) ACADEMIC YEAR-2020-21

SEMESTER - II	PAPER CODE :
PAPER TITLE : FOOD ADULTERATION	

UNIT-I: Total: 30Hrs (2h/week)   02 Credits

Common Foods Adulteration

Common Foods subjected to Adulteration-Adulteration-Definition –Types; Poisonous substances, Foreign matter, cheap substitutes, Spoiled parts. Adulteration through Food Additives –Intentional and incidental. General Impact on Human Health.

UNIT-II :

Adulteration of Common Foods and Methods of Detection   (10+10+5+5+5) **10Hrs**

Means of Adulteration Methods of Detection Adulterants in the following Foods; Milk, Oil, Grain, Sugar, Spices and Condiments, Processed Food, Fruits and Vegetables. Additives and Sweetening agents (at least three methods of detection for each food item).

UNIT-III:

Present   Laws   and   Procedures   on   Adulteration(10+10+5+5+5) **10Hrs**

Highlights of Food Safety and Standards Act 2006 (FSSA) –Food Safety and Standards Authority of India- Rules and Procedures of Local Authorities.Role of Voluntary Agencies Suchas, Agmark, I.S.I. Quality control laboratories of Companies, Private testing laboratories, Quality control laboratories of Consumer co-operatives.

Consumer Education, Consumer's problems, rights and responsibilities, COPRA2019-Offenses and Penalities-Procedures to Complain –Compensation to Victims.

Adusumilli Gopalakrishnaiah & Sugar Cane Growers Siddhartha Degree College of Arts & Science, Vuyyuru– 521165, Krishna District, Andhra Pradesh

(An Autonomous College in the Jurisdiction of Krishna University, Machilipatnam)

Accredited by NAAC with "A" Grade   **ISO 9001:2015 Certified Institution**

DEPARTMENT OF HISTORY

2020-2021

HIGHLIGHTED SYLLABUS OF B.A

Courses on Employability, Entrepreneurship and Skill-Development in the curriculum of all programs are highlighted as mentioned: Employability in yellow Color, Skill-Development in Sky blue colour and Entrepreneurship in Green colour

Employability   ▮ (yellow)

Skill-Development   ▮ (blue)

Entrepreneurship   ▮ (green)

M.Sc. CHEMISTRY - I - SEMESTER
CH1T1: GENERAL CHEMISTRY

Subject Code	CH1T1	I A Marks	30
No. of Lecture Hours / Week	4	End Exam Marks	70
Total Number of Lecture Hours	60	Total Marks	100
Seminar	---	Exam Hours	03

UNIT I

Treatment of analytical data : Classification of errors - Determinate and indeterminate errors -Minimisation of errors - Accuracy and precision - Distribution of random errors - Gaussian distribution - Measures of central tendency - Measures of precision - Standard deviation - student's t test - Confidence interval of mean - Testing for significance - Comparison of two means – F - test - Criteria of rejection of an observation - propagation of errors - Significant figures and computation rules.

UNIT-II

Titrimetric Analysis: Classification of reactions in titrimetric analysis- Primary and secondary standards-Neutralisationtitrations-Theory of neutralisation indicators-Mixed indicators- Neutralisation curves-Displacement titrations-Precipitation titrations-Indicators for precipitation titrations-Volhard method-Mohr method- Theory of adsorption indicators-Oxidation reduction
titrations-Change of electrode potentials during titration of Fe(II) with Ce(IV)- Detection of end point in redox titrations.

UNIT -III

Methods of purification:
Distillation: Basic principles. Distillation types, continuous distillation, batch distillation, fractional distillation, vacuum distillation and steam distillation.

Drying Techniques: Drying of Hexane, Benzene, Toluene, Xylene, Tetrahydrofuran, DMF, DMSO, Methanol, Ethanol, Diethylether and Dioxane. **Solvent extraction**: Basic principles. Different types of extraction. Selection of solvents. Avoiding emulsion formation. Basic concepts on Soxhlet extraction.

UNIT – IV

Adsorption and Partition Chromatography: Introduction to chromatography, Different types of Chromatography: **Adsorption chromatograph**: adsorbents, solvents, solutes, apparatus; **Column Chromatography:** stationary phase, Mobile phase, packing of column, advantages and disadvantages. **Paper chromatography:** Basic Principles. Ascending and descending types. Selection of mobile phase, Development of chromatograms, Visualization methods. Application of paper chromatography in the identification of sugars and amino acids. One- and two-dimensional paper chromatography; **Thin Layer chromatography:** Basic Principles. Common stationary phases, Methods of preparing TLC plates, Development of TLC plates, Visualization methods, Rf value. Application of TLC in monitoring organic reactions. identification and quantitative analysis.

UNIT V

Gas Chromatography and High-Performance Liquid Chromatography: **Gas chromatography:** Basic Principles. Different types of GC techniques. Selection of columns and carrier gases. Instrumentation. detectors; RT values. Applications in the separation, identification and quantitative analysis of organic compounds; **High Performance liquid chromatography (HPLC):** Basic Principles. Normal and reversed Phases. Selection of column and mobile phase. Instrumentation. detectors; RT values. Applications in the separation, identification and quantitative estimation of organic compounds. Concepts on HPLC method development.

CH1T2: INORGANIC CHEMISTRY – I

Subject Code	CH1T2	I A Marks	30
No. of Lecture Hours / Week	4	End Exam Marks	70
Total Number of Lecture Hours	60	Total Marks	100
Seminar	----	Exam Hours	03

UNIT-I

Introduction to Exact Quantum Mechanical Results: Schrodinger equation importance of wave function, Operators, derivation of wave equation using operator concept. Discussion of solutions of Schrodinger's equation to some model systems viz. particle in one dimensional box (applications), three dimensional box, Rigid rotator system and the Hydrogen atom.

UNIT-II

Chemistry of non- transition elements - Inter halogen compounds, Halogen oxides and oxyfluorides. Noble gas compounds with special reference to clathrates. Spectral and Magnetic properties of Lanthanides and Actinides. Analytical applications of Lanthanides and Actinides.

Synthesis, properties and structure of B-N, S-N, P-N cyclic compounds and intercalation compounds.

UNIT-III

Structure and Bonding - pπ - dπ bonding - Evidences (in non-transition metal compounds). Non-valence cohesive forces, Hydrogen bonding. VSEPR theory, Walsh diagrams for linear (BeH_2) and bent (H_2O) molecules. Molecular Orbital theory, Molecular orbitals in triatomic (BeH_2) molecules and ions (NO_2^-) and energy level diagrams.

UNIT-IV

Metal –ligand bonding - Crystal Field Theory of bonding in transition metal complexes – Splitting of d-orbitals in octahedral, tetrahedral, square plannar, Trigonalbipyramidal and Square pyramidal fields.Tetragonal distortions - Jahn Teller effect . Experimental evidences for covalence in complexes.

Molecular Orbital Theory of bonding for Octahedral, tetrahedral and square planar complexes. π- bonding and MOT -

UNIT-V

Metal – ligand Equilibria in solutions - Step wise and over all formation constants. Trends in stepwise constants (statistical effect and statistical ratio). Determination of formation constants by Spectrophotometric method (Job's method) and pH metric method (Bjerrum's). Stability correlations - Irwing – William's series.Hard and soft acids and bases – Hard and soft acids and bases (HSAB).

CH1T3: ORGANIC CHEMISTRY – I

Subject Code	CH1T3	I A Marks	30
No. of Lecture Hours / Week	4	End Exam Marks	70
Total Number of Lecture Hours	60	Total Marks	100
Seminar	----	Exam Hours	03

UNIT-I

Nature of Bonding in Organic Molecules: Localised and Delocalized, Delocalised chemical bonding conjugation, cross conjugation, hyper conjugation, Tautomerism.

Aromaticity: Concept of Aromaticity, Aromaticity of five membered, six membered rings
.- Non benzonoid aromatic compounds:-cyclopropenylcation,

Cyclobutadienyldication,cyclopentadienylanion-tropylliumcationcyclooctatetraenyldianion.Homoaromaticity, Anti aromaticity.

UNIT–II

Reactive intermediates:

Generation,Structure, Stability, Detection and Reactivity of Carbocations, Carbanions, Free radicals, Carbenes, Nitrenes and Arynes.

Reactive Species: Generation and reactivity of Electrophiles, Nucleophiles, Dienophiles, Ylids.

UNIT–III

Addition Reactions: Additions: Addition to carbon – carbon multiple bonds, HX, X2, HOX, stereo chemistry of addition, formation and reaction of epoxides, syn and anti hydroxylation, hydrogenation(catalytic and Non catalytic), synthetic reactions of CO and CN and Cram's rule.

UNIT–IV

Eliminations Reactions:
Types of elimination (E1,E1CB,E2) reactions, mechanisms, stereochemistry and orientation, Hofmann and Saytzeff's rules, Syn elimination versus anti elimination. Competitions between elimination and substitution. Dehydration, dehydrogenation, decarboxylative elimination, pyrolytic elimination.

UNIT–V

Substitution Reactions:
Aliphatic Nucleophilic substitutions:
The SN2, SN1, mixed SN1 and SN2 and SNireactions : Mechanism, effect of structure, nucleophile, leaving group on substitutions. The neighbouring group mechanism, neighbouring group participation by σ and π bonds, anchimeric assistance.
Aromatic Nucleophilic substitution:
The SNAr, SN1 mechanisms and benzyne mechanism. Reactivity- effect of substrate structure, leaving group and attacking nucleophile. The Von-Richter, Sommelet – Hauser and Smiles rearrangements.

CH1T4: PHYSICAL CHEMISTRY – I

Subject Code	CH1T4	I A Marks	30
No. of Lecture Hours / Week	4	End Exam Marks	70
Total Number of Lecture Hours	60	Total Marks	100
Seminar	----	Exam Hours	03

UNIT-I

Thermodynamics - I

Classical thermodynamics - Brief review of first and second laws of thermodynamics - Entropy change in reversible and irreversible processes - Entropy of mixing of ideal gases - Entropy and disorder – Free energy functions - Gibbs-Helmholtz equation - Maxwell partial relations - Conditions of equilibrium and spontaneity - Thermodynamic derivation of Raoult's law.

UNIT – II

Surface phenomena and phase equilibria- Surface tension - capillary action - pressure difference - across curved surface (young - Laplace equation) - Vapour pressure of small droplets
(Kelvin equation) - Gibbs-Adsorption equation - BET equation - Estimation of surface area - catalytic activity of surfaces – ESCA , X- ray fluorescence and Auger electron spectroscopy.

UNIT - III

Electrochemistry – I - Electrochemical cells - Measurement of EMF - Nernst equation – Equilibrium constant from EMF Data - pH and EMF data - concentration cells with and without transference – Liquid junction potential and its determination - Activity and activity coefficients - Determination by EMF Method - Determination of solubility product from EMF measurements. Debye Huckel limiting law and its verification.

UNIT - IV

Chemical kinetics- Methods of deriving rate laws - complex reactions - Rate expressions for opposing, parallel and consecutive reactions involving unimolecular steps. Theories of reaction rates -collision theory - Steric factor - Activated complex theory - Thermodynamic aspects – Unimolecular reactions - Lindemann's theory - Lindemann-Hinshelwood theory. Reactions in solutions - Influence of solvent - Primary and secondary salt effects

UNIT – V

Microwave Spectroscopy and Rotational Vibrational Spectroscopy: Motion of molecules-Degrees of freedom –Energy associates with the degrees of freedom Type of spectra. **Microwave spectroscopy**: Classification molecules, rigid rotator model, effect of isotopic substitution on the transition frequencies, Intensities non-rigid rotator-Microwave spectra of polyatomic molecules. **RotationalVibrational Spectroscopy**: Harmonic oscillator, vibrational energies of diatomic molecules, zero-point energy, force constant and bond strengths, anharmonicity Morse potential energy diagram. Vibration – rotation spectroscopy. PQR branches, Born–Openheimer approximation, selection rules, normal modes of vibration group frequencies, overtones, hot bands, applications.

CH1L1: INORGANIC CHEMISTRY PRACTICAL

Subject Code	CH1L1	I A Marks	30
No. of Practical Hours / Week	6	End Exam Marks	70
Total Number of Practical Hours	80	Total Marks	100
Seminar	----	Exam Hours	06

List of experiments:
1. Preparation of Potassium trisoxalatoferrate(III).
2. Preparation of Tris thiourea copper (1)sulphate.
3. Preparation of Cis and trans potassium diaquodioxalatochromium(III).
4. Preparation of Hexa ammine cobalt (III)chloride.
5. Determination of Zn^{2+} with potassium Ferrocyanide.
6. Determination of Mg^{2+} usingEDTA.
7. Determination of Ni^{2+} usingEDTA.
8. Determination of hardness of water usingEDTA.
9. Gravimetric determination of nickel using dimethylglyoxime.
10. Gravimetric determination of Copperusingammonium thiocyanate.
11. Gravimetric determination of Zn using diammonium hydrogenphosphate.
12. Semi micro qualitative analysis of six radicalmixtures

(One interfering anion and one less familiar cation for each mixture)
 (minimum three mixtures).

Anions: S^{2-}, SO^{2-}, Cl^-, Br^-, I^-, $NO3^-$, $SO4^{2-,}$ $CH3COO^-$, $C2O4^{-2}$, $C4H4O6^{-2}$, $PO4^{3-}$, $CrO4^{2-}$,

Cations: Ammonium $(NH4^+)$

1st group: Hg^+, Ag^+, Pb^{+2}, Tl^+, W^{+6}.

2nd group: Hg^{+2}, Pb^{+2}, Bi^{+3}, Cu^{+2}, Cd^{+2}, Sn^{+2}, Sn^{+4}, Mo^{+6}.

3rd group: Fe^{+2}, Fe^{+3}, Al^{+3}, Cr^{+3}, Ce^{+4}, Th^{+4}, Ti^{+4}, Zr^{+4}, VO^{+2}, $UO2^{+2}$, $Be^{+2.}$

4th group: Zn^{+2}, Mn^{+2}, Co^{+2}, Ni^{+2}.

5th group: Ca^{+2}, Ba^{+2}, Sr^{+2}.

6th group: Mg^{+2}, K^+, Li^+.

CH1L2: ORGANIC CHEMISTRY PRACTICAL-I

Subject Code	CH1L2	I A Marks	30
No. of Practical Hours / Week	4	End Exam Marks	70
Total Number of Practical Hours	80	Total Marks	100
Seminar	---	Exam Hours	06

List of experiments:

1. Separation of Binary mixtures of Carboxylic acid + Neutral organic compounds (Solvent extraction method).
2. Separation of Binary mixtures of Basic nature + Neutral organic compounds (Solvent extraction method).
3. Separation of Binary mixtures of Phenolic compounds + Neutral organic compounds (Solvent extractionmethod).
4. Preparation of Phthalimide from Phthalic anhydride – High Temperature.
5. Preparation of p-nitro acetanilide – Low temperature.
6. Preparation of Iodoform – Room temperature.
7. Column chromatography - separate the given mixture of o-and p-nitroaniline.
8. Paper chromatography - separate the given mixture of sugars or aminoacids.
9. Thin layer chromatography - separate the given mixture of phenols or 2,4-DNP derivatives of carbonyls compounds.
10. Preparation of Sodium wire - to make Sodium Wire for solventdrying.
11. Preparation of Sodium Granules.
12. Preparation of Sodiumt-butoxide.
13. Preparation of Grignard Reagent and its usage one reaction.
14. Preparation of Wittig reagent.
15. Preparation of ButylLithium.

A.G. & S.G. SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE (Autonomous)
DEPARTMENT OF CHEMISTRY
M.Sc – CHEMISTRY (ORGANIC CHEMISTRY)
II SEMESTER

Paper Code & Title: 20CH2T1: ORGANIC SPECTROSCOPY

No. of hours per week: 04 Total credits: 04
Total marks: 100 (Internal: 30 M & External: 70M)

UNIT- I
UV- Visible Spectroscopy:
Mechanics of measurement – Energy transitions – Simple chromophores – Auxochrome, Absorption shifts (Bathchromic shifts, Hypsocromic shift, Hyper chromic shift, Hypo chromic shift). UV absorption of Alkenes – polyenes, unsaturated cyclic systems .
UV absorption of Carbonyl compounds α,β-unsaturated carbonyl systems - UV absorption aromatic systems – solvent effects – geometrical isomerism – acid and base effects – typical examples – calculation of λmax values for simple molecules using Woodward -Fieser rules.

UNIT – II
IR Spectroscopy:
Mechanics of measurement – Fundamental modes of vibrations -Stretching and bending vibrations – Factors effecting vibrational frequency-hydrogen bonding.
Finger print region and its importance. Typical group frequencies for – CH,
-OH, -NH, -CC, -CO and aromatic systems - Application in structural determination Examples – simple problems.

UNIT – III
Nuclear Magnetic Resonance Spectroscopy (1HNMR – First Order PMR):
Introduction:Nuclear spin-Basic principle of -NMR - nuclear resonance –saturation-Larmor's frequency-Relaxation- Instrumentation(Cw and FT) shielding and de shielding of magnetic nuclei- chemical shift and its measurements, factors influencing chemical shift, spin–spin interactions and factors influencing spin -spin coupling- Dynamic NMR- coupling constant J. and factors effecting J value.

UNIT – IV
Mass Spectrometry I
Introduction- ionization methods-EI, CI, ES, MALDI and FAB – advantages and disadvantages-molecular ion peak and its importance, meta stable peak, Nitrogen rule and extension of nitrogen rule. Determination of Molecular weight and determination of molecular formulae- Isotopic Peaks- Identification of single chlorine atom and double chlorine atom single bromine atom and double bromine atoms in organic compounds. Instrumentation.

UNIT – V
Mass Spectrometry II
Fundamental fragmentation process- Stevenson's rule- radical site initiated cleavage-charge site initiated cleavage- two bond cleavage- Retrodielalder cleavage- Mc-Lafferty rearrangement and other cleavages. Mass spectral fragmentation of alkanes, cycloalkanes, alkenes, alkynes, aromatic hydrocarbons, alcohols, phenols, thiols, ethers, carbonyl containing compounds (Aldehydes, ketones, esters and carboxylic acids), nitrogen compounds, alkyl chlorides and alkyl bromides, Examples of mass spectral fragmentation of organic compounds with respect to their structure determination.

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II SEMESTER

Paper Code & Title: 20CH2T2: INORGANIC CHEMISTRY-II

No. of hours per week: 04 Total credits: 04
Total marks: 100 (Internal: 30 M & External: 70M)

Unit-I: Non-metal cages and metal clusters:
Structure and bonding in phosphorous-oxygen, phosphorous-Sulphur cages; structure and bonding in higher boranes with (special reference to B12icosahedra). Carboranes, metalloboranes, metallocarboranes. Classification- LNCs and HNCs,Isoelectronic and Isolobal relationships, electron counting rules: Wade's and Lauher's rules. M-Mmultiple bonding; preparation, structure and bonding in dinuclear [Re2Cl8] 2- ion, trinuclear[Re3Cl9], tetra nuclear W4(OR)16, hexa nuclear [Mo6Cl8]4+ and [Nb6Cl12]2-.

Unit-II: Organometallic chemistry of transition metals:
Classification and electron counting rules, captivity, synthesis, structure and bonding of Olefinic complexes, Acetylene complexes,ferrocene, dibenzene chromium, cyclo heptatriene and tropylium complexes of transition metals.Reactions of organometallic compounds - oxidative addition reductive elimination, insertion and elimination. Applications of organometallic compounds, Catalytic hydrogenation, Hydroformylation, alkene polymerization.

Unit-III: Reaction mechanism of transition metal complexes:
Kinetics of octahedral substitution, acid hydrolysis, base hydrolysis-conjugate base (CB) mechanism. Direct and indirect evidences in favour of CB mechanism. Anation reactions. Reactions without metal-ligand bond cleavage. Factors affecting the substitution reactions in octahedral complexes. Trans effect on substitution reactions insquare planar complexes. Mechanism of redox reactions, outer sphere mechanism, cross reactions and Marcus –Hush equation, inner sphere mechanism.

Unit-IV: Term symbols and Electronic spectra: Term symbols:
Term symbols and theirderivation, Microstates, Hund's rules to predict ground terms and ground states. List of groundenergy and higher energy terms from d1 to d9 configurations;
Electronic spectra of transitionmetal complexes:
Spectroscopicterms. Selection rules, Slator–Condon parameters, Racahparameters, Term separation energies for dn configurations,Orgeldiagrams. Tanabe-Sugano diagrams for d1 to d9 configurations. Calculations of Dq, B and βparameters. Charge transfer spectra.

Unit-V: Bio-inorganic chemistry and Magnetic properties of complexes:
Storage and transportof dioxygen by Hemoglobin and Myoglobin,Vitamin B12 and its importance.
Magnetic properties of transition metal complexes:
Types of magnetism, factors affecting Paramagnetism, anomalous magnetic moments - Orbital and spin contribution, spin-orbit coupling andmagnetic moments chiro optical properties, cotton effect and Faraday effect.

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II SEMESTER

Paper Code & Title: 20CH2T3: ORGANIC CHEMISTRY -II

No. of hours per week: 04   **Total credits: 04**
Total marks: 100   **(Internal: 30 M & External: 70M)**

Unit-I: Named reactions:
Aldol condensation, Benzoin condensation, Cannizzaro condensation, claisen condensation, Dieckmann condensation, Perkin condensation, Stobbe condensation,Reformatsky reaction,Mannich reaction, Reimer-Tiemann reaction, Vilsmeier-Haack reaction, Shapiro reaction, McMurray reaction, Michael addition reaction, Wittig reaction, Stork – Enamine reaction,Acyloin condensation, Robinson ringannulation and Simmon-Smith reaction.

Unit-II: Stereo Chemistry-I:
Concept of chirality, Recognitionof Symmetry elements. Definition and classification of Stereoisomers, Enantiomer, Diastereomer, Homomer, Epimer, Anomer, Configuration and Conformation, Configurational nomenclature: D,L and R, S nomenclature. Molecular representation of organic molecules: Fischer, Newman and Sawhorse projections and their inter-conversions.Geometrical Isomerism. Cis-trans, E, Z- and Syn and anti nomenclature, Methods of determining configuration of Geometrical isomers using physical, spectral and chemical methods.

Unit-III: Stereo Chemistry-II:
Definition of Conformation, Conformational analysis of acyclic molecules – alkanes and substituted alkanes. Conformational analysis of monocyclic molecules – cyclohexane – chair, boat and twist boat - mono and disubstituted cyclohexanes and conformation around carbon hetero atom bonds having C–O & C–N. Confirmationandintramolecular hydrogen bonding.

Unit-IV: Green chemistry & Phase transfer catalysis:
Introduction to Green chemistry, Principles and concepts of Green chemistry, Green Catalysis, Biocatalysis, renewable resources, Green Reagents, examples of green reactions-synthesis of Ibuprofen, Clean Fischer-Indole synthesis comparison of the above with conventional methods. Introduction to Microwave organic synthesis: introduction, advantages and disadvantages. Applications: solvents (water and organic solvents), solvent free reactions (Solid state reactions).

Unit-V: Chemistry of Nanomaterials:
Introduction, carbon nanotubes: structure of single and multi-walled carbon nanotubes, synthesis-solid and gaseous carbon source-based production techniques, synthesis with controlled orientation. Growth mechanism of carbon nano tubes-catalyst free growth, catalyst activated growth, general propertiesandapplications.

NOTE: Percentage ofChange - 0%

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DEPARTMENT OF CHEMISTRY
M.Sc – CHEMISTRY (ORGANIC CHEMISTRY)
II SEMESTER

Paper Code & Title: CH204: PHYSICAL CHEMISTRY-II
No. of hours per week: 04 Total credits: 04
Total marks: 100 (Internal: 30 M & External: 70M)

Unit-I: Third law of Thermodynamics and Statistical thermodynamics:
Nernst Heat theorem -Third law of thermodynamics - Its limitations - Determination of absolute entropy - Thermodynamic probability and most probable distribution, Entropy and probability - Boltzmann-Plank equation. Ensembles, Maxwell-Boltzmann distribution, Fermi-Dirac statistics, Bose Einstein statistics. Partition function - calculation of thermodynamic properties in terms of partition function- Chemical equilibrium and partition function - Translational, rotational and electronic partition function - Entropy of Monatomic gases (Sackur-Tetrode equation).

Unit-II: Polymer chemistry and Raman Spectroscopy:
Classification of polymers - Free radical, ionic and Zeigler -Natta Polymerization - kinetics of free radical polymerization -Techniques of polymerization -Glass transition temperature - Factors influencing the glass transition temperature. Number average and Weight average, Molecular weights –molecular weights determinations –Membrane Osmometry, Light scattering phenomenon. Classical and quantum theories of Raman effects, pure rotational, vibration and Vibration- rotational Raman spectra, selection rules,
Mutual exclusion principle.

Unit-III: Electro Chemistry-II:
Reference electrode - Standard hydrogen electrode. Calomel electrode -Indicator electrodes: Metal-metal ion electrodes - Inert electrodes -Membrane electrodes- theory of glass membrane potential, potentiometric titrations, advantages of potentiometrictitrations, Conductmetric titrations. Electrode potentials - Double layer at the interface - rate ofcharge transfer - Decomposition potential - Over potential - Tafel plots - Derivation of Butler-Volmer equation for one electron transfer - electro chemical potential.

Unit-IV: Chemical kinetics and Photo chemistry:
Branching Chain Reactions – Hydrogen-oxygenreaction - lower and upper explosion limits - Fast reactions - Study of kinetics by flow methods - Relaxation methods - Flash photolysis. Acid base catalysis –protolytic and phototropicmechanism. Enzyme catalysis - Michelis-Menten kinetics.

Photochemistry:
Quantum yield and its determination, Actinometrical, Reactions with low and high quantum yields, Photo sensitization, Exciplexes and Excimers, Photochemical equilibrium, Kinetics of collisional quenching - Stern-Volmer equation.

Unit-V:
Symmetry and Group theory in chemistry: Symmetry elements, symmetry operation, definition of group, sub group, relation between order of a finite group and its sub group. GMT tables Abelian and non-abelian groups. Point group. Schonfiles symbols, Find out Point group of a molecule (yes or no Method). Representation of groups by Matrices (representation for the Cn, Cnv, Cnh, Dn etc. groups to be worked out, explicitly). Character of a representation. The great Orthogonality theorem (without proof) and its importance. Character tables and their use. Construction of Character tables.

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II SEMESTER
Paper Code & Title: CH206L1: ORGANIC CHEMISTRY PRACTICAL-II

No. of hours per week: 03 Total credits: 03
Total marks: 100 (Internal: 30 M & External: 70M)

Course Learning Objective(S): The main objective of this paper is to give a practical knowledge
for the students on Organic chemistry practical.

List of experiments:
1. Preparation of organic compounds: Single stage preparations by reactions involving nitration,
Halogenations, oxidation, reduction, alkylation, acylation, condensation and rearrangement.
(A student is expected to prepare at least 5 different organic compounds by making use of the
Reactions given above).
2. Preparation of organic compounds: Two stage preparations by reactions involving nitration,
Halogenations, oxidation, reduction, alkylation, acylation, condensation and rearrangement.
(A student is expected to prepare at least 5 different organic compounds by making use of
the reactions given above).
3. Systematic qualitative analysis of organic compounds with different functional groups (5
Different compounds)

Course Learning Outcome(S): After studying this paper, students will acquire the knowledge of
Organic chemistry practical.

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II SEMESTER

Paper Code & Title: CH207L2: PHYSICAL CHEMISTRY PRACTIAL

No. of hours per week: 03 Total credits: 03
Total marks: 100 (Internal: 30 M & External: 70M)

Course Learning Objective(S): The main objective of this paper is to give a practical knowledge for the students on Inorganic and Physical chemistry experiments.

List of experiments:
1. Relative strengths of acids by studying the hydrolysis of ethyl acetate / methyl acetate.
2. Determination of equilibrium constant of KI3 KI + I2 by partition coefficient.
3. Determination of unknown concentration of potassium iodide by partition coefficient method.
4. Distribution coefficient of Benzoic acid between Benzene and water.
5. Determination of critical solution temperature of phenol-water system.
6. Study of the effect of electrolyte on the miscibility of phenol-water system.
7. Determination of Coordination number of cuprammoniumcation.
8. Potentiometric determination of Fe(II) with Cr (VI).
9. Potentiometric determination of Fe(II) with Ce (IV).
10. pH-metric determination of strong acid with strong base.
11. Conduct metric titration of strong acid with strong base.
12. Conductometric titration of strong acid + Weak acid with strong base.
13. Dissociation constant of weak acid (CH3COOH) by conductometric method.
14. Determination of cell constant.
15. Verification of Beers Law using potassium permanganate/Potassium dichromate.

Course Learning Outcome(S): After studying this paper, students will acquire the knowledge of Inorganic and Physical chemistry experiments.

Text books/ Reference books:
1. Experimental Physical chemistry by V.D. Athawale, Parul Mathur, New Age International publishers.
2. Physical chemistry experiments by V. P. Kudesia, Pragati Prakasan publishers.
3. Advanced practical Physical chemistry by J.B. Yadav, Krishna's educational publishers.

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DEPARTMENT OF CHEMISTRY

M.Sc – CHEMISTRY (ORGANIC CHEMISTRY)

II SEMESTER

Paper Code & Title: 20OECH: (OPEN ELECTIVE-I)

CHEMISTRY IN DAILY LIFE

No. of hours per week: 04   **Total credits: 04**

Total marks: 100   **(Internal: 30 M & External: 70M)**

Course Learning Objective(S): The main objective of this paper is to give a basic and updated knowledge for the students on Chemistry Laboratory safety symbols – Meaning, Environmental Chemistry, Bioinorganic Chemistry, Biological functions of Hormones and Medicinal chemistry.

Unit-I: Chemistry Laboratory safety symbols – Meaning:

Corrosive, carcinogenic, Harmful, toxic, dangerous to environment, Explosive, flammable, Narcotic, Oxidizing, Lachrymatory, Radioactive, irritant, gases under pressure, general laboratory safety precautions.

Unit-II: Environmental Chemistry:

Ambient air quality standards, Acid rain, Smog, Greenhouse effect, Bhopal gas tragedy, Vishakhapatnam polymer industry tragedy, Renewable and Nonrenewable energy resources, DO, COD, BOD, Toxicity of lead, mercury, arsenic and Cadmium.

Unit-III: Bioinorganic Chemistry:

Essential elements, biological significance of Na, K, Mg, Ca, Fe, Metalloporphyrin – Structure and functions of hemoglobin, Myoglobin.

Unit-IV: Biological functions of Hormones:

Introduction,Types of harmones, Role of Anderstrone, Progestrone and thyroxin, action of cortisone, Insulin.

Unit-V: Medicinal Chemistry:

The role of vitamins – K,E,D,C,B – complex, classification of antibiotics, mechanism of antibiotics action - role of ampicillin, chloromycetin and amoxicillin as antibiotics.

A.G.& S.G. SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE

Title of the Paper: ADVANCED ORGANIC SPECTROSCOPY

Semester:III

Course Code: 20CH3T1

Syllabus

Unit	Learning Units	Lecture Hours
I	**Proton NMR Spectrscopy**: Determination of structure of organic compounds using PMR data. Spin system, Nomenclature of spin system, spin system of simple and complex PMR spectrum (Study of AB – A2 – AB2. ABX – ABC – AMX interactions) Simplification of complex spectra- nuclear magnetic double resonance, chemical shift reagents, solvent effects on PMR Spectrum . Nuclear Overhauser Effect (NOE).	12
II	**13C-NMR spectroscopy:** Similarities and Difference between PMR and CMR-CMR recording techniques -BBC-BBD-SFORD-Gate pulse CMR spectrum. General considerations, chemical shift (aliphatic, olefinic, alkyne, aromatic, heteroaromatic and carbonylcarbon), coupling constants.Typical examples of CMR spectroscopy – simple problems.	12
III	**ORD& CD Curves:** Optical rotatory dispersion : Theory of optical rotatory dispersion – Cotton effect –CD curves-types of ORD and CD curves- similarities and difference between ORD and CD curves. α- Halo keto rule, Octant rule – application in structural studies.	12
IV	**2D NMR spectroscopy:** Definitions and importance of COSY, DEPT, HOMCOR, HETCOR,INADEQUATE, INDOR, INEPT, NOESY, HOM2DJ, HET2DJ. Study of COSY ,DEPT, HOMCOR, HETCOR, INADEQUATE INDOR INEPT ,NOESY HOM2DJ, HET2DJ, taking simple organic compounds as examples.	12
V	Structural Elucidation of Organic compounds Using UV, IR, 1H-NMR, 13C-NMR and Mass spectroscopy.	12

Title of the Paper: ORGANIC REACTIONS & MECHANISMS
Semester:III
Course Code: **20CH3T2**

Syllabus

Unit	Learning Units	Lecture Hours
I	**Oxidations** Definition and types of Oxidations, oxidations with ruthenium tetroxide, NBS, iodobenzenediacetate, Tl(III) nitrate, Chromium (VI) oxidants, Lead tetra acetate, SeO2, MnO2, Ag2CO3, Oppenauer oxidation, perhydroxylation using KMnO4, OsO4, HIO4, oxidation with iodine silver carboxylate (Woodward and Prevostconditions), Definition & mechanism of epoxidation by peracids.	12
II	**Reductions** Definition and types of reductions, reduction by dissolving metals - Reduction with metal and liquid ammonia (Birch Reduction of aromatic compounds), Reduction with metal acid - Clemensons reduction, Reduction by hydride transfer reagents, Aluminiumalkoxide – MeerweinPondorfVerley Reduction, LiAlH4, NaBH4, Diisobutylaluminiumhydride(DIBAL), Sodium cyanoborohydride, trialkyl borohydrides, Reduction with diimide,. Wolff-Kishnerreduction.	12
III	**Molecular Rearrangements** Migration to electron deficient carbon atom**.** Pinacole-Pinacolone rearrangement, Wagner-Meerwein rearrangement, Dienone-Phenol rearrangement, Benzil-Benzilic acid rearrangement, Favorski rearrangement, ARNDT Eistert rearrangement,Sommelet – Hauser rearrangement. Migration to electron deficient hetero atom:.Wolf, Hofmann, Curtius, Lossen, Schmidt, Beckmann rearrangement, Baeyer-Villiger rearrangement, Stevens, Neber rearrangements. Fries, Fischer-Hepp,Orton,Bamberger,Dakin,CumeneHydroperoxide rearrangement	12
IV	**Pericyclic Reactions – I:** Definition, classification of pericyclic reactions, Molecular Orbital energy level diagrams, electronic configuration in ground and first excited states of Ethylene, 1,3-Butadiene, 1,3,5 – Hexatriene, allyl system, stereo chemical notations – suprafacial, antarafacial, conrotatory and disrotatory modes, Woodward and Hoffmann selection rules. **Electrocyclic reactions**: Mechanism, Stereochemistry of (4n) and (4n+2) π systems. PMO, FMO and correlation methods. **Cyclo additions**: Mechanism, stereochemistry of (2+2) and (4+2) π systems, PMO, FMO and correlation methods. **Sigmatropic rearrangements**: Classification, mechanism for FMO and PMO approach under thermal and photo chemical conditions. (Detailed treatment of Claisen, Cope rearrangements fluxional molecules, aza-cope rearrangements).	12
V	**Photochemistry:** Photochemical processes: Energy transfer, sensitization and quenching. Singlet and triplet states and their reactivity. Photochemistry of olefins – conjugated olefins, Aromatic compounds–isomerisation–additions. Photochemistry of carbonyl compounds – Norrish type I and II reactions –Paterno – Buchi Reaction. Photoreduction, Photochemical rearrangements–Photo Fries rearrangement, Di-π-methane rearrangement, Barton reaction.	12

A.G. & S.G. SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE Vuyyuru-521165.

Title of the Paper: ORGANIC SYNTHESIS

Semester:III

Course Code: **OCH303**

Syllabus

Unit	Learning Units	Lecture Hours
I	**Formation of carbon-carbon single bonds:** Alkylation of relatively acidic methylene groups, alkylation of ketones, enamine and related reactions, umplong (dipole inversion). Allylic alkylation of alkenes, alkylation of α-thiocarbanions- α- seleno carbanions, formation of carbon carbon single bonds by the addition of free radicals to alkenes, synthetic applications of carbenes and carbenoids.	12
II	**Formation of carbon-carbon double bonds** Pyrolytic syn elimination reactions sulphoxide-sulphonate rearrangement, synthesis of allyl alcohols, the witting reaction, alkenes from sulphones, decarboxylation of β-lactones, alkenes from aryl sulphonyl hydrazones. Stereo selective synthesis of tri and tetra substituted alkenes, oxidative decarboxylation of carboxylic acids, stereospecific synthesis from 1,2-diols, reductive dimerization of carbonyl compounds.	12
III	**Diels–Aider and related reactions**: The dienophile, heterodienophile, oxygen as dienophile, The diene, acyclic dienes, heterodienes, 1,2-dimethylene cycloalkanes, vinyl cycloalkenes, and vinyl arenes, cyclic dienes and furans. Intra molecular Diels –Alder reactions, stereochemistry and mechanism of Diels – Alder reaction, retro Diels – Alder reaction, catalysis by lewis acids, photosensitized Diels- Alder reactions and 1,3-dipolar cycloaddition reactions, the ene reaction.	12
IV	**Disconnection approach** Introduction to Retro-synthetic analysis, Disconnection approach with suitable examples, Definitions: FGI, Disconnection, synthons, synthetic equivalent, reagent, target molecule, General strategy: choosing a disconnection, greatest simplification, symmetry, high yielding steps, recognizable startingmaterials. Chemo, regio and stereo selectivity with examples. One group C-C disconnections-Alcohols, carbonyl compounds, alkene synthesis, two group disconnections: 1,3 – dicarbonyl compounds, α,β – unsaturated carbonyl compounds.	12
V	**Protecting groups:** Theory and importance of functional group protection and deprotection in organic synthesis:-Protecting agents for the protection of functional groups: Hydroxyl group, Amino group, Carbonyl group and Carboxylic acid group carbon-carbon multiple bonds; chemo- and regioselective protection and deprotection. Illustration of protection and deprotection in organic synthesis.	12

Adusumilli Gopalakrishnaiah & Sugar Cane Growers Siddhartha Degree College of Arts & Science, Vuyyuru, Krishna District, Andhra Pradesh

(An Autonomous College in the Jurisdiction of Krishna University, Machilipatam)

Accredited by NAAC with "A" Grade ISO 9001:2015 Certified Institution

DEPARTMENT OF COMPUTER SCIENCE

2020-21 (ODD SEMESTER)

HIGHLIGHTED SYLLABUS OF COMPUTER SCIENCE

Syllabus in Relevance to Employability, Skill Development and Entrepreneurship **is** highlighted as mentioned: Employability in yellow Color, Skill Development in Sky blue color and Entrepreneurship in Green color

Employability

Skill-Development

Entrepreneurship

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(With Effect from Academic Year 2020-21)

COMPUTER SCIENCE	CSC-501C	2020-'21	B.Sc.(MPCs,MCCs)

SEMESTER – V   **PAPER – V**   **Max. Marks 70**

Syllabus: DATA BASE MANAGEMENT SYSTEMS

NO Of Hours: 4   **No Of Credits: 3**   **Pass Marks 28**

Course Objective: Design & develop database for large volumes & varieties of data with

optimized data processing techniques.

Unit – I: Database Systems Introduction   **12Hrs**
Database Systems: Introducing the database and DBMS, Why the database is important,
Historical Roots: Files and File Systems, Problems with File System, Data Management, Database
Systems. *Data Models:* The importance of Data models, Data Model Basic Building Blocks, The
evaluation of Data Models, Degree of Data Abstraction.

Unit - II: Relational Database & Data Modelling   **12 Hrs**
The Relational Database Model: A logical view of Data, Keys, Integrity Rules, Relational Set
Operators, The Data Dictionary and the system Catalog, Indexes, Codd's relational database
rules.*Entity Relationship Model:* The ER Model*Advanced Data Modelling:* The Extended Entity
Relationship Model, Entity clustering, Entity integrity.

Unit-III:Normalization and Database Design   **14 Hrs**
Data base Tables and Normalization, The need Normalization, The Normalization Process, High
level Normal Forms, Normalization and database design, de normalization.
Database Design: The Information System, The Systems Development Life Cycle, The Database
Life Cycle, Centralized Vs Decentralized design.

Unit-IV:Structured Query Language   **12 Hrs**
Introduction to SQL: Data Definition Commands, Data Manipulation Commands, Select queries,
Advanced Data Definition Commands, Advanced Select queries, Virtual Tables, SQL Join
Operators, Sub queries and correlated queries, SQL Functions.

Unit-V: Procedural SQL
           10Hrs*Introduction to PL/SQL:* Triggers, Stored Procedures, Pl/ SQL Stored Functions

Prescribed Text Book:
1. **P**eter Rob, Carlos Coronel, Database Systems Design, Implementation and Management, Seventh
   Edition, Thomson (2007).

Reference Books:
   1. Elimasri / Navathe, Fundamentals of Database Systems, Fifth Edition, Pearson Addison
      Wesley 2. Raman A Mata – Toledo/Panline K Cushman, Database Management Systems, .
   2. C.J.Date, A.Kannan, S.Swamynathan, An Introduction to Database Systems, Eight edition,
   3. "DatabaseSystemConcepts" by AbrahamSilberschatz, Henry Korth, and S.Sudarshan,
   4. Atul Kahate, Introduction to Database Management Systems, Pearson Education (2006).
      Student Activity: 1. Create your college database for placement purpose. 2. Create faculty
      database of your college with their academic performance scores

AG & SG SIDDHARTHA COLLEGE OF ARTS AND SCIENCES - VUYYURU.

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(With Effect from Academic Year 2020-21)

COMPUTER SCIENCE	CSC-501P	2020-'21	B.Sc.(MPCS,MCCs)

SEMESTER – V   **PAPER – V**   **Max. Marks 50**

Lab List DATA BASE MANAGEMENT SYSTEMS   **Pass Marks 25**

No. of Hours per week: 2   **External: 25**   **Internal: 25**   **Credits: 2**

1. Creation of college database and establish relationships between tables
2. Explain various data type in Oracle.
3. Show the structure of the Emp table.
4. Show the structure of the DEPT table.
5. Explain the syntax of SELECT statement.
6. Create a query to display the name, job, hiredate and employee number from emp table.
7. Create a query to display unique jobs from the emp table.
8. Create a query to display the empno as EMP#, ename as EMPLOYEE and Hire_date from emp.
9. Create a query to display all the data from the EMP table. Separate each column by a comma and name the column THE_OUTPUT.
10. Create a query to display the name and salary of employees earning more than 2850.
11. Create a query to display the name and salary for all employees whose salary is not in the range of 1500 and 2850.
12. Display the employee name, job and start date of employees hired between February 20 ,1981 and May 1, 1981. Order the query in ascending order of start date
13. Display the employee name and department number of all the employees in departments 10 and 30 in alphabetical order by name.
14. List the name and salary of employees who earn more than 1500 & are in department 10 or 30.
15. Display the name, salary and commissions and sort data in descending order of salary and commission.
16. Display the name and job title of all employees who do not have a manager.
17. Display the name, job and salary for all employees whose job is Clerk or Analyst and their salary is not equal to 1000, 3000 or 5000.
18. Display the names of all employees where the third letter of their name is an 'A'.
19. Display the names of all employees who have two 'L's in their name and are in department 30 or their manager is 7782.
20. Display the name , salary and commission for all employees whose commission amount is grater than their salary increased by 10%.
21. Explain all the character functions.
22. Explain all the number functions.
23. Explain all the Date functions.
24. Explain different types of JOIN.
25. Write a query to display the name, department number and department name for all employees.
26. Create a unique listing of all jobs that are in department 30. and include the location of department 30 in the output.
27. Write a query to display the employee name, department name and location of all employees who earn a commission.
28. Write a query to display the name ,job department number and department name for all employees who work in 'DALLAS'.
29. Create a query to display the name and hire date of any employee hired after employee BLAKE.

30. . Display all employees names and hire dates along with their manager's name and hire date for all employees who were hired before their managers.
31. Create your own users and give permissions to you and explain GRANT and REVOKE Commands.

A. Create MOVIE database using the following tables.

MOVIE:Movie no: primary key, varchar2Movie name: NOT NULL, varchar2Movie Type: varchar2Star: Varchar2

CUSTOMER: Customer No: primary key, varchar2   Customer Name: NOT NULL, varchar2
Address: NOT NULL   Phone no: Number   INVOICE: Invoice no: Varchar2, primary key
Movie no: foreign key Customer no: foreign key

Price: NOT NULL, Number

Queries:

1. List the movie names that starts with 'p'
2. List the number of the movies those price ranges from 15000 and 20000
3. List the customers who have phone numbers.
4. List the customers who have no phone numbers.
5. Display the following string
   (a) A Customer "customer number" has bought the "movie number" "movie name" with "Price"
6. List the customers by calculating price as (price*tax)/100 where tax=0.5 and rename the column as 'tax'.
7. List the movies, which are owned by 2 customers.
8. List the customers, who bought 2 picture names.
9. List the customers, who are not the range of 15000 and 20000.

B. Create Student database using the following tables.
   STUDENT: Sno : primary key, numberSname : NOT NULL, varchar2 Address: Varchar2
   COURSE:Sno : Foreign key.Course Name : varchar2
   Queries:

   1. Alter table by adding a column fees in table COURSE.

   2. Alter table by modifying the address to VARCHAR2(20)

   3. Create a view on which the students who joined in one course only.

   PL/SQL.
   1. Write A Pl/Sql Program To Swap Two Numbers Without Using Third Variable.
   2. Write A Pl/Sql Program To Generate Multiplication Tables For Numbers 2,4 And 6
   3. Write A Pl/Sql Program To Display Sum Of Even Numbers And Sum Of Odd Numbers In The Given Range.
   4. Write A Pl/Sql Program To Check The Given Number Is Pollinndrome Or Not.
   5. Write A Pl/Sql Program To Display Top 10 Rows In Emp Table Based On Their Job And Salary.
   6. Write A Procedure Update The Salary Of Employee, Who is Not Getting Commission by 10%.

Reference Books:
   1. Oracle Pl/Sql By Example. Benjamin Rosenzweig, Elena Silvestrova, Pearsoneducation 3rd Edition

   2. Sql& Pl/Sql For Oracle 10g, Black Book, Dr.P.S. Deshpande

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COMPUTER SCIENCE	CSC-502C	2020-'21	B.Sc.(MPCs,MCCs)

SEMESTER – V   **PAPER – VI**   Max. Marks 70

<u>Syllabus</u>   **SOFTWARE ENGINEERING**

NO of Hours: 4   **No Of Credits: 3**   **Pass Marks 28**

Course Objectives
The Objective of the course is to assist the student in understanding the basic theory of software engineering, and to apply these basic theoretical principles to a group software development project.

UNIT-I: Introduction to Software Engineering & Process   **12Hrs**
The Evolving Role of Software– Software - The Changing Nature of Software, Software Myths, Legacy Software.
Process: Software Engineering-A Layered Technology - A Process Framework - The Capability Maturity Model Integration (CMMI) - Process Patterns, Process Assessments - Personal Software Process(PSP), Team Software Process (TSP).

Unit-II: Process Models   **12Hrs**
The Waterfall Models - Increment Process Models: The Increment Model, The RAD Model - Evolutionary Process Models: Prototyping, The Spiral Model, The Concurrent Development Model- The Unified Process: Phases of The United Process, Unified Process Work Products.

Unit-III: Requirements Engineering   **14 Hrs**

Requirements Engineering Tasks - Initiating The Requirements Engineering Process - Eliciting Requirements: Collaborative Requirements Gathering, Quality Function Deployment, User Scenarios, Elicitation Work Products - Negotiating Requirements - Validating Requirements.

Unit-IV: Design Engineering   **10Hrs**
Design Process And Design Quality - Design Concepts - The Design Model: Data Design Elements, Architectural Design Elements, Interface Design Elements, Component-Level Design Elements, Deployment -Level Design Elements.

Unit-V:Software Quality: **12Hrs**

Quality and Quality Concepts, Software Quality Assurance (SQA), Software Reviews, Formal Technical Reviews, Formal Approaches to SQA and SSQA, Software Reliability, The ISO 9000 Quality Standards, The SQA Plan.

Prescribed Text Book:
1. Software Engineering – A Practitioner's Approach, Sixth Edition - Roger S Pressman, TATA McGrawHill: Chapters: 1,2,3,7,8 and 9)

Reference Books:
1. Software Engineering Principles and Practice by Deepak Jain Oxford University Press
2. Sommerville, "Software Engineering", Eighth Edition, Pearson Education, 2007

Student Activity: Visit any financial organization nearby and prepare requirement analysis report 2. Visit any industrial organization and prepare risk chart.

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COMPUTER SCIENCE	CSC-502C	2020-'21	B.Sc.(MPCS,MCCs)
SEMESTER – V	**PAPER – VI**		**Max. Marks 50**
Lab List	**SOFTWARE ENGNEERING**		**Pass Marks 25**
No. of Hours per week: 2	**External: 25**	**Internal: 25**	**Credits: 2**

A. ATM

1.Objective of an ATM System.　　　　2. Use-case Diagram of an ATM System

3. Class Diagram of an ATM System　　4. Sequence Diagram of an ATM System

5. Activity Diagram of an ATM System　6. State Diagram of an ATM System

7. Deployment Diagram of an ATM System　8. ER Diagram of an ATM System

B. Library management System

1. Objective of Librarymanagement System.2. Use-case Diagram of Librarymanagement

3. Class Diagram of Library management System4. Sequence Diagram of Library management

5. Activity Diagram of Library management System6. State Diagram of Library management

7. Deployment Diagram of Library management System8. ER Diagram of Library management

C. Barcode Reader

1. Objective of Barcode Reader　　　　2. Use-case Diagram of Barcode Reader

3. Class Diagram of Barcode Reader　　4. Sequence Diagram of Barcode Reader

5. Activity Diagram ofBarcode Reader 6. State Diagram ofBarcode Reader

7. Deployment Diagram ofBarcode Reader　8. ER Diagram ofBarcode Reader

D .Safe Home System

1. Objective of Safe Home System.　　　　2. Use-case Diagram of Safe Home System

3. Class Diagram of Safe Home System　4. Sequence Diagram of Safe Home System

5. Activity Diagram ofSafe Home System　　6. State Diagram ofSafe Home System

7. Deployment Diagram of Safe Home System　　8. ER Diagram of Safe Home System

E. Online Book Store System

1. Objective of Online Book Store System　2. Use-case Diagram of Online Book Store System

3. Class Diagram of Online Book Store System 4. Sequence Diagram of Online Book Store

5. Activity Diagram ofOnline Book Store System 6. State Diagram ofOnline Book Store System

7. Deployment Diagram of Online Book Store System　8. ER Diagram of Online Book Store

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(**With Effect from Academic Year2020-21**)

COMPUTER SCIENCE	CCSC-505C	2020-21	B. Com (CA)

SEMESTER – V   **PAPER – V**   **Max. Marks 70**   **Pass Marks 28**

Syllabus   OBJECT ORIENTED PROGRAMMING USING JAVA

Total Hrs: 60   **NO. Of. Hours: 5**   **Credits: 3**

UNIT-I   **10Hrs**
Fundamentals of Object – Oriented Programming: Introduction, Object Oriented paradigm, Basic Concepts of OOP, Benefits of OOP, Applications of OOP, Java features:

UNIT-II   **14Hrs**
Overview of Java Language: Introduction, Simple Java program structure, Java tokens, Java Statements, Implementing a Java Program, Java Virtual Machine, Command line arguments. **Constants, Variables & Data Types:** Introduction, Constants, Variables, Data Types, Declaration of Variables, Giving Value to Variables, Scope of variables, Type casting, Getting Value of Variables, **Operators.**

UNIT-III   **12Hrs**
Decision Making & Branching: Introduction, Decision making with if statement, Simple if statement, if-Else statement, Nesting of if-else statements, the else if ladder, the switch statement, the conditional operator. **Looping**: Introduction, while statement, do-while statement, for statement, Jumps in loops.

UNIT-IV   **12 Hrs**
Classes, Objects & Methods: Introduction, defining a class, adding variables, adding methods, creating objects, Accessing class members, Constructors, Method overloading, Method Overriding, Static members, Nesting of methods;

UNIT-V   **12Hrs**
Inheritance: Extending a Class, Overriding Methods, Final Variables and Methods, Final Classes, Abstract Methods and Classes; **Arrays, Strings And Vectors:** Arrays, One-dimensional arrays, Creating an array, Two – dimensional arrays, Strings, Vectors, Wrapper classes; **Interfaces**: **Multiple Inheritance**: Introduction, Defining interfaces, Extending interfaces, Implementing interfaces, Assessing interface variables;

Prescribed Text Book:
1. E. Balaguruswamy, Programming with JAVA, A primer, 3e, TATA McGraw-Hill Company.
Reference Books
1. Programming In Java By Sachin Malhotra And Saurabh Choudhary From Oxford University Press
2. Object Oriented Programming Through Java by P. Radha Krishna, Universities Press
3. John R. Hubbard, Programming with Java, Second Edition, Schaum's outline Series,
4. Deitel&Deitel. Java TM: How to Program, PHI (2007)
5. Java Programming: From Problem Analysis to Program Design- D.S Mallik

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(**With Effect from Academic Year2020-21**)

COMPUTER SCIENCE	**CCSC-505C**	**2020-21**	**B. Com (CA)**

SEMESTER – VPAPER – V

Lab List<mark>**OBJECT ORIENTED PROGRAMMING USING JAVA**</mark>   **Pass Marks 25**

No. of Hours per week: 2   **External: 25**   **Internal: 25**   **Credits: 2**

1. Write a program to perform various String Operations
2. Write a program to print the given number is Armstrong or not?
3. Prompt for the cost and selling price of an article and display the profit (or) loss
4. Write a program to print the numbers given by command line arguments
5. Write a program on class and object in java
6. Illustrate the method overriding in JAVA
7. Write a program to find the Simple Interest using Multilevel Inheritance
8. Write a program to display matrix multiplication.
9. Write a program on interface in java
10. Write a program on inheritance

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(With Effect from Academic Year 2020-21)

COMPUTER SCIENCE	CCSC 506C	2020-'21	B.Com.(C.A.)

SEMESTER – V   **PAPER – VI**   **Max. Marks 70**

<u>Syllabus</u>   DATA BASE MANAGEMENT SYSTEMS

NO Of Hours: 5   **No Of Credits: 3**   **Pass Marks 28**

Course Objective: Design & develop database for large volumes & varieties of data with optimized data processing techniques.

Unit – 1: Database Systems Introduction   **12Hrs**

Database Systems: Introducing the database and DBMS, Why the database is important,
Historical Roots: Files and File Systems, Problems with File System, Data Management, Database Systems. *Data Models:* The importance of Data models, Data Model Basic Building Blocks, The evaluation of Data Models.

Unit - II: Relational Database & Data Modelling   **12 Hrs**

The Relational Database Model: A logical view of Data, Keys, Integrity Rules, Relational Set Operators, Indexes, Codd's relational database rules.*Entity Relationship Model:* The ER Model
Advanced Data Modelling: The Extended Entity Relationship Model, Entity clustering.

Unit-III: Normalization and Database Design   **14 Hrs**

Normalization of database tables: Database Tables and Normalization, The need for Normalization, The Normalization Process, High level Normal Forms, Normalization and database design, de normalization.

Unit-IV: Structured Query Language   **12 Hrs**

Introduction to SQL: Data Definition Commands, Data Manipulation Commands, Select queries, Advanced Data Definition Commands, Advanced Select queries, Virtual Tables, SQL Join Operators,

Unit-V: Procedural SQL   **10 Hrs**

Introduction to PL/SQL : Triggers, Stored Procedures, Pl/ SQL Stored Functions

Prescribed Text Book:

1. **Peter Rob, Carlos Coronel, Database Systems Design, Implementation and Management, Seventh Edition, Thomson (2007).**

Reference Books:

3. Elimasri / Navathe, Fundamentals of Database Systems, Fifth Edition, Pearson Addison Wesley
4. Raman A Mata – Toledo/Panline K Cushman, Database Management Systems, Schaum'sOutlibe series, Tata McGraw Hill (2007).
5. C.J.Date, A.Kannan, S.Swamynathan, An Introduction to Database Systems, Eight edition, Pearson Education (2006).
6. "DatabaseSystemConcepts" by AbrahamSilberschatz, Henry Korth, and S.Sudarshan, McGrawhill
7. Atul Kahate, Introduction to Database Management Systems, Pearson Education (2006).

Student Activity:

1. Create your college database for placement purpose.
2. Create faculty database of your college with their academic performance scores

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(**With Effect from Academic Year 2020-21**)

COMPUTER SCIENCE	CCSC-506P	2020-'21	B. COM(CA)

SEMESTER – V   **PAPER – VI**   **Max. Marks 50**

Lab List   DATA BASE MANAGEMENT SYSTEMS   **Pass Marks 25**

No. of Hours per week: 2   **External: 25**   **Internal: 25**   **Credits: 2**

1. Creation of college database and establish relationships between tables
2. Explain various data type in Oracle.
3. Show the structure of the Emp table.
4. Show the structure of the DEPT table.
5. Explain the syntax of SELECT statement.
6. Create a query to display the name, job, hiredate and employee number from emp table.
7. Create a query to display unique jobs from the emp table.
8. Create a query to display the empno as EMP#, ename as EMPLOYEE and Hire_date from emp.
9. Create a query to display all the data from the EMP table. Separate each column by a comma and name the column THE_OUTPUT.
10. Create a query to display the name and salary of employees earning more than 2850.
11. Create a query to display the name and salary for all employees whose salary is not in the range of 1500 and 2850.
12. Display the employee name, job and start date of employees hired between February 20 ,1981 and May 1, 1981. Order the query in ascending order of start date
13. Display the employee name and department number of all the employees in departments 10 and 30 in alphabetical order by name.
14. List the name and salary of employees who earn more than 1500 & are in   department 10 or 30.
15. Display the name, salary and commissions and sort data in descending order of salary and commission.
16. Display the name and job title of all employees who do not have a manager.
17. Display the name, job and salary for all employees whose job is Clerk or Analyst and their salary is not equal to 1000, 3000 or 5000.
18. Display the names of all employees where the third letter of their name is an 'A'.
19. Display the names of all employees who have two 'L's in their name and are in department 30 or their manager is 7782.
20. Display the name , salary and commission for all employees whose commission amount is grater than their salary increased by 10%.
21. Explain all the character functions.
22. Explain all the number functions.
23. Explain all the Date functions.

Create Student database using the following tables.

STUDENT: Sno : primary key, numberSname : NOT NULL, varchar2 Address: Varchar2

COURSE:Sno   : Foreign key.Course Name : varchar2

Queries:

1. Alter table by adding a column fees in table COURSE.

2. Alter table by modifying the address to VARCHAR2(20)

3. Create a view on which the students who joined in one course only.

PL/SQL.

1. Write A Pl/Sql Program To Swap Two Numbers Without Using Third Variable.
2. Write A Pl/Sql Program To Generate Multiplication Tables For Numbers 2,4 And 6
3. Write A Pl/Sql Program To Display Sum Of Even Numbers And Sum Of Odd Numbers In The Given Range.
4. Write A Pl/Sql Program To Check The Given Number Is Pollinndrome Or Not.
5. Write A Pl/Sql Program To Display Top 10 Rows In Emp Table Based On Their Job And Salary.

Reference Books:

1. Oracle Pl/Sql By Example. Benjamin Rosenzweig, Elena Silvestrova, Pearsoneducation 3rd Edition

2. Sql& Pl/Sql For Oracle 10g, Black Book, Dr.P.S. Deshpande

DEPARTMENTOFCOMPUTERSCIENCE

Minutes of the meeting of Board of Studies in Computer Science for PG held on 06-04-2023 in the Department of Computer Science.

Semester	:	II	Programme	:	M.Sc (Comp. Sci.)
Course	:	Web Technologies	Course Code	:	22CS2T3
Course delivery method	:	Class room / Blended	Credits	:	4
Credits	:	4	CIA marks	:	30
No. of lecture hours / week	:	4	Semester end exam	:	70
Total no. of lecture hours	:	60	Total marks	:	100
Year of Introduction	:	2020-21	Year of Revision	:	2022-23
% of revision	:	30%			

Course content suggested by APSCHE	Additions	Deletions
UNIT-I: Introduction to Software Engineering & Process	NIL	NIL
Unit-II: Process Models		**VB Script:**
Unit-III: Requirements Engineering		
Unit-IV: Analysis Model		**Analysis Model**
Unit-V: Design Engineering	**Design Engineering moved to unit-4** **Software Quality**	

It is resolved and recommend the changes in the syllabus of course code: 22CS2T3, Course: Web Technologies from the academic year 2022-23 onwards for I M.Sc (Computer Science), II Semester.

AG & SG SIDDHARTHA COLLEGE OF ARTS AND SCIENCES - VUYYURU.

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(With Effect from Academic Year 2020-21)

COMPUTER SCIENCE	CCSC-507C	2020-'21	B.Com.(CA)

SEMESTER – V   **PAPER – VII**   **Max. Marks 70**

<u>Syllabus</u>   **WEB TECHNOLOGIES**

 NO Of Hours: 5   <u>**No of Credits: 3**</u>   **Pass Marks 28**

Unit -I Introduction to XHTML:

Introduction to HTML, Basic html, Document body text, Hyperlinks, Lists, Tables, Images,Frames, Forms and XHTML.

Unit- II: CSS:

Cascading Style Sheets: Introduction, Defining your own styles, properties and values in styles, Formatting blocks of information, Layers.

Java Script: java Script, the basics, Variables, String Manipulations, Mathematical functions, Statements, Operators.

Unit –III: Objects in Java Script & Dynamic HTML with Java Script

Objects in Java Script: Data and objects in java script, Regular expressions, Exception Handling, built in objects, Events.

Dynamic HTML with Java Script: Data validation, Rollover buttons, Moving images.

Unit –IV: XML Defining Data for Web Applications

XML: Introduction to XML, Basic XML, document type definition, XML Schema, Document object model, Using XML parser.

Unit -V:JSP:

JSP Lifecycle, Basic Syntax, EL (Expression Language), EL Syntax, Using EL Variables

Prescribed Books:

1.Chris Bates, Web Programming Building Internet Application, Second Edition, Wiley

    2.Head First Servlets and JSP 2nd Edition, Bryan Basham, Kathy Sierra

  2.   Uttam Kumar Roy, Web Technologies from Oxford University Press

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COMPUTER SCIENCE	CSC-301C	2020-21	B.Sc.(MPCs, MCCs.)

SEMESTER – III PAPER – III   Max. Marks 70   Pass Marks 28

Syllabus   OBJECT ORIENTED PROGRAMMING USING JAVA   Total Hrs: 60

NO. Of. Hours: 4   Credits: 3

UNIT-I   15Hrs

Fundamentals of Object – Oriented Programming: Introduction, Object Oriented paradigm, Basic Concepts of OOP, Benefits of OOP, Applications of OOP, Java features: **Overview of Java Language**: Introduction, Simple Java program structure, Java tokens, Java Statements, Implementing a Java Program, Java Virtual Machine, Command line arguments. **Constants, Variables & Data Types:** Introduction, Constants, Variables, Data Types, Declaration of Variables, Giving Value to Variables, Scope of variables, Type casting, Getting Value of Variables; **Operators & Expressions**.

UNIT-II   15 Hrs

Decision Making & Branching: Introduction, Decision making with if statement, Simple if statement, if-Else statement, Nesting of if-else statements, the else if ladder, the switch statement, the conditional operator. **Looping**: Introduction, While statement, do-while statement, for statement, Jumps in loops. **Classes, Objects & Methods**: Introduction, Defining a class, Adding variables, Adding methods, Creating objects, Accessing class members, Constructors, Method overloading, Static members, Nesting of methods;

UNIT-III   10 Hrs

Inheritance: Extending a Class, Overriding Methods, Final Variables and Methods, Final Classes, Abstract Methods and Classes; **Arrays, Strings And Vectors:** Arrays, One-dimensional arrays, Creating an array, Two – dimensional arrays, Strings, Vectors, Wrapper classes; **Interfaces**: **Multiple Inheritance**: Introduction, Defining interfaces, Extending interfaces, Implementing interfaces, Assessing interface variables;

UNIT-IV   10 Hrs

Multithreaded Programming: Introduction, Creating Threads, Extending the Threads, Stopping and Blocking a Thread, Lifecycle of a Thread, Using Thread Methods, Thread Exceptions, Thread Priority, Synchronization, Implementing the 'Runnable' Interface.

Managing Errors And Exceptions: Types of errors: Compile-time errors, Runtime errors, Exceptions, Exception handling, Multiple Catch Statements, Using finally statement,

UNIT-V   10 Hrs

Applet Programming: local and remote applets, Applets and Applications, Building Applet code, Applet Life cycle: Initialization state, Running state, Idle or stopped state, Dead state, Display state. **Packages:** Introduction, Java API Packages, Using System Packages, Namingconventions, Creating Packages, Accessing a Package, using a Package. **Managing Input/ Output Files in Java:** Introduction, Concept of Streams, Stream classes, Byte Stream Classes, Input Stream Classes, Output Stream Classes, Character Stream classes: Reader stream classes, Writer Stream classes, Using Streams;

Prescribed Text Book:

1. E.Balaguruswamy, Programmingwith JAVA, A primer, 3e, TATA McGraw-Hill Compan

Reference Books

1. Programming In Java By Sachin Malhotra And Saurabh Choudhary From Oxford UP
2. Object Oriented Programming Through Java by P. Radha Krishna, Universities Press
3. John R. Hubbard, Programming with Java, Second Edition, Schaum's outline Series,
4. Deitel&Deitel. Java TM: How to Program, PHI (2007)
5. Java Programming: From Problem Analysis to Program Design- D.S Mallik

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COMPUTER SCIENCE	CSC-301C	2020-21	B.Sc.(MPCS&MCCS)

SEMESTER – III   **PAPER – III**   **Max. Marks:50**

Lab List OBJECT ORIENTED PROGRAMMING USING JAVA   **Pass Marks 25**

No. of Hours per week: 2   **External: 25**   **Internal: 25**   **Credits: 2**

1. Write a program to perform various String Operations

2. Write a program to print the given number is Armstrong or not?

3. Prompt for the cost and selling price of an article and display the profit (or) loss

4. Write a program to print the numbers given by command line arguments

5. Write a program on class and object in java

6. Illustrate the method overriding in JAVA

7. Write a program to find the Simple Interest using Multilevel Inheritance

8. Write a program to display matrix multiplication.

9. Write a program to implement Exception handling

10. Write a program to create packages in Java

11. Write a program on interface in java

12. Write a program to Create Multiple Threads in Java

13. Write a program to assign priorities to threads in java

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COMPUTER SCIENCE	ICT-II-301C	2020-'21	B.A, B.Com, B.Sc.

SEMESTER – III   PAPER – II   Max. Marks 50   Pass Marks 20   Total Hrs 30

Syllabus   Internet Fundamentals and Web Tools   NO. Of Hrs: 2   Credits: 2

Unit-I :   **6Hrs**
Fundamentals of Internet : Networking Concepts, Data Communication – Types ofNetworking, Internet and its Services, Internet Addressing – Internet Applications –Computer Viruses and its types – Browser – Types of Browsers.

Unit-II: **6Hrs**
Internet applications: Using Internet Explorer, Standard Internet Explorer Buttons,Entering a Web Site Address, Searching the Internet – Introduction to SocialNetworking: twitter, tumbler, LinkedIn, face book, flicker, Skype, yelp, vimeo, yahoo,Google+, YouTube, WhatsApp, etc.

Unit-III :   **6Hrs**
E-mail : Definition of E-mail - Advantages and Disadvantages – User-Ids, Passwords,Email Addresses, Domain Names, Mailers, Message Components, MessageComposition, Mail Management, Email Inner Workings.

Unit IV: **6Hrs**
WWW- Web Applications, Web Terminologies, Web Browsers, URL – Components ofURL, Searching WWW – Search Engines and Examples

Unit-V :   **6Hrs**
Basic HTML: Basic HTML – Web Terminology – Structure of a HTML Document –HTML, Head and Body tags – Semantic and Syntactic Tags – HR, Heading, Font,Image and Anchor Tags –Different types of Lists using tags – Table Tags, Imageformats – Creation of simple HTML Documents.

Reference Books :
1. In-line/On-line : Fundamentals of the Internet and the World Wide Web, 2/e - by
Raymond Greenlaw and Ellen Hepp, Publishers : TMH

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COMPUTER SCIENCE	CCSC-303C	2020-'21	B.Com. (C.A)

SEMESTER – III   PAPER – III   Max. Marks 70   Pass Marks 28   Total Hrs: 60

Syllabus Office Automation Tools   **NO. Of. Hours: 5Credits:4**

Unit-I: **12Hrs**

MS-Excel: features of Ms-Excel, Parts of MS-Excel window, entering and editing data in worksheet, number formatting in excel, different cell references, how to enter and edit formula in excel, auto fill and custom fill, printing options.

Unit-II: **12 Hrs**

Formatting options: Different formatting options, change row height, formulae and Functions,

Functions: Meaning and advantages of functions, different types of functions available in Excel.

Unit-III: **12Hrs**

Charts: Different types of charts, Parts of chart, chart creation using wizard, chart operations, data maps, graphs, data sorting, filtering. Excel sub totals, scenarios, what-if analysis.

Macro: Meaning and advantages of Macros, creation, editing and deletion of macros - Creating a macro, how to run, how to delete a macro.

Unit-IV: **12Hrs**

MS Access: Creating a Simple Database and Tables: Features of Ms-Access, Creating a Database, Parts of Access. **Tables:** table creation using design view, table wizard, data sheet view, import table, link table. **Forms:** The Form Wizard, design view, columnar, tabular, data sheet, chart wizard.

Unit- V: **12Hrs**

Finding, Sorting and Displaying Data: Queries and Dynasts, Creating and using select queries, Returning to the Query Design, Multi-level sorts, Finding incomplete matches, showing All records after a Query, saving queries - Crosstab Queries. **Printing Reports:** Form and Database Printing..

Reference Books:

1.Ron Mansfield, Working in Microsoft Office, Tata McGraw Hill(2008)

2.Ed Bott, Woody Leonhard, Using Microsoft Office 2007, Pearson Education(2007)

3. Sanjay Saxsena, Microsoft Office, 4.Microsoft Office, BPB Publications

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COMPUTER SCIENCE	CCSC-303P	2020-'21	B.Com. (C.A)

SEMESTER – III   PAPER – III   Max. Marks 50   Pass Marks 20   Total Hrs: 30

Lab list   Office Automation Tools

Ms-Word

1. Create a vesting Card
2. Create a template for organization using Header & Footer
3. Mail merge Procedure

Ms-Excel

1. Create an electronic spreadsheet in which you enter the following decimal numbers and convert into Octal, Hexadecimal and Binary numbers vice versa. Decimal Numbers: 35, 68, 95, 165, 225, 355, 375, 465. Binary Numbers: 101, 1101, 111011, 10001, 110011001, 111011111.

2. The ABC Company shows the sales of different products for 5 years. Create column chart, 3D-column and Bar chart for the following data
YEAR PRODUCT-1 PRODUCT-2 PRODUCT-3 PRODUCT-4
2003 1000 800 900 10002004 800 80 500 9002005 1200 190 400 8002006 400 200 300 1000 2007 1800 400 400 1200

3. Create a suitable examination data base and find the sum of the marks(total) of each student and respective class secured by the student rules:
Pass if marks in each subject >=35
Distinction if average>=75
First class if average>=60 but <75
Second class if average>=50 but <60
Third class if average>=35 but <50
Fail if marks in any subject is <35
Display average marks of the class, subject wise and pass percentage

4. Create an electronic spread sheet in which you enter date and time functions in Excel

5. Create a electronic spread sheet in statistical and mathematical functions in Excel

MS-PowerPoint

1. Make a Power point presentation on your strengths, weaknesses, hobbies, factors that waste your time.

2. Make a Power point presentation to represent your College profile.

3. Make a Power point presentation of all the details of the books that you had studied in B.Sc. First Year.

4. Create a Presentation without Animation.

1. Create a database using MS-ACCESS with at least 5 records table1 structure: register number , name, dob, gender, class table2 structure: register number m1 m2 m3 m4 m5 total maintain the relationship between two tables with register number as a primary key and answer the following quarries: show the list of students with the following fields as one query register number name gender total marks

2. Maintain the relationship between above two tables with register number as a primary key and answer the following reports: reports must have following columns report1 with register number, name, marks of all subjects and 90 hrs (3 hrs/ week) computer science 10 of 44 total report2 with register number, total , percentage.

3. Create a database using ms-access with at least 5 records table1 structure: emp-code emp-name age gender dob table2 structure: emp-code basic-pay maintain the relationship between two tables with emp-code as a primary key generate the following reports: report1: emp-code emp-name basic-pay da,hra gross-salary report2: emp-code emp-name age gender gross-salary

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COMPUTER SCIENCE	CSC-101C	2020-'21	B.Sc (MPCs & MCCs)

SEMESTER – I   **PAPER – I**   Max. Marks 70

Syllabus: Problem Solving in 'C'

NO of Hours: 4   **No Of Credits: 3**   **Pass Marks 28**

UNIT-I: General Fundamentals& Programming Languages   **10Hrs**
General Fundamentals: Introduction to computers: Block diagram of a computer, characteristics and limitations of computers, applications of computers, types of computers, computer generations. Introduction to Algorithms and Programming Languages: Algorithm – Key features of Algorithms, Flow Charts, **Programming Languages** – Generations of Programming Languages – Structured Programming Language- Design and Implementation of Correct, Efficient and MaintainablePrograms.

UNIT- II: Introduction To C & Decision Making control Statements   **12Hrs**
Introduction to C: Introduction – Structure of C Program – Writing the first C Program – File used in C Program – Compiling and Executing C Programs – Using Comment , Keywords – Identifiers – Basic Data Types in C – Variables – Constants – I/O Statements in C-Operators in C- Programming Examples.
Decision Control and Looping Statements: Introduction to Decision Control Statements– Conditional Branching Statements – Iterative Statements – Nested Loops – Break and Continue Statement – Goto Statement.

UNIT III: Arrays   **10 Hrs**
Arrays: Introduction – Declaration of Arrays – Accessing elements of the Array – Storing Values in Array– Operations on Arrays – one dimensional, two dimensional and multi dimensional arrays, character handling and strings.

UNIT-IV:Functions & Structures   **13Hrs**

Functions: Introduction – using functions – Function declaration/ prototype – Function definition – function call – return statement – Passing parameters – Scope of variables – Storage Classes – Recursive functions.
Structure, Union, and Enumerated Data Types: Introduction – Nested Structures – Arrays of Structures – Structures and Functions– Union – Arrays of Unions Variables – Unions inside Structures – Enumerated DataTypes.

UNIT-V:Pointes&Files   **15Hrs**
Pointers: Understanding Computer Memory – Introduction to Pointers – declaring Pointer Variables – Pointer Expressions and Pointer Arithmetic – Null Pointers -– Memory Allocation in C Programs – Memory Usage – Dynamic Memory Allocation – Drawbacks of Pointers
Files: Introduction to Files – Using Files in C – Reading Data from Files – Writing Data to Files – Detecting the End-of-file – Error Handling during File Operations – Accepting Command Line Arguments.

BOOKS

1. E Balagurusamy – Programming in ANSIC – Tata McGraw-Hillpublications.
2. Brain W Kernighan and Dennis M Ritchie - The 'C' Programming language" - Pearsonpublications.
3. Ashok N Kamthane: Programming with ANSI and Turbo C, Pearson Edition Publications.
4. YashavantKanetkar - Let Us 'C' – BPBPublications.

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COMPUTER SCIENCE	CSC-101P	2020-'21	B.Sc. (MPCs, MCCs.)

SEMESTER – I   PAPER – I   Max. Marks: 50   Pass Marks 25

No. of Hours per week: 2   External: 25   Internal: 25   Credits: 2

Lab List:Problem solving in C LAB

1. Write a program to check whether the given number is Armstrong ornot.
2. Write a program to find the sum of individual digits of a positiveinteger.
3. Write a program to generate the first n terms of the Fibonaccisequence.
4. Write a program to find both the largest and smallest number in a list of integervalues
5. Write a program to demonstrate refection of parameters in swapping of two integer values using **Call by Value** & **Call byAddress**
6. Write a program that uses functions to add twomatrices.
7. Write a program to calculate factorial of given integer value using recursivefunctions
8. Write a program for multiplication of two N X Nmatrices.
9. Write a program to perform various stringoperations.
10. Write a program to search an element in a given list ofvalues.
11. Write a program to sort a given list of integers in ascendingorder.
12. Write a program to calculate the salaries of all employees using *Employee (ID, Name, Designation, Basic Pay, DA, HRA, Gross Salary, Deduction, Net Salary)* structure.
    DA is 30 % of BasicPay
    HRA is 15% of BasicPay
    Deduction is 10% of (Basic Pay +DA)
    Gross Salary = Basic Pay + DA+HRA
    Net Salary = Gross Salary -Deduction
13. Write a program to illustrate pointerarithmetic.

14. Write a program to read the data character by character from afile.
15. Write a program to create *Book (ISBN, Title, Author, Price, Pages, Publisher)* structure and store book details in a file and perform the following operations
    Add bookdetails
    Search a book details for a given ISBN and display book details, ifavailable
    Update a book details usingISBN
    Delete book details for a given ISBN and display list of remainingBooks

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COMPUTER SCIENCE	CCSC-103C	2020-'21	B.Com(CA)

SEMESTER – I   PAPER – I   Max. Marks 70

Syllabus: INTRODUCTION TO INFORMATION TECHNOLOGY

NO of Hours: 4   No Of Credits: 3   Pass Marks 28

Unit – I: Database Systems Introduction Computer Basics   13H'rs

Introduction, Evolution of Computers, Generations of Computers, Classification of Computers, Computer Concepts, Applications Of Computers, Central Processing Unit.

Memory Representation:

Random Access Memory, Read Only Memory, Magnetic Tape, Magnetic Disk, Types of Magnetic Disks, Types of Optical Disk, USB.

UNIT-II: Input/output Devices &Operating Systems   15H'rs

Input/output Devices: Types of Input Devices, Types Of Output Devices, Programming Languages: Types of Programming Languages, Generations of Programming Languages

Software: Definition Of Software, Relationship Between Software And Hardware, Categories Of Software**, Operating Systems:** Introduction, Types of Operating Systems

UNIT-III: Information Technology&Internet Applications: 12H'rs

Information Technology: Components Of Information Technology**,** Role Of Information Technology, Information Technology In Business, Manufacturing, Mobile Computing, Public Sector, Defence Sectors, Media, Education, Publication.

Internet Applications: Evolution Of Internet, Basic Internet Terms, Internet Applications.

 Introduction, E-mail, Information Browsing Service, The World Wide Web, Information Retrieval from the World Wide Web, Other Facilities Provided by Browsers, Audio on the Internet, Pictures, Animation and Video viaInternet

UNIT-IV: Data Communications

          10H'rs

Introduction, Data Communication, Components Of Data Communication, Data Transmission Mode, Analog To Digital Data Transmission, Data Communication Measurement, Transmission Media, Guided/Wired Media, Unguided/Wireless Media.

UNIT-V: Computer Networks: 10H'rs

 Introduction to Computer Networks, Types of Computer Networks, Network Topologies, OSI Model, TCP/IP Model.

Text Book:

1. Introduction To Information Technology (Second Edition) , Pearson, ITI Education Solutions Limited.

2. Introduction of Information Technology, by V. Rajaraman, PHI Learning Private Limited.

Reference Book:

1. Fundamentals Of Computers, Balagurusamy, McGraw Hill Education (India) Private Limited.
2. Fundamentals Of Computers , Reema Thareja Oxford University

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COMPUTER SCIENCE	CCSC-103C	2020-'21	B.Com. (C.A)

SEMESTER – I   PAPER – I   Max. Marks 50   Pass Marks 20

Lab List:Introduction to Information Technology & Internet

NO Of Hours: 2   **Credits: 2**

1. Introduction to Computers.
2. Block Diagram of a Digital Computer
3. Memory Devices
4. Software & Hardware
5. MS-DOS.
    b) Internal Commands
    c) External Commands
6. Windows.
7. MS-Word:
    a) Creating a letter pad.
    b) Creating a visiting card.
    c) Prepare a time table.
    d) Header & footers
    e) Mail Merge.

8. MS-Power Point:
    a) Power point presentation for Fourth National Games.
    b) Power point presentation for Indian Education System.
    c) Power point presentation to represent your College profile.
    d) Power point presentation using Multimedia.
    e) Power point presentation to represent your department
9. How to create E-mail, Information Browsing Service
10. World Wide Web, Information Retrieval from the World Wide Web
11. Data Transmission Modes
12. Network Topologies

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DEPARTMENT OF COMPUTER SCIENCE

2020-21 (EVEN SEMESTER)

HIGHLIGHTED SYLLABUS OF COMPUTER SCIENCE

Syllabus in Relevance to Employability, Skill Development and Entrepreneurship is highlighted as mentioned: Employability in yellow Color, Skill Development in Sky blue color and Entrepreneurship in Green color

Employability   █

Skill-Development   █

Entrepreneurship   █

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COMPUTER SCIENCE	CSC-601(GE)	2020-'21	B.Sc.(MPCs. , MCCs.)

SEMESTER – VI   **PAPER – VII Max. Marks 70**

<u>**Syllabus**</u>   **WEB TECHNOLOGIES**

NO of Hours: 4   <u>**No of Credits: 3**</u>   **Pass Marks 28**

Course Objectives:

1. To provide knowledge on web architecture, web services, client side and server side scripting technologies to focus on the development of web-based information systems and web services.
2. To provide skills to design interactive and dynamic web sites.

COURSE OUTCOMES:

  CO1: Understand the basic structure of a HTML design and develop a website using different text

Formatting tags, images, links, lists and tables.

  CO2: Understand to style a webpage using CSS and Basic Concepts of Java Scripts.

  CO3: Understand to style a webpage Using Objects in Java Script and DHTML.

  CO4: Understand the Basic Concepts of XML and Defining Data for Web Applications.

  CO5: Understand the Concepts of JS.

Unit -I   Introduction to XHTML: **12 Hrs**

Introduction to HTML, Basic html, Document body text, Hyper links, Adding more formatting Lists, Tables, Images, Multimedia Objects, Frames, Forms and XHTML.

Unit- II: CSS: **12 Hrs**

Cascading Style Sheets: Introduction, Defining your own styles, properties and values in styles, Formatting blocks of information, Layers.

Java Script: java Script, the basics, Variables, String Manipulations, Mathematical functions, Statements, Operators, Arrays, Functions.

Unit –III: Objects in Java Script & Dynamic HTML with Java Script   **12 Hrs**

Objects in Java Script: Data and objects in java script, Regular expressions, Exception Handling, Built in objects, Events.

Dynamic HTML with Java Script: Data validation, Opening a new window, Messages and Confirmations, The status bar, writing to a different frame, Rollover buttons, Moving images, multiple pages in a single download, A text-only menu system, Floating logos.

Unit –IV: XML Defining Data for Web Applications   **12 Hrs**

XML: Introduction to XML, Basic XML, document type definition, XML Schema, Document object model, presenting XML, Using XML parser.

UNIT-V: **12 Hrs**

JSP: JSP Lifecycle, Basic Syntax, EL (Expression Language), EL Syntax, Using EL Variables

Prescribed Books:

1. Chris Bates, Web Programming Building Internet Application, Second Edition, Wiley   (2007)
2. Head First Servlets and JSP 2nd Edition, Bryan Basham, Kathy Sierra
3. Uttam Kumar Roy, Web Technologies from Oxford University Press

Student Activities:

1. Prepare a web site for your college
2. Prepare your personal website

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COMPUTER SCIENCE	CSC-601(GE)	2020-'21	B.Sc.(MPCs. , MCCs.)

SEMESTER – VI   **PAPER – VI**   **Max. Marks 50**

Lab List   **WEB TECHNOLOGIES**   **Pass Marks:**
20

No. of Hours per week: 2   **External: 25**   **Internal: 25**   **Credits: 2**

1. Write an HTML program to demonstrate text formatting, working with images and hyper links
2. Write an HTML program to create Student Marks sheet preparation.
3. Write an HTML program to explain String manipulation-using functions.
4. Write an HTML program to explain <form> events
5. Write an HTML program to perform all arithmetic operations using java script.
6. Develop a HTML Form, which accepts any Mathematical expression. Write JavaScript code to Evaluates the expression and Displays the result.
7. Create a form for Student information. Write JavaScript code to find Total, Average, Result and Grade.
8. Create a form for Employee information. Write JavaScript code to find DA, HRA, PF, TAX, Gross pay, Deduction and Net pay.
9. Create a form consists of a Multiple choice questions that validates the answer dynamically and displaying result using java script.
10. Write a java script to work with following

a. Date display b. Calendar   c. Copy Selected Text

b. IP Address

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COMPUTER SCIENCE	CSC-602CE	2020-'21	B.Sc.(MPCs. , MCCs.)

SEMESTER – VI   **PAPER – VIII**   **Max. Marks: 70**

<u>Syllabus</u> **PHP, MySQL & Word Press**
<u>NO Of Hours:4 Credits: 3</u>   **Pass Marks 28**

Course Objective: To introduce the concept of PHP and to give basic Knowledge of PHP. Learn about PHP Syntax., Arrays, PHP Loops, PHP and MySQL connectivity, PHP form validation, PHP form handling. Overview of MySQL and PHPMyAdmin, Understand basic concepts of how a database stores information via tables, Understanding of SQL syntax used with MySQL, Learn how to retrieve and manipulate data from one or more tables, Know how to filter data based upon multiple conditions, Updating and inserting data into existing tables, Learning how the relationships between tables will affect the SQL, The advantages of store procedures with storing data using variables and functions, How SQL can be used with programming languages like PHP to create dynamic websites for visitors, Review of some sample PHP projects interacting with MySQL.

COURSE OUTCOMES:
   CO1: Understand the concepts Of PHP and MY SQL Installations.
   CO2: Able to know the basic concepts Function and Working with Functions.
   CO3: Understand the concepts of FORMS and working with FORMS.
   CO4: understand the concepts of MY SQL and MY SQL Components.
   CO5: Able to know the concepts of WORD PRESS.

UNIT-1: **Installing and Configuring MySQL**:   **10 Hrs**

Current and Future Versions of MySQL, How to Get MySQL, Installing MySQL on Windows, Trouble Shooting your Installation, Basic Security Guidelines, Introducing MySQL Privilege System, Working with User Privileges. Installing and Configuring Apache: Current and future versions of Apache, Choosing the Appropriate Installation Method, Installing Apache on Windows, Apache Configuration File Structure, Apache Log Files, Apache Related Commands, Trouble Shooting. Installing and Configuring PHP: Building PHP with Apache on Windows, php.ini. Basics, The Basics of PHP scripts. The Building blocks of PHP: Variables, Data Types, Operators and Expressions, Constants. Flow Control Functions in PHP: Switching Flow, Loops, Code Blocks and Browser Output.

Unit – II: Working with Functions: **10 Hrs**
What is function?, Calling functions, Defining Functions, Returning the values from User-Defined Functions, Variable Scope, Saving state between Function calls with the static statement, more about arguments. Working with Arrays: What are Arrays? Creating Arrays, Some Array-Related Functions. Working with Objects: Creating Objects, Object Instance Working with Strings, Dates and Time: Formatting strings with PHP, Investigating Strings with PHP, Manipulating Strings with PHP, Using Date and Time Functions in PHP.

Unit – III: Working with Forms: **15 Hrs**

Creating Forms, Accessing Form Input with User defined Arrays, Combining HTML and PHP code on a single Page, Using Hidden Fields to save state, Redirecting the user, Sending Mail on Form Submission, Working with File Uploads. Working with Cookies and User Sessions: Introducing Cookies, Setting a Cookie with PHP, Session Function Overview, Starting a Session, Working with session variables, passing session IDs in the Query String, Destroying Sessions and Unsetting Variables, Using Sessions in an Environment with Registered Users. Working with Files and Directories: Including Files with inclue(), Validating Files, Creating and Deleting Files, Opening a File for Writing, Reading or Appending, Reading from Files, Writing or Appending to a File, Working with Directories.

Unit – IV: Introduction to MySQL   **15Hrs**

Introduction to My SQLand Interfacing with Databases through PHP Understanding the database design process: The Importance of Good Database Design, Types of Table Relationships, Understanding Normalization. Learning basic SQL Commands: Learning the MySQL Data types, Learning the Table Creation Syntax, Using Insert Command, Using SELECT Command, Using WHERE in your Queries, Selecting from Multiple Tables, Using the UPDATE command to modify records, Using RELACE Command, Using the DELETE Command, Frequently used string functions in MySQL, Using Date and Time Functions in MySQL. Interacting with MySQL using PHP: MySQL Versus MySQLi Functions, Connecting to MySQL with PHP, Working with My SQL Data.

Unit – V:Word press   **10Hrs**

Word press: Introduction to word press, servers like wamp, bitnami e.tc, installing and configuring word press, understanding admin panel, working with posts and pages, using editor, text formatting with shortcuts, working with media-Adding, editing, deleting media elements, working with widgets, menus. Working with themes-parent and child themes, using featured images, configuring settings.

References:
1. Julie C. Meloni, PHP MySQL and Apache, SAMS Teach yourself, Pearson Education (2007).
2. Xue Bai Michael Ekedahl, The web warrior guide to Web Programming, Thomson (2006).

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COMPUTER SCIENCE	CSC-602CE	2020-'21	B.Sc.(MPCs. , MCCs.)

SEMESTER – VI   **PAPER – VIII**   Max. Marks 50

Lab List   PHP, MySQL & Word Press Lab   Pass Marks 20

No. of Hours per week: 3   External: 25   Internal: 25   Credits: 2

MySQL Lab Cycle

Cycle -1

An Enterprise wishes to maintain the details about his suppliers and other corresponding details. For that he uses the following details.
Suppliers (sid: Integer, sname: string, address: string)
Parts (pid: Integer, pname: string, color: string)
Catalog (sid: integer, pid: integer, cost: real)

The catalog relation lists the prices charged for parts by suppliers.

Write the following queries in SQL:

1. Find the pnames of parts for which there is some supplier.
2. Find the snames of suppliers who supply every part.
3. Find the snames of supplier who supply every red part.
4. Find the pnames of parts supplied by London Supplier abd by no one else.
5. Find the sid's of suppliers who charge more for some part than the average cost of that part.
6. For each part, find the sname of the supplier who charges the most for that part.
7. Find the sid's of suppliers who supply only red parts.
8. Find the sid's of suppliers who supply a red and a green part.
9. Find the sid's of suppliers who supply a red or green part.
10. Find the total amount has to pay for that suppler by part located from London.

Cycle – 2

An organisation wishes to maintain the status about the working hours made by his employees. For that he uses the following tables.

Emp (eid: integer, ename: string, age: integer, salary: real)
Works (eid: integer, did: integer, pct_time: integer)
Dept (did: integer, budget: real, managerid: integer)
An employee can work in more than one department; the pct_time field of the works relation shows the percentage of time that a given employee works in a given department.

Resolve the following queries.

1. Print the names and ages of each employee who works in both Hardware and Software departments.
2. For each department with more than 20 full time equivalent employees (i.e., where the part-time and full-time employees add up to at least that many full-time employees), print the did's together with the number of employees that work in that department.

3. Print the name of each employee whose salary exceeds the budget of all of the departments that he or she work in.
4. Find the manager id's of managers who manage only departments with budgets greater than 1,000,000.
5. Find the enames of managers who manage the departments with largest budget.
6. If a manager manages more than one department, he or she controls the sum of all the budgets for those departments. Find the menagerie's of managers who Control more than 5,000,000.
7. Find the menagerie's of managers who control the highest amount.
8. Find the average manager salary.

PHP Lab Cycle

1. Write a PHP program to Display "Hello"
2. Write a PHP Program to display the today's date.
3. Write a PHP Program to read the employee details.
4. Write a PHP Program to display the
5. Write a PHP program to prepare the student marks list.
6. Write a PHP program to generate the multiplication of two matrices.
7. Write a PHP Application to perform demonstrates the college website.
8. Write a PHP application to add new Rows in a Table.
9. Write a PHP application to modify the Rows in a Table.
10. Write a PHP application to delete the Rows from a Table.
11. Write a PHP application to fetch the Rows in a Table.
12. Develop an PHP application to make following Operations
    i. Registration of Users.
    ii. Insert the details of the Users.
    iii. Modify the Details.
    iv. Transaction Maintenance.
        a) No of times Logged in
        b) Time Spent on each login.
        c) Restrict the user for three trials only.
        d) Delete the user if he spent more than 100 Hrs of transaction.

Wordpress Lab

1. Installation and configuration of word press.
2. Create a site and add a theme to it.

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COMPUTER SCIENCE	CSC-603CE	2020-'21	B.Sc.(MPCs. , MCCs.)

SEMESTER – VI   PAPER – IX Max. Marks 70   Credits: 3   Pass

Marks 28

Syllabus Advanced java Script: JQUERY/AJAX/JSON/ANGULAR JS   NO Of Hours:4

Course Objective: To impart knowledge in designing a webpage in a structured way by using advanced java script i.e., using different scripting languages.

COURSE OUTCOMES:

   CO1: Understand the concepts Of HTML and JQUERY

   CO2: Write program for JQUERY and CSS Methods using DOM Attributes

   CO3: Understand the concepts of JQUERY USER INTERFACE Programs

   CO4: Understand the concepts of AJAX and JSON Objects

   CO5: Basic concepts of ANGULAR JS and ANIMATIONS

UNIT-1:JQuery – Basics: **10 Hrs**

String, Numbers, Boolean, Objects, Arrays, Functions, Arguments, Scope, Built-in Functions. jQuery Selectors: CSS Element Selector, CSS Element ID Selector, CSS Element Class Selector, CSS Universal Selector, Multiple Elements E, F, G Selector, Callback Functions. JQuery – DOM Attributes: Get Attribute Value, Set Attribute Value. JQuery – DOM Traversing: Find Elements by index, filtering out Elements, Locating Descendent Elements, and JQuery DOM Traversing Methods.

Unit – II: jQuery – CSS Methods: **10 Hrs**

Apply CSS Properties; Apply Multiple CSS Properties, Setting Element Width & Height, and JQuery CSS Methods. JQuery – DOM Manipulation Methods: Content Manipulation, DOM Element Replacement, Removing DOM Elements, Inserting DOM elements, DOM Manipulation Methods. jQuery – Events Handling: Binding event handlers, Removing event handlers, Event Types, The Event Object, The Event Attributes. JQuery – Effects: JQuery Effect Methods, jQuery Hide and Show, jQuery Toggle, jQuery Slide – slideDown, slideUp, slide Toggle, jQuery Fade – fadeIn, fadeOut, fadeTo, jQuery Custom Animations

Unit – III: Intro to jQuery UI   **15 Hrs**

, Need of jQuery UI in real web sites, Downloading jQuery UI, Importing jQuery UI, Draggable, Droppable, Resizable, Selectable, Sortable, Accordion, Auto Complete, Button Setϖ, Date Picker, Dialog, Menu, Progress Bar, Slider, Spinner, Tabs, Tooltip, Color Animation, Easing Effects, add Class, remove Class, Effects, jQuery UI themes, Customizing jQuery UI widgets / plug-ins, jQuery UI with CDN, Consuming jQuery Plug-ins from 3rd party web sites jQuery Validations, Intro to jQuery validation plug-in, Using jQuery validation plug-in, Regular expressions.

Unit – IV: Intro to AJAX   **15 Hrs**

Need of AJAX in real web sites, Getting database data using jQueryAJAX, Inserting, Updating, Deleting database data using jQuery-AJAX Grid Development using jQuery-AJAX Intro to JSON JSON syntax, Need of JSON in real web sites, JSON object, JSON array, Complex JSON objects, Reading JSON objects using jQuery.

Unit – V: Intro to AngularJS   **15 Hrs**

Need of AngularJS in real web sites, Downloading AngularJS, AngularJS first example, AngularJS built-in directives, AngularJS expressions, AngularJS modules, AngularJS controllers, AngularJS scope AngularJS dependency injection AngularJS, bootstrapping AngularJS data bindings, AngularJS $watch, AngularJS filters, AngularJS events, AngularJS AJAX, Ng-repeat, AngularJS with json arrays, AngularJS registration form and login form, AngularJS CRUD operations, AngularJS Animations, AngularJS validationsϖ AngularJS $q,

AngularJS custom values, AngularJS custom services, AngularJS custom directives, AngularJS custom providers, AngularJS Routing, AngularUI Routing.

References:

1. jQuery UI 1.8: The User Interface Library for jQuery by Dan Wellman

2. jQuery Fundamentals by Rebecca Murphey 3. Ajax: The Complete Reference by Thomas A. Powell

COMPUTER SCIENCE	CSC-603CE	2020-'21	B.Sc.(MPCs. , MCCs.)

SEMESTER – VI   **PAPER – IX**   **Max. Marks 50**

Lab List: Advanced java Script: JQUERY/AJAX/JSON/ANGULAR JS

Pass Marks 20   No. of Hours per week: 3 External: 2 Internal: 25   Credits: 2

1. Using jQuery find all text areas, and makes a border. Then adds all paragraphs to the jQuery object to set their borders red.

2. Using jQuery add the class "w3r_font_color" and w3r_background to the last paragraph element.

3. Using jQuery add a new class to an element that already has a class.

4. Using jQuery insert some HTML after all paragraphs.

5. Using jQuery insert a DOM element after all paragraphs.

6. Convert three headers and content panels into an accordion. Initialize the accordion
   And specify the animate option

7. Convert three headers and content panels into an accordion. Initialize the accordion and specify the height.

8. Create a pre-populated list of values and delay in milliseconds between a keystroke occurs and a search is performed.

9. Initialize the button and specify the disable option.

10. Initialize the button and specify an icon on the button.

11. Initialize the button and do not show the label.

12. Create a simple jQuery UI Datepicker. Now pick a date and store it in a textbox.

13. Initialize the date picker and specify a text to display for the week of the year column heading.

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COMPUTER SCIENCE	CSC PROJ-602 P	2020-'21	B.Sc.(MPCs. , MCCs.)

SEMESTER – VI   PROJECT (Java, PHP & MYSQL)   Max. Marks 100

OBJECTIVE

The objective of the Project Course is to help the students to study, analyze and design software or utility for different problems or applications. This will improve the skills of software development of the students.

COURSE OUTCOMES:

  CO1: Students will get fundamental knowledge to work in emerging/latest technologies.

  CO2: They will also learn about theoretical and practical tools/techniques to solve real life problems   related to industry, academic institutions and research laboratories.
  CO3: Able to know the details of modules and process logic.
  CO4: Able to know the details of Testing and Implementation.
  CO5: Able to use no. of tools/platforms, Languages.

MARKS FOR PROJECT EVALUATION

        The project course will be evaluated for **100** Marks, of which **75** marks are meant for the practical evaluation of a project and **25** marks are allotted for attending viva-voce examination. The passing minimum in the project work will be 50% of the total mark. i.e. the student should get minimum 50% marks in the project evaluation and the viva-voce examination. Thus, the minimum mark the student is required to obtain is 50 out of 100 marks.

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COMPUTER SCIENCE	CCSC-605CE	2020-21	B.Com (C.A)

SEMESTER –VI   **PAPER – IX**   Total: 60 Hrs

Syllabus   **TALLY**   **Max.Marks:70**

Credits 3   **NO Of Hours 5**   **Pass Marks 28**

COURSE OUTCOMES:
CO1: Able to understand the basic concepts of TALLY
CO2: Able to understand the installation of TALLY Software.
CO3: Able to implement the concepts of ledgers
CO4: Able to implement the concepts of vouchers
CO5:Able to implement the basic concepts of final accounts.

Unit-I: Introduction to Tally: **12Hrs**

Introduction, Software versions of Tally, Terminology related to Accounts credit & Debit,

Journal, Ledger, Voucher, Group etc. Difference between Manual Accounting and

Accounting Packages. Features and advantages of Tally.

Unit-II: Introduction of Tally Software   **12Hrs**

Introduction of Tally Software Creation of a company, Gateway of Tally, Accounts

Information, Groups, pre defined Groups, Creation of New Groups, and Creation of sub

Group.

Unit-III: Ledgers   **12Hrs**

Ledger Creation Single and multiple Ledgers, Displaying & altering Ledgers, configure

Ledger, Stock Ledger, Ledgers and their Group Allocation.

Unit-IV: Vouchers   **12Hrs**

Types of vouchers – recording of vouchers – entry of payment voucher, Receipt voucher,

sales voucher, purchase voucher, Journal Voucher, Contra Voucher, Debit & Credit Note.

Creating New Voucher types, customizing the Existing voucher types, Alternation of

Voucher, Deletion of Voucher.

Unit-V: Final Accounts   **12Hrs**

Customizing the final accounts – Profit and Loss Account, Balance Sheet. Key board

shortcuts in Tally. Generating the Reports from Tally, Trial Balance, Account Books, Sales,

Purchase, Journal Registers, Statement of Accounts, Day Book, List of Accounts.

Reference Books:

1. K. Kiran Kumar, Tally ERP9.

2. Tally 9 In Simple Steps, Kogent solutions Inc., John Wiley & Sons, 2008.

3. Narmata Agarwal, Financial Accounting on Computers Using Tally, Dramatic Press, 2000.

 4. Tally 9.0, Google eBook, Computer World.

5. Vikas Gupta, Comdex Computer and Financial Accounting with Tally 9.0, 2007.

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COMPUTER SCIENCE	CCSC-605P	2020-21	B.Com.(C.A.)

SEMESTER – VI   **PAPER – V**   **Max. Marks: 50**   **Pass Mark: 20**

Lab list :TALLY

No. Of Hours per week: 3   **External: 25**   **Internal: 25**   **Credits: 2**

1. Architecture and customization of Tally

2. Configuration of Tally

3. Tally Screens and Menus

4. Creation of new company and groups.

5. Preparation of voucher entries.

      a. Payment voucher creation

      b. Receipt voucher creation

      c. Sales voucher creation

      d. Purchase voucher creation

      e. Contra voucher creation

      f. Journal voucher creation

6. Ledger Creation.

7. Preparation of VAT

8. Preparation of TDS

7. Preparation of Trail balance

8. Preparation of Profit and loss statement.

9. Preparation of Balance Sheet

10. Preparation of Bank Reconciliation Statement.

11. Example Exercise

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COMPUTER SCIENCE	CCSC-606CE	2020-21	B.Com (C.A)

SEMESTER –VI   **PAPER – X**   **Total: 60 Hrs**

Syllabus   **E-COMMERCE**   **Max.Marks:70**
Credits 3   **NO Of Hours 5**   **Pass Marks 28**

COURSE OUTCOMES:
CO1: Students would be able to analyse the concept of business models and standards.
CO2: Students would be able to understand the electronic market and market place.
CO3: Students would be able to understand the Hardware and Software of Server.
CO4: Students would be able to understand the legal and security issues.
CO5: Able to differentiate different online payment methodologies.

Unit-I: Introduction to E-Commerce   **12Hrs**
Scope, Definition, e-Commerce and the Trade Cycle, Electronic Markets, Electronic Data Interchange, Internet Commerce. Business Strategy in an Electronic Age: Supply Chains, Porter's Value Chain Model, Inter Organizational Value Chains, Competitive Strategy, First Mover Advantage – Sustainable Competitive Advantage, Competitive Advantage using E-Commerce – Business Strategy.

Unit-II:Business-to-Business Electronic Commerce12Hrs
Characteristics of B2B EC, Models of B2B EC, Procurement Management by using the Buyer's Internal Market place, Just in Time Delivery, Other B2B Models, Auctions and Services from traditional to Internet Based EDI, Integration with Back-end Information System, Role of Software Agents for B2B EC, Electronic marketing in B2B, Solutions of B2B EC, Managerial Issues, Electronic Data Interchange (EDI), EDI: Nuts and Bolts EDI and Business.

Unit-III: Internet and Extranet   **12Hrs**
Automotive Network Exchange, Largest Extranet, Architecture of the Internet, Intranet and Extranet, Intranet software, Applications of Intranets, intranet Application Case Studies, Considerations in Intranet Deployment, Extranets, Structures of Extranets, Extranet products and services, Applications of Extranets, Business Models of Extranet Applications, Managerial Issues. Electronic Payment Systems: Issues and Challenges.

Unit-IV:Public Policy: **12Hrs**
From Legal Issues to Privacy : Legal Incidents, Ethical and Other public Policy Issues, Protecting Privacy, Protecting Intellectual Property, Free speech, Internet Indecency and Censorship, Taxation and Encryption Policies, Other Legal Issues: Contracts, Gambling and More, Consumer and Seller Protection in EC.

Unit-V:Infrastructure For EC   **12Hrs**
Network of Networks, Internet Protocols, Web- Based client/Server, Internet Security, Selling on the Web, Chatting on the Web, Multimedia delivery, Analyzing Web Visits, Managerial Issues, Equipment required for establishing EC Sites – problems in Operation – Future of EC.

Reference Books
1. David Whiteley, "E-Commerce", Tata McGraw Hill, 2000.
2. E Business by Parag Kulakarni and Sunitha Jahirabadkar from Oxford University Press.
3. E Business by Jonathan Reynolds from Oxford University Press.
4. Eframi Turban, Jae Lee, David King, K. Michael Chung, "Electronic Commerce",
5. Pearson Education, 2000.

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COMPUTER SCIENCE	CCSC-607CE	2020-21	B.Com (C.A)

SEMESTER –VI   **PAPER – XI**

Syllabus   **PHP& MY SQL**   **Max.Marks:70**

Credits 3   **NO Of Hours 5**   **Pass Marks 28**

COURSE OUTCOMES:

CO1: Understand the concepts Of PHP and PHP Basic Building Blocks.

CO2: Able to know the basic concepts Arrays and it's Working.

CO3: Understand the concepts of FORMS and working with FORMS.

CO4: Understand the concepts of FILES and DIRECTORIES.

CO5: Able to know how the interaction between MY SQL using PHP.

Unit-I: Building blocks of PHP:

Variables, Data Types, Operators and Expressions, Constants. Flow Control Functions in PHP: Switching Flow, Loops, Code Blocks and Browser Output. Working with Functions: Defining Functions, Calling functions, returning the values from User Defined Functions, Variable Scope, Saving State between Function calls with the Static statement, more about arguments.

Unit-II: Working with Arrays:

Arrays, Creating Arrays, Some Array-Related Functions. Working with Objects: Creating Objects, Object Instance. Working with Strings, Dates and Time: Formatting Strings with PHP, Investigating Strings with PHP, Manipulating Strings with PHP, Using Date and Time Functions in PHP.

Unit-III: Working with Forms:

Creating Forms, Accessing Form – Input with User defined Arrays, Combining HTML and PHP code on a single Page, Using Hidden Fields to save state, Redirecting the user, Sending Mail on Form Submission, Working with File Uploads. Working with Cookies and User Sessions: Introducing Cookies, Setting a Cookie with PHP, Session Function Overview, Starting a Session, Working with session variables, passing session Ids in the Query String, Destroying Sessions and Unsettling Variables, Using Sessions in an Environment with Registered Users.

Unit-IV: Working with Files and Directories:

Including Files with include(), Validating Files, Creating and Deleting Files, Opening a File for Writing, Reading or Appending, Reading from Files, Writing or Appending to a File, Working with Directories, Open Pipes to and from Process Using popen (), Running Commands with exec(), Running Commands with system ( ) or passthru ( ). Working with Images: Understanding the Image-Creation Process, Necessary Modifications to PHP, Drawing a New Image, Getting Fancy with Pie Charts, Modifying Existing Images, Image Creation from User Input.

Unit-V:Interacting with MySQL using PHP:

MySQL Versus MySQL Functions, Connecting to MySQL with PHP, Working with MySQL Data. Creating an Online Address Book: Planning and Creating Database Tables, Creating Menu, Creating Record Addition Mechanism, Viewing Records, Creating the Record Deletion Mechanism, Adding Sub-entities to a Record.

References:

1. Julie C. Meloni, PHP MySQL and Apache, SAMS Teach You, Pearson Education (2007).

2. Xue Bai Michael Ekedahl, the Web Warrior Guide to Web Programming, Thomson (2006).

COMPUTER SCIENCE	CCSC-607CE	2020-21	B.Com (C.A)

SEMESTER –VI   **PAPER – XI**   **Total: 60 Hrs**
Lab List   PHP, MySQL   **Pass Marks 20**
 No. of Hours per week: 2   **External: 25   Internal: 25**   **Credits: 2**

MySQL Lab Cycle

Cycle -1
An Enterprise wishes to maintain the details about his suppliers and other corresponding details. For that he uses the following details.
Suppliers (sid: Integer, sname: string, address: string)
Parts (pid: Integer, pname: string, color: string)
Catalog (sid: integer, pid: integer, cost: real)

The catalog relation lists the prices charged for parts by suppliers.

Write the following queries in SQL:

1. Find the pnames of parts for which there is some supplier.
2. Find the snames of suppliers who supply every part.
3. Find the snames of supplier who supply every red part.
4. Find the pnames of parts supplied by London Supplier abd by no one else.
5. Find the sid's of suppliers who charge more for some part than the average cost of that part.
6. For each part, find the sname of the supplier who charges the most for that part.
7. Find the sid's of suppliers who supply only red parts.
8. Find the sid's of suppliers who supply a red and a green part.
9. Find the sid's of suppliers who supply a red or green part.
10. Find the total amount has to pay for that suppler by part located from London.

Cycle – 2

An organisation wishes to maintain the status about the working hours made by his employees. For that he uses the following tables.

Emp (eid: integer, ename: string, age: integer, salary: real)
Works (eid: integer, did: integer, pct_time: integer)
Dept (did: integer, budget: real, managerid: integer)
An employee can work in more than one department; the pct_time field of the works relation shows the percentage of time that a given employee works in a given department.

Resolve the following queries.

1. Print the names and ages of each employee who works in both Hardware and Software departments.
2. For each department with more than 20 full time equivalent employees (i.e., where the part-time and full-time employees add up to at least that many full-time employees), print the did's together with the number of employees that work in that department.
3. Print the name of each employee whose salary exceeds the budget of all of the departments that he or she work in.

4. Find the managerid's of managers who manage only departments with budgets greater than 1,000,000.
5. Find the enames of managers who manage the departments with largest budget.
6. If a manager manages more than one department, he or she controls the sum of all the budgets for those departments. Find the managerid's of managers who control more than 5,000,000.
7. Find the managerid's of managers who control the highest amount.
8. Find the average manager salary.

1. Write a PHP program to Display "Hello"
2. Write a PHP Program to display the today's date.
3. Write a PHP Program to read the employee details.
4. Write a PHP program to prepare the student marks list.
5. Write a PHP program to generate the multiplication of two matrices.
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9. Write a PHP application to delete the Rows from a Table.
10. Write a PHP application to fetch the Rows in a Table.
11. Develop an PHP application to make following Operations
    i. Registration of Users.
    ii. Insert the details of the Users.
    iii. Modify the Details.
    iv. Transaction Maintenance.
        a) No of times Logged in
        b) Time Spent on each login.
        c) Restrict the user for three trials only.
        d) Delete the user if he spent more than 100 Hrs of transaction.

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COMPUTER SCIENCE	CSC-401C	2020-'21	B.Sc.(MPCs. , MCCs.)

SEMESTER – IV   PAPER – IV   Max. Marks 70 Pass Marks 28   Totals Hrs 60

Syllabus DATA STRUCTURES   NO of Hours: 4   Credits: 3

COURSE OUTCOMES:

CO1: To Understand the Basic concepts of data structures and storage structures and file structures.

CO2: Implement operations on linear lists, Stacks, Queues and their applications.

CO3: Implement various sorting and searching techniques and to understand advantages.

CO4: To understand Trees concepts and implementations.

CO5: To understand Graphs concepts and implementations.

UNIT I   **15 Hrs**

Concept of Abstract Data Types (ADTs)- Data Types, Data Structures, Storage Structures, and File Structures, Primitive and Non-primitive Data Structures, Linear and Non-linear Structures. **Linear Lists** - ADT, Array and Linked representations, Pointers.

Arrays - ADT, Mappings, Representations, Sparse Matrices, Sets - ADT, Operations Linked Lists: Single Linked List, Double Linked List, Circular Linked List, applications

UNIT II   **10 Hrs**

Stacks: Definition, ADT, Array and Linked representations, Implementations and Applications

Queues: Definition, ADT, Array and Linked representations, Circular Queues, De-queues, Priority Queues, Implementations and Applications.

UNIT III   **15 Hrs**

Trees: Binary Tree, Definition, Properties, ADT, Array and Linked representations, Implementations and Applications. Binary Search Trees (BST) - Definition, ADT, Operations and Implementations, BST Applications. Threaded Binary Trees, Heap trees

UNIT IV   **10Hrs**

Graphs – Graph and its Representation, Graph Traversals, Connected Components, Basic Searching Techniques, Minimal Spanning Trees

UNIT- V   **10 Hrs**

Sorting and Searching: Selection, Insertion, Bubble, Merge, Quick, Heap sort, Sequential And Binary Searching.

TEXT BOOKS

1. Hubbard John R. and Hurray Anita, Data Structures with Java Paperback Prentice-Hall 2005 ISBN-10: 8120327454

2. Samanta D, Classic Data Structures, Prentice-Hall of India, 2001.

3. David Cousins, Introducing Data Structures with Java Kindle Edition, Pearson Education; First edition, 2011, ISBN-10: 8131758648, 464 pages

REFERENCE BOOKS

1. Sahani S, Data Structures, Algorithms and Applications in C++, McGraw-Hill, 2002

2. D S Malik, Data Structures Using C++, Thomson, India Edition 2006

3. Tremblay P, and Sorenson P G, Introduction to Data Structures with Applications, Tata McGraw-Hill,

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COMPUTER SCIENCE	CSC-401P	2020-'21	B.Sc.(MPCs., MCCs.)

SEMESTER – IV   PAPER – IV   Max. Marks 50   Pass Marks 20   Total Hrs:28

LAB LIST   DATA STRUCTURES

No. of Hours per week: 2   External: 25   Internal: 25   Credits: 2

1. Write a Program to implement the Linked List operations

2. Write a Program to implement the Stack operations using an array.

3. Write Programs to implement the Queue operations using an array.

4. Write Programs to implement the Stack operations using a singly linked list.

5. Write Programs to implement the Queue operations using a singly linked list.

6. Write a program to search an item in a given list using Linear Search and Binary Search

7. Write a program for Quick Sort

8. Write a program for Merge Sort

9. Write a program for insertion sort

10. Write a program for Bubble Sort.

11. Write a program for Selection Sort.

12. Write a program for Graph traversals

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(With Effect from Academic Year 2019-'20)

COMPUTER SCIENCE	CCSC 403C	2020-'21	B.Com.(C.A.)

SEMESTER – IV   PAPER – IV   Max. Marks 70

Syllabus   PROGMAMMING IN C

NO Of Hours: 5No Of Credits: 3   **Pass Marks 28**

COURSE OUTCOMES:

CO1: Analyze a given problem and develop an algorithm to solve the problem

CO2: Understand the C tokens and control structures.

CO3: Understand to handle arrays and strings

CO4: Use the 'C' language constructs in the right way using pointers, structures and unions

CO5: Design, develop and test programs written in 'C' files.

.**Unit- I: Introduction to Algorithms and Programming Languages:**   **12 Hrs**

Algorithm – Key features of Algorithms – Some more Algorithms – Flow Charts. Introduction to C: Structure of C Program – Writing the first C Program – Compiling and Executing C Programs Using Comments – Keywords – Identifiers – Basic Data Types in C – Variables Constants – I/O Statements in C- Operators in C- Programming Examples – Type Conversion and Type Casting

Unit-II: Decision Control and Looping Statements   **12 Hrs**

Introduction to Decision Control Statements – Conditional Branching Statements – Iterative Statements – Nested Loops – Break and Continue Statement – Go to Statement

Unit- III: Functions   **12 Hrs**

Introduction – using functions – Function declaration/ prototype – Function definition – function call – return statement – Passing parameters – Scope of variables – Storage Classes – Recursive function

Unit- IV: Arrays   **12 Hrs**

Introduction – Declaration of Arrays – Accessing elements of the Array – Storing Values in Array Calculating the length of the Array – Operations on Array – one dimensional array for inter-function communication – Two dimensional Arrays –Operations on Two Dimensional Arrays

Strings: Introduction String and Character functions

Unit-V: Pointers: **12 Hrs**

Understanding Computer Memory – Introduction to Pointers – declaring Pointer Variables Passing Arguments to Functions using Pointer.

Structure, Union, and Enumerated Data Types: Introduction – Nested Structures – Unions – Enumerated Data Types.

Reference Books:

1. Reema Thareja, Introduction to C programming, Oxford University Press.

2. E Balagurusamy, Computing Fundamentals & C Programming – Tata McGraw-Hill, 2008.

3. Ashok N Kamthane, Programming with ANSI and Turbo C, Pearson Publisher, 2002.

4. Henry Mulish & Hubert L.Coo Reema Thareja: The Spirit of C: An Introduction to Modern Programming, Jaico Publishing House, 1996.

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COMPUTER SCIENCE	CCSC-403P	2020-'21	B.Com.(C.A.)

SEMESTER – IV   PAPER – IV   Max. Marks 50   Pass Marks 20

LABLIST PROGRAMMING IN C

No. of Hours per week: 2   External: 25   Internal: 25   Credits: 2

1. Find out the given number is perfect number or not using c program.

2. Write a C program to check whether the given number is Armstrong or not.

3. Write a program to find roots of quadratic equation.

   Root 1 = (-b + sqrt (b^2 - 4ac) / 2a   Root 2 = (-b - sqrt (b^2 - 4ac) / 2a

4. Write a C program to find the sum of individual digits of a positive integer.

5. Write a C program to print the Fibonacci series

6. Write a C program to generate the first n terms of the Fibonacci sequence.

7. Write a program to find factorial of a given number using recursion

8. Write a program to perform all arithmetic operations using switch case

9. Write a C program to generate all the prime numbers between 1 and n, where n is a Value supplied by the user.

10. Write a C program to find both the largest and smallest number in a list of integers.

11. Write a C program that uses functions to perform the following:

     a.   Addition of Two Matrices

     b.   Multiplication of Two Matrices

12. Write a program to perform various string operations

13. Write a program to swap two numbers using pointers.

14. Write C program that implements searching of given item in a given list

15. Write a C program to sort a given list of integers in ascending order

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COMPUTER SCIENCE	CSC-201C	2020-'21	B.Sc.(MPCs. , MCCs.)

SEMESTER – II   PAPER – II   Max. Marks 70   Pass Marks 28   Total Hrs: 60

Syllabus:DATA STRUCTURES USING C

NO. Of. Hours: 4   **Credits:3**

Course Objectives

To introduce the fundamental concept of data structures and to emphasize the importance of various data structures in developing and implementing efficient algorithms.

COURSE OUTCOMES:

CO1: Understand available Data Structures for data storage and processing.

CO2: Comprehend Data Structure and their real-time applications - Stack, Queue, Linked List, Trees & Graph

CO3: Choose a suitable Data Structures for an application

CO4: Develop ability to implement different Sorting and Search methods

CO5: Have knowledge on Data Structures basic operations like insert, delete, search, update and traversal

CO6: Design and develop programs using various data structures

CO7: Implement the applications of algorithms for sorting, pattern matching etc

UNIT – I: **10Hrs**

Introduction to Data Structures: Introduction to the Theory of Data Structures, Data Representation, Abstract Data Types, Data Types, Primitive Data Types, Data Structure and Structured Type, Program Design, Algorithms, Different Approaches to Designing an Algorithm, Complexity, Big 'O' Notation, Algorithm Analysis.

Arrays: Introduction to Linear and Non- Linear Data Structures, One- Dimensional Arrays, Array Operations, Two- Dimensional arrays, Multidimensional Arrays, Pointers and Arrays, an Overview of Pointers

UNIT – II: **10Hrs**

Linked Lists: Introduction to Lists and Linked Lists, Dynamic Memory Allocation, Basic Linked List Operations, Doubly Linked List, Circular Linked List.

Stacks: Introduction to Stacks, Stack as an Abstract Data Type, Representation of Stacks through Arrays, Representation of Stacks through Linked Lists, Applications of Stacks, Stacks and Recursion

Queues: Introduction, Queue as an Abstract data Type, Representation of Queues, Circular Queues, Double Ended Queues- Deques, Priority Queues, Application of Queues

UNIT – III: **10Hrs**

Binary Trees: Introduction Non- Linear Data Structures, Introduction Binary Trees, Types of Trees, Basic Definition of Binary Trees, Properties of Binary Trees, Representation of Binary Trees, Operations on a Binary Search Tree, Binary Tree Traversal, Counting Number of Binary Trees, Applications of Binary Tree

UNIT – IV: **10Hrs**

Graphs: Introduction, Terms Associated with Graphs, Sequential Representation of Graphs, Linked Representation of Graphs, Traversal of Graphs, Spanning Trees, Shortest Path, Application of Graphs.

UNIT – V: **10Hrs**

Searching and sorting: An Introduction, Bubble Sort, Insertion Sort, Merge Sort, Searching – An Introduction, Linear or Sequential Search, Binary Search, Indexed Sequential Search

UNIT – VI: **10Hrs**

Term Papers: Introduction, Latest Topics for Pursuing Research in Technology and Computer Science, Literature survey.

Note: Unit VI only for Internal Assessment
BOOKS:
1. "Data Structures using C", ISRD group Second Edition, TMH
2. "Data Structures through C", Yashavant Kanetkar, BPB Publications
3. "Data Structures Using C" Balagurusamy E. TMH

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SEMESTER –II   **PAPER – II**   **Total: 60 Hrs**

Lab List   **DATA STRUCTURES USING C'**   **Pass Marks 20**

No. of Hours per week: 2   **External: 25**   **Internal: 25**   **Credits: 2**

DATA STRUCTURES USING C LAB CYCLE

1. Write a program to read 'N' numbers of elements into an array and also perform the following operation on an array
   a. Add an element at the begging of an array
   b. Insert an element at given index of array
   c. Update a element using a values and index
   d. Delete an existing element

2. Write a program using stacks to convert a given
   a. postfix expression to prefix
   b. prefix expression to postfix
   c. infix expression to postfix

3. Write Programs to implement the Stack operations using an array

4. Write Programs to implement the Stack operations using Liked List.

5. Write Programs to implement the Queue operations using an array.

6. Write Programs to implement the Queue operations using Liked List.

7. Write a program for arithmetic expression evaluation.

8. Write a program for Binary Search Tree Traversals

9. Write a program to implement dequeue using a doubly linked list.

10. Write a program to search an item in a given list using the following Searching Algorithms
    a. Linear Search
    b. Binary Search.

11. Write a program for implementation of the following Sorting Algorithms
    a. Bubble Sort
    b. Insertion Sort
    c. Quick Sort

12. Write a program for polynomial addition using single linked list

13. Write a program to find out shortest path between given Source Node and Destination Node in a given graph using Dijkstrar's algorithm.

14. Write a program to implement Depth First Search graph traversals algorithm

15. Write a program to implement Breadth First Search graph traversals algorithm.

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COMPUTER SCIENCE	CCSC-203C	2020-'21	B.Com.(C.A)

SEMESTER –II   PAPER – II   Max. Marks 70   Pass Marks 28   Totals Hrs 60

Syllabus:E-COMMERCE & WEB DESIGNING NO. Of. Hours: 4Credits:3

CO1: Students would be able to analyse the concept of business models and standards.

CO2: Students would be able to understand the electronic market and market place.

CO3: Students would be able to understand the Hardware and Software of Server**.**

CO4: Understand the basic structure of a HTML design and develop a website using different text

Formatting tags, images, links, lists and tables.

CO5:   Understand to style a webpage using CSS.

Unit I: Introduction: **10Hr's**

Introduction to Internet: Internet Terminology History of the Internet Advantages& disadvantages of Internet how internet works

Electronic Commerce: Definition, types, advantages and disadvantages, E-Commerce transaction on World Wide Web. Electronic Market-Online shopping, three models of Electronic Market–E-Business.

Unit-II: E-payment System   **10Hr's**

Models and methods of e-payments (Debit Card, Credit Card, Smart Cards, emoney) Digital Signatures (Procedure, Working and Legal Position), Payment Gateways, Online Banking (Meaning, Concepts, Importance), Risks Involved in e-payments**.**

Unit-III: On-line Business Transactions: **10Hr's**

Meaning,Purpose,AdvantagesandDisadvantagesofTransactingOnline, E-Commerce Applications in Various Industries Like (Banking, Insurance, Payment of Bills), Benefits, ProblemsandFeatures,OnlineServices(Financial,TravelandCareer),OnlineLearning,Online Shopping (Amazon, Flipkart,etc.)

Unit-IV: Website Designing   **10Hr's**

Introduction to HTML: Basic HTML, HTML document structure HTML tags Base font tag titletagbodytagHorizontalRuleTag-TextformattingtagsCharactertags.**HTMLLists:**OrderedList,UnorderedList&Definition ListUsingcolors UsingImages

Unit V: Website Designing: Hyperlinks: 10Hr's

Textual links, Graphical links, And types of document links, anchor tag, Image Tag HTML Tables tablecreationstags,NestedTables,Frames:Frameintroduction-framecreationtagsNested Frames, Forms.

Unit VI: Ms Excel: **10Hr's**

Overview of Excel features – Creating a new worksheet, Selecting cells, Entering and editing Text, Numbers, Formulae, Referencing cells – Inserting Rows/Columns – Changing column widths and row heights, auto format, changing font sizes, colors, shading and attributes – Data Sorting and Filters – Functions – Functions requiring Addins, Functions by category Creating different types of Charts

Note: Unit VI only for Internal Assessment

References: **1.**E-commerceandE-Business,Himalayapublishers

2. E-Commerce by Kenneth C Laudon, PEARSONINDIA

3. WebDesign:IntroductorywithMind TapJenniferTCampbell,CengageIndia

4.Html & Web Design:Tips& Techniques Jamsa, Kris, McgrawHill

5. FundamentalsOfWebDevelopmentbyRandyConnolly,RicardoHoar,

6.HTML & CSS: COMPLETE REFERENCE POWELL, THOMAS, McGraw-Hill.

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COMPUTER SCIENCE	CSC-203P	2020-21	B.Com.(C.A.)

SEMESTER – II   PAPER – II   Max. Marks: 50   Pass Mark: 20
Lab List: E-COMMERCE & WEB DESIGNINGLAB

No. Of Hours per week: 2   External: 25   Internal: 25   Credits: 2

1. Describe Internet and its features.

2. advantages and disadvantages, E-Commerce

3. Explain about Payment gateways? E-Commerce

4. Applications in Various Industries

5. Creation of simple web page using formatting tags

6. Creation of lists and Tables.

7. Creation of web page with text tags

8. Creation of tables with attributes

9. Creation of hyperlinks

10. Creation of hyperlinks and including images

11. Creation of forms

12. Creation of frame sets

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COMPUTER SCIENCE	ICT-I-201	2020-'21	B.A, B.Com, B.Sc.

SEMESTER – II   PAPER – I   Max. Marks 50   Pass Marks 20   Total Hrs: 30

Syllabus: INFORMATION & COMMUNICATION TECHNOLOGY

NO. Of Hrs: 2   **Credits: 2**

Objectives:

This course aims at acquainting the students with basic ICT tools which help them in their day to day and life as well as in office and research.

COURSE OUTCOMES: After completion of the course, student will be able to;

CO1. Understand the literature of social networks and their properties.

CO2. Explain which network is suitable for whom.

CO3. Develop skills to use various social networking sites like twitter, flicker, etc.

CO4. Learn few GOI digital initiatives in higher education.

CO5. Apply skills to use online forums, docs, spreadsheets, etc for communication, collaboration and research.

CO6. Get acquainted with internet threats and security mechanisms

Unit-I: Basics of Computers   **6 Hrs**

Definition of a Computer - Characteristics and Applications of Computers – Block Diagram of computer, What is Network, Definition, Network Types, Network Topologies, OSI MODEL

UNIT-II: **8 Hrs**

Fundamentals of Internet: What is Internet?, Internet applications, Internet Addressing – Entering a Web Site Address, URL–Components of URL, Searching the Internet, Browser – Types of Browsers, Introduction to Social Networking: Twitter, Tumbler, LinkedIn, Face book, flicker, Skype, yahoo, YouTube, WhatsApp .

UNIT-III: **8 Hrs**

E-mail: Definition of E-mail -Advantages and Disadvantages –User Ids, Passwords, Email Addresses, Domain Names, Mailers, Message Components, Message Composition, Mail Management.

G-Suite: Google drive, Google documents, Google spread sheets, Google Slides and Google forms.

UNIT-IV: **8Hrs**

Overview of Internet security, E-mail threats and secures E-mail, Viruses and antivirus software, Firewalls, Cryptography, Digital signatures, Copyright issues.

What are GOI digital initiatives in higher education? (SWAYAM, SwayamPrabha, National Academic Depository, National Digital Library of India, E-Sodh-Sindhu, Virtual labs, e-acharya, e-Yantra and NPTEL).

Reference Books:

1. In-line/On-line: Fundamentals of the Internet and the World Wide Web, 2/e – by Raymond Green law and Ellen Hepp, Publishers: TMH

2. Internet technology and Web design, ISRD group, TMH.

3. Information Technology – The breaking wave, Dennis P.Curtin, Kim Foley, Kunai Sen and Cathleen Morin, TMH.

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Siddhartha Degree College of Arts & Science
Vuyyuru– 521165, Krishna District, Andhra Pradesh
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ISO 9001:2015 Certified Institution

DEPARTMENT OF COMPUTER SCIENCE (PG)

2020-21

HIGHLIGHTED SYLLABUS OF M.Sc. (Computer Science)

Courses on Employability, Skill-Development and Entrepreneurship in the curriculum of all programs are highlighted as mentioned:

Employability

Skill-Development

Entrepreneurship

20MCS101: DATA STRUCTURES

Details of the syllabus

Unit 1	**Introduction and Overview** : Elementary Data Organization, Data Structures, Data Structure Operations, Algorithms: Complexity, Time-Space Tradeoff. **Preliminaries** : Mathematical Notations and Functions, Algorithmic Notation, Control Structures, Complexity of Algorithms. Other Asymptotic Notations, Sub algorithms, Variables, Data Types
Unit 2	**String Processing :** Storing Strings, Character Data Type, String Operations, Word Processing, Pattern Matching Algorithms. **Arrays, Records and Pointers :** Linear Arrays, Representation and Traversing Linear Arrays, Inserting and Deleting, Bubble Sort, Linear Search, Binary Search, Multidimensional Arrays, Pointer Arrays, Record Structures, Representation of records in memory, Parallel Arrays, Matrices, Sparse Matrices.
Unit 3	**Linked Lists :** Representation, Traversing, Searching, Memory Allocation: Garbage Collection, Insertion, Deletion, Header Linked Lists Two-Way Lists. **Stacks, Queues, Recursion :** Stacks, Array representation, Linked List representation, Evaluation of Arithmetic Expressions, Quick sort, Recursion, Towers of Hanoi, Queues, Linked representation of Queues, Deques, Priority Queues.
Unit 4	**Trees** : Binary trees, Representing and traversing binary trees, Traversal algorithms using stacks, Header nodes, Binary Search Trees, Searching, Insertion and Deletion in Binary Search Trees, AVL Search Trees, Insertion and Deletion in AVL trees, m-way search trees, searching, insertion and deletion in m-way search tree, Heap: Heap Sort, Huffman's Algorithms, General Trees
Unit 5	**Graphs**: Terminology, Sequential representation of Graphs, Warshall's Algorithm, Linked representation of Graphs, Operations on Graphs, Traversing a Graph, Topological Sorting. **Sorting and Searching** : Insertion Sort, Selection sort, Merging, Merge sort, Radix sort, Searching and Data modification, Hashing.

20MCS102: PROGRAMMING AND PROBLEM SOLVING USING PYTHON

Details of the syllabus

Unit 1	**Basics of Python Programming**-Features of Python, History of Python, The Future of Python, Writing and Executing First Python Program, Literal Constants, Variables and Identifiers, Data Types, Input Operation, Comments, Reserved Words, Indentation, Operators and Expressions, Expressions in Python, Operations on Strings, Other Data Types, Type Conversion.
Unit 2	**Decision Control Statements**-Conditional Branching Statements, Basic Loop Structures, Nested Loops, The break statement, The continue statement, The pass statement. The else statement used with loops. **Functions and Modules**- Function Definition, Function Call, Variable Scope and Lifetime, The return statement, More on Defining Functions, Recursive functions, Modules, Packages in Python, Standard Library Modules.
Unit 3	**Python Strings Revisited**-Concatenating, Appending and Multiplying Strings, String formatting operator, Built in String Methods and Functions, Comparing Strings, Regular Expressions. **Data Structures-** Sequence, Lists, Functional Programming, Tuple, Sets, Dictionaries.
Unit 4	**Classes and Objects**- Classes and Objects, Class Method and self Argument, Class variables and Object Variables, Public and Private Data Members, Private Methods, Calling a Class Method from Another Class Method, Built-in Class Attributes, Class Methods, Static Methods.
Unit 5	**Inheritance**- Inheriting Classes in Python, Types of Inheritance, Abstract Classes and Interfaces. **Error and Exception Handling**- Introduction to Errors and Exceptions, Handling Exceptions, Raising Exceptions, Built- in and User defined Exceptions **Operator Overloading-** Concept of Operator Overloading, Advantage of Operator Overloading, Implementing Operator Overloading.

20MCS103: COMPUTER ORGANIZATION

Details of the syllabus

Unit 1	**Digital Logic Circuits**: Digital Computers, Logic Gates, Boolean algebra, Map Simplification, Combinational Circuits, Flip-flops, Sequential Circuits. **Digital Components**: Integrated Circuits, Decoders, Multiplexers, Registers, Shift Registers, Binary Counters, Memory Unit. **Data Representation**: Data types, Complements, Fixed-point Representation, Floating-point representation, other binary codes, Error detection Codes.
Unit 2	**Register Transfer and Micro operations**: Register transfer language, Register transfer, Bus & memory Transfers, Arithmetic micro operations, logic micro operations, Shift micro operations, Arithmetic Logic Shift Unit **Basic Computer Organization and Design**: Instruction Codes, Computer registers, Computer Instructions, Timing and Control, Instruction Cycle, Memory-Reference Instructions, Input-output Interrupt.
Unit 3	**Micro programmed Control:** Control memory, Address Sequencing, Micro program Example, Design of control Unit. **Central Processing Unit**: General Register Organization, Stack Organization, Instruction Formats, Addressing Modes, Data Transfer and Manipulation, Program Control.
Unit 4	**Pipeline and Vector Processing:** Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline, Vector Processing, Array Processors. **Computer Arithmetic**: Introduction, Addition and subtraction, Multiplication Algorithm, Floating point arithmetic operations, Decimal Arithmetic unit, Decimal Arithmetic operations.
Unit 5	**Input-Output Organization**: Peripheral Devices, Input-Output Interface, Asynchronous Data Transfer, Modes of Transfer, Priority Interrupt, Direct Memory Access (DMA). **Memory Organization**: Memory Hierarchy, Main Memory, Auxiliary Memory, Associative Memory, Cache Memory, Virtual Memory.

20MCS104: FORMAL LANGUAGES AND AUTOMATA THEORY

Details of the syllabus

Unit 1	**Fundamentals:** Strings, Alphabet, Language, Operations, finite automaton model, acceptance of strings, and languages, FA, transition diagrams and Language recognizers. **Finite Automata:** Deterministic finite automaton, Non deterministic finite automaton and NFA with ε transitions - Significance, acceptance of languages, equivalence between NFA with and without ε transitions, NFA to DFA conversion, minimization of FSM, equivalence between two FSMs, Finite Automata with output- Moore and Mealy machines.
Unit 2	**Regular Languages:** Regular sets, regular expressions, identity rules, construction of finite automata for a given regular expressions and its inter conversion, Pumping lemma of regular sets, closure properties of regular sets (proofs not required).
Unit 3	**Grammar Formalism:** Regular grammars-right linear and left linear grammars, equivalence between regular linear grammar and FA, inter conversion, Context free grammar, derivation trees, sentential forms, right most and leftmost derivation of strings. **Context Free Grammars:** Ambiguity in context free grammars. Minimization of Context Free Grammars. Chomsky normal form, Greibach normal form, Pumping Lemma for Context Free Languages. Enumeration properties of CFL (proofs not required).
Unit 4	**Push down Automata:** Definition, model, design of PDA, acceptance by final state and acceptance by empty stack, equivalence of CFL and PDA, interconversion (proofs not required), Introduction to DCFL and DPDA.
Unit 5	**Turing Machine:** Definition, model, design of TM, recursively enumerable languages and recursive languages, types of Turing machines (proofs not required). **Computability Theory:** Chomsky hierarchy of languages, decidability of problems, undecidability of Posts Correspondence problem, Definition of P and NP problems.

MCS201: DESIGN AND ANALYSIS OF ALGORITHMS

Details of the syllabus

it 1	**Introduction to Algorithm** : Algorithm definition, properties, Different areas to study about Algorithms, Pseudo code expressions for an algorithm, Performance Analysis, Time Complexity & Space Complexity, Asymptotic notations **Elementary Data Structures:** Stacks and Queues, Trees: Terminology - Binary Trees, Dictionaries : Binary Search Trees, Heaps,Heapsort, Sets and disjoint set Union: Introduction - union and find operations. ; Graphs: Introduction - Definitions - Graph Representations.
it 2	**Introduction to Divide and Conquer** : Binary search, Binary search analysis, Quick sort, Quick sort analysis, Merge sort, Merge sort Analysis, Strassen's matrix multiplication, Finding Maximum and minimum. **Greedy Method** : Introduction, General method, Job sequencing with deadlines, single source shortest path problem, Optimal storage on tapes, Knapsack problem, Minimum cost spanning trees : Prim's Algorithm, Kruskal's Algorithm.
it 3	**Dynamic Programming** : Single source shortest path problem, Multi stage graphs, All pairs shortest path, Optimal Binary search tree, 0/1 Knapsack problem, Reliability design, Travelling person Problem, Flow shop scheduling. **Basic Traversal and Search Techniques:** Techniques for Binary Trees, Techniques for graphs: Breadth First Search and Traversal-Depth First Search; Connected Components and Spanning Trees -Bi-connected components and DFS
it 4	**Introduction to Backtracking :** General method, N-queens problem, sum of sub sets problem, Graph coloring, Hamiltonian cycles, Knapsack problem. **Branch and Bound :** The Method: Least Cost search -The 15 puzzle - control abstractions for LC search - Bounding - FIFO Branch and Bound - LC Branch and Bound; 0/1 knapsack problem: LC Branch and Bound solution - FIFO Branch and Bound solution; Traveling Sales person.

it 5	**NP-Hard and NP -complete problems :** Basic concepts : Non deterministic algorithms -The classes NP hard and NP complex; Cook's theorem - NP hard graph problems : Clique Decision Problem -Node cover decision problem chromatic number decision problem - Directed Hamiltonian cycle - Traveling sales person decision problem - and/or graph decision problem; NP-hard scheduling Problems: scheduling identical processors - flow shop scheduling -job shop scheduling; NP-hard code generation problems: code generation with common sub expressions -Implementing parallel assignment instructions; Some simplified NP-hard problems.

Text books

	Author	Title	Publisher
1	Sartaj Sahni	Fundamentals of Computer Algorithms.	2nd Edition, University Press

Reference books

	Author	Title	Publisher
1	Anany Levitin	Introduction to the Design & Analysis of Algorithms	2nd Edition, Pearson Education
2	I Chandra Mohan	Design and Analysis of Algorithms	PHI
3	Prabhakar Gupta and Vineet Agarwal	Design and Analysis of Algorithms	PHI
4	Parag Himanshu Dave	Design and Analysis of Algorithms	Pearson Education

20MCS202: SOFTWARE ENGINEERING

Details of the syllabus

Unit 1	**Introduction to software Engineering**- The Evolution Role of software, Software, Quality of Software, Software Evolution. Software Engineering Process Models- prescriptive models, waterfall model, Incremental model, RAD model, Evolutionary process model.
Unit 2	**Software Architecture** – Software Architecture, Data design, Architecture styles and patterns, Architectural design, mapping data flow into software architecture. Software Analysis Model- Requirements analysis, Data modeling concepts, Object-oriented modeling, Class- based modeling, flow-oriented modeling.
Unit 3	**Software Design Engineering**- Design within the context of software Engineering, Design process and quality, Design concepts, Design model, Pattern based software design. Software Testing Strategies – Static approach to software testing, Validation testing, System testing, Black-Box testing, White-Box testing, Object oriented testing models, Art of Debugging.
Unit 4	**Software Metrics**- Framework for product metrics, Metrics for analysis, Design, Source code, testing and maintenance, Metrics for process and project domains. Software Re-Engineering- Software Re-Engineering, Reverse Engineering, Restructuring, Forward engineering.
Unit 5	**Project Organization & Responsibilities**-, Project organizations, evolution of organizations. Process Automation- Automation building blocks, project environment. Project control & Process Instrumentation- The seven core metrics, Management indicators, Quality indicators, Life cycle expectations, Programmatic software metrics, Metrics automation, tailoring the process, Process discriminates.

Text books

	Author	Title
1	Roger S. Pressman	Software Engineering-A practitioner's Approach
2	Walker Royce	Software Project Management- A unified Framework

20MCS203: OPERATING SYSTEMS

Details of the syllabus

Unit 1	**Introduction:** Where does an operating system fit in? : System Levels, What Operating Systems do? : Hardware Resources, Resource Management, Virtual Computers, A Virtual Computer: Virtual Processor, Virtual Primary Memory, Virtual Secondary Memory, Virtual I/O. **The Hardware Interface:** The CPU: General- Purpose Registers, Control Registers, Processor Modes, Instruction Set, Machine Instructions in C++ code, Memory and Addressing, Interrupts, I/O Devices: Disk Controller.
Unit 2	**The Operating System Interface:** What are System Calls? : How to Make a System Call, What is a System Call Interface?, An Example System Call Interface: System Call Overview, Hierarchical File Naming System, File and I/O System Calls, open Files, Examples of File I/O, Naming Operating System Objects, Devices as files: Unification of the File and Device Concepts, The Process Concept: Processes and programs, process Management System Calls, Communication between Processes: Communication-Related System Calls, Example of Interprocess Communication, UNIX-Style Process Creation, Standard Input and Standard Output: Communicating with Pipes, Naming of Pipes and Message Queues, Summary of System Call Interfaces.
Unit 3	**Implementing Processes:** The System Call Interface, Implementation of a Simple Operating System: Guide to the Code, The Architecture, Implementation of Processes: Process Creation, process States, Process Dispatching, Flow of Control Through the Operating System.
Unit 4	**Memory Management:** Levels of Memory Management, Linking and Loading a Process: Creating a Load Module, loading a Load Module, Allocating Memory in a Running Process,, Variations in Program Loading: Load Time Dynamic Linking, Run Time Dynamic Linking, Solutions to the Memory Management Design Problem: Static Division into a Fixed Number of Blocks, Buddy Systems, powers-of-two Allocation, Dynamic Memory Allocation, Keeping Track of the Blocks: The List Method, Keeping Allocated Blocks on the Block List, Examples of Dynamic Memory

		Allocation: Logical and Physical Memory, Allocating Memory to Processes, Static Memory Management. **Virtual Memory:** Fragmentation and Compaction, Dealing with Fragmentation: Separate code and Data Spaces, Segments Noncontiguous Address Spaces, page Tables in Hardware Registers, Page Tables in Memory, Using a Page Table Cache, Analysis Models of Paging with Caching, Memory Allocation with Paging, Terminology: Page and Page Frame, Page Tables, Paging Summary.
Unit 5		**Virtual Memory Systems:** Page Replacement, Global Page Replacement Algorithms: Measuring the Performance of a Page Replacement Algorithm, Optimal Page Replacement, Theories of Program paging Behavior, Random Page Replacement, First In First Out FIFO Page Replacement, Least Recently Used Page Replacement, Approximations of LRU, Clock Algorithms, Page Replacement Examples, Local Page Replacement Algorithms: What Is a Working Set?, Program Phases, Variable Resident Set Sizes, The Working Set Paging Algorithm, Approximating the Working Set, WSClock Paging Algorithm.

Text books

	Author	Title	Publisher
1	Charles Crowley	Operating Systems: A Design-Oriented Approach	TATA MCGRA-HILL EDITION.

Reference books

	Author	Title	Publisher
1	Abraham Silberchatz, Peter B. Galvin, Greg Gagne	Operating System Principles	8th Edition, Wiley Student Edition.
2	Naresh Chauhan	Principles of Operating Systems	OXFORD University Press
3	Sumitabhadas	Unix Concept and application	----
4	YashwantKanetkar	Unix Shell Programming	----

20MCS204: DATABASE MANAGEMENT SYSTEMS

Unit 1	**Databases and Database Users**: Introduction, Characteristics of the Database Approach, Actors on the Scene, Workers behind the scene, Advantages of the using the DBMS Approach.
	Database System Concepts and Architecture: Data Models, Schemas and Instances, Three Schema architecture and Data Independence, Database Languages and Interfaces, Centralized and Client/Server Architecture for DBMS, Classification of Database Management Systems.
Unit 2	**Data Modeling Using the ER Model**: Conceptual Data models, Entity Types, Entity Sets, Attributes and Keys, Relationship types, Relationship sets, roles and structural Constraints, Weak Entity types, Relationship Types of Degree Higher than Two, Refining the ER Design for the COMPANY Database.
	The Relational Algebra and Relational Calculus: Unary Relational Operations: SELECT and PROJECT, Relational Algebra Operations from set Theory, Binary Relational Operations: JOIN and DIVISION, Additional Relational Operations, Examples, The Tuple Calculus and Domain Calculus.
	The Enhanced Entity-Relationship Model: Sub classes, Super classes and Inheritance, Specialization and Generalization, Constraints and Characteristics of Specialization and Generalization
Unit 3	**Functional Dependencies and Normalization for Relational Databases:** Informal Design Guidelines for Relation Schemas, Functional dependencies, Normal Forms Based in Primary Keys, General Definitions of Second and Third Normal Forms, Boyce-Codd Normal Form, Multivalued Dependencies and Fourth Normal Form, Join Dependencies and Fifth Normal Form, Inclusion Dependencies.
	SQL-99: Schema Definition, Constraints, Queries and Views: SQL Data Definitions and Data Types, Specifying Constraints in SQL, Schema Change Statements on SQL, Basic Queries in SQL, More Complex SQL Queries, INSERT, DELETE and UPDATE statements in SQL, Triggers and Views.
Unit 4	**Introduction to Transaction Processing Concepts and Theory:** Introduction to

	Transaction Processing, Transaction and System Concepts, Desirable Properties of Transactions, Characterizing Schedules Based on Recoverability, Characterizing schedules Based on Serializability. **Concurrency Control Techniques:** Two Phase Locking Techniques for Concurrency Control, Concurrency Control Based on Timestamp Ordering, Multiversion Concurrency control techniques, Validation concurrency control Techniques.	
Unit 5	**Disk Storage, Basic File Structures and Hashing**: Introduction, Secondary Storage Devices, Buffering of Blocks, Placing file Records on Disk, Operations on Files, Files of Unordered Records, Files of Ordered Records, Hashing Techniques, Other Primary File Organizations, Parallelizing Disk Access using RAID Technology. **Indexing Structures for Files**: Types of Single-Level Ordered Indexes, Multilevel Indexes, Dynamic Multilevel Indexes Using B-Trees and B^+ Trees, Indexes on Multiple Keys, Other Types of Indexes.	

Text books

	Author	Title	Publisher
1	Elmasri.R and Navathe.S	Fundamentals of Database Systems.	Pearson Education (2007) **Chapters:** 1.1 to 1.6, 2, 13.1 to 13.10, 14, 3.1 to 3.6, 3.9, 4.1 to 4.5, 5, 6, 8, 10, 11, 17, 18.1 to 18.5, 25.1 to 25.3, 25.6

Reference books

	Author	Title	Publisher
1	Peter Rob, Carlos Coronel	Database Systems– Design, Implementation and Management	Eigth Edition, Thomson (2008)
2	C.J. Date, A.Kannan, S.Swamynathan	An Introduction to Database Systems	VII Edition Pearson Education (2006).
3	Raman A Mata – Toledo, Panline K. Cushman	Database Management Systems	Schaum's Outlines, TMH (2007)
4	Steven Feuerstein	Oracle PL/SQL – Programming	10th Anniversary Edition, OREILLY (2008)

Adusumilli Gopala krishnaiah & Sugar Cane Growers Siddhartha Degree

College ofArts & Science, Vuyyuru, Krishna District, Andhra Pradesh

(An Autonomous College in the Jurisdiction of Krishna University, Machilipatnam)

Accredited by NAAC with "A" GradeISO 9001:2015 Certified Institution

DEPARTMENT OF COMMERCE

HIGHLIGHTED SYLLABUS OF COMMERCE

2020-21

Syllabus in Relevance to Employability, Skill Development and Entrepreneurship **is** highlighted as mentioned: Employability in yellow Color, Skill Development in Sky blue colour and Entrepreneurship in Green colour

Employability

Skill-Development

Entrepreneurship

AG & SG SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE VUYYURU

(AUTONOMOUS)

(MANAGED BY SIDDHARTHA ACADEMY OF GENERAL & TECHNICAL EDUCATION VIJAYAWADA)

Commerce	CACC -101G/C C	2020-2021	*I.B.Com(gen/comp)*

SEMESTER – I   SYLLABUS

Fundamentals of Accounting - I

Unit-I – Introduction to Accounting

Need for Accounting – Definition – Objectives, Advantages – Book keeping and Accounting– Accounting concepts and conventions - Accounting Cycle - Classification of Accounts and its rules - Double Entry Book-keeping - Journalization - Posting to Ledgers, Balancing of ledger Accounts (problems).

Unit –II: Subsidiary Books:

Types of Subsidiary Books - Cash Book, Three-column Cash Book- Petty cash Book (Problems).

Unit-III: Trail Balance and Rectification of Errors:

Preparation of Trail balance - Errors – Meaning – Types of Errors – Rectification of Errors (Problems)

Unit-IV- Bank Reconciliation Statement:

Need for bank reconciliation - Reasons for difference between Cash Book and Pass Book Balances- Preparation of Bank Reconciliation Statement- Problems on both favorable and unfavourable balances.

Unit -V: Final Accounts:

Preparation of Final Accounts: Trading account – Profit and Loss account – Balance Sheet – Final Accounts with adjustments (Problems).

Reference Books

1. T.S.Reddy & A. Murthy, Financial Accounting , Margham Publications

2. R L Gupta & V. K Gupta, Principles and Practice of Accounting, Sultan Chand & Sons

3. S.P. Jain & K.L Narang, Accountancy-I, Kalyani Publishers

4. Tulasian, Accountancy -I, Tata McGraw Hill Co.

5. V.K.Goyal, Financial Accounting, Excel Books.

Commerce	CBOM-102 CC	2020-2021	I B.Com (CA)

SEMESTER – I

SYLLABUS

Business Organization and Management

Unit-I: Introduction:
Concepts of Business, Trade , Industry and Commerce – Features of Business -Trade Classification - Aids to Trade – Industry – Classification – Relationship among Trade, Industry and Commerce.

Unit-II: Forms of Business Organizations:
Forms of Business Organization: Sole Proprietorship, Joint Hindu Family Firm, Partnership firm, Joint Stock Company, Cooperative Society

Unit-III:Company Incorporation:
Preparation of important Documents for incorporation of Company – Memorandum of Association – Articles of Association – Differences Between Memorandum of Association and Articles of Association - Prospectus and its contents –

Unit-IV: Management:
Process of Management Planning; Decision-making; Fayol's 14 Principles of Management, Administration VS Management

Unit-V: Functional Areas of Management:
Production - Manufacturing - Make in India - Marketing Management: Marketing Concept; Marketing Mix; Product Life Cycle; Pricing Policies and Practices.

Reference Books:
1. Kaul, V.K., Business Organization and Management, Pearson Education, New Delhi.
2. Chhabra, T.N., Business Organization and Management, Sun India Publications, New Delhi.
3. Koontz and Weihrich, Essentials of Management, McGraw Hill Education.
4. Basu, C. R., Business Organization and Management, McGraw Hill Education.
5. Jim, Barry, John Chandler, Heather Clark; Organization and Management, Cengage Learning.
6. Allen, L.A., Management and Organization; McGraw Hill, New York.

Commerce	CBO -102G/C	2020-21	*I.B.Com(gen/comp)*

SEMESTER– I   <u>SYLLABUS</u>

<u>Business Organization</u>

Unit-I–Introduction

Concepts of Business, Trade , Industry and Commerce – Features of Business – Trade Classification - Aids to Trade – Industry – Classification – Relationship of Trade, Industry and Commerce.

UnitII-Business Functions and Entrepreneurship

Functions of Business and their relationship - Factors influencing the choice of suitable form oforganization – Meaning of Entrepreneurship – Characteristics of a good entrepreneur - Types –Functions of Entrepreneurship.

Unit–III –Forms of Business Organizations

Sole Proprietorship – Meaning – Characteristics – Advantages and Disadvantages – Partnership -Meaning – Characteristics- Kinds of partners – Advantages and Disadvantages – PartnershipDeed– Hindu-undivided Family–CooperativeSocieties.

Unit-IV-JointStockCompany

Joint Stock Company – Meaning – Characteristics –Advantages – Kinds of Companies -Differencesbetween Private Ltd andPublic Ltd Companies.

Unit-V-CompanyIncorporation

Preparation of important Documents for incorporation of Company – Memorandum ofAssociation – Articles of Association – Differences Between Memorandum of Association andArticlesof Association-Prospectusanditscontents.

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| Commerce | CBEN -103G/ C | 2020-2021 | *I.B.Com(gen)* |

SEMESTER – I SYLLABUS

Business Environment

Unit-I: Overview of Business Environment
Business Environment – Meaning – Macro and Micro Dimensions of Business Environment – Economic – Political – Social – Technological – Legal – Ecological – Cultural – Demographic – Changing Scenario and implications – Indian Perspective – Global perspective
.

Unit-II: Economic Growth
Meaning of Economic growth – Factors Influencing Development – Balanced Regional Development.

Unit-III: Development and Planning
Rostow's stages of economic development - Meaning – Types of plans – Main objects of planning in India – NITI Ayog and National Development Council – Five year plans.

Unit-IV;Economic Policies
Economic Reforms and New Economic Policy – New Industrial Policy – Competition Law – Fiscal Policy – Objectives and Limitations – Union budget – Structure and importance of Union budget – Monetary policy and RBI.

Unit-V : Social, Political and Legal Environment
 Concept of Social Justice - Schemes - Political Stability - Legal Changes.

Suggested Readings:
1   Rosy Joshi and Sangam Kapoor : Business Environment.
2   Francis Cherunilam : Business Environment.
3   S.K. Mishra and V.K. Puri : Economic Environment of Business.

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Commerce	*CIP-102G/C C*	*2020-2021*	*I.B.Com(gen&comp)*

SEMESTER –I   SYLLABUS:

INSURANCE PROMOTION
Skill Development Course

Unit-I: Introduction of Insurance –
Types of insurances. Growth of Insurance sector in India - Regulatory mechanism (IRDA) - Its functions

Unit-II: Life Insurance plans. Health insurance plans.
Products and features. Contents of documents– Sales Promotion methods - Finding prospective customers –Counselling – Helping customers in filing - Extending post-insurance service to customers.

Unit- III : General Insurance –
 It's products (Motor, Marine, Machinery, Fire, Travel and Transportation) and features. Contents of documents. Dealing with customers – Explaining Products to Customers - Promoting Customer loyalty. Maintenance of Records.

Reference books:
1. Principles of Insurance, Himalaya publishing House
2. Principles and Practice of Insurance,
3. Fundamentals of insurance,
 4. Life and General Insurance Management,
 5. Financial services, Tata McGraw hill
 6. Insurance Principles and Practices, Sultan Chand &Son

Commerce	*CCA-301G/C C*	*2020-2021*	*II.B.Com(gen/comp)*

SEMESTER –III   *SYLLABUS*

Corporate Accounting

Unit -I: Accounting for Share Capital –
Issue, forfeiture and reissue of forfeited shares- concept &process of book building - Issue of rights and bonus shares - Buyback of shares (preparation of Journal and Ledger).

Unit-II:Profits prior to incorporation
-Nature –need- ascertainment - treatment of   profit /loss.(Includingproblems).

Unit –III:

Valuation of Goodwill and Shares:

Need and methods - Normal Profit Method, Super Profits Method – Capitalization Method - Valuation of shares - Need for Valuation – Methods of Valuation - Net assets method, Yield basis method, Fair value method (including problems).

UNIT – IV: Company Final Accounts:
Preparation of Final Accounts – Adjustments relating to preparation of final accounts – Profit and loss account and balance sheet – Preparation of final accounts (including problems).

Unit –V : Provisions of the Companies Act, 2013
Relating to issues of shares and debentures - Book Building- Preparation of Balance Sheet and Profit and Loss Account – Schedule-III.

Reference Books:
1. Corporate Accounting – Haneef & Mukherji,
2. Corporate Accounting – RL Gupta & Radha swami
3. Corporate Accounting – P.C. Tulsian

Commerce	*CBS-302G/C C*	*2020-2021*	*II.B.Com(gen/comp)*

SEMESTER –III   <u>*SYLLABUS*</u>

Business Statistics

Unit 1: Introduction to Statistics:
Definition, importance and limitations of statistics - Collection of data - Schedule and questionnaire–Frequency distribution – Tabulation -Diagrammatic and graphic presentation of data.

Unit 2: Measures of Central Tendency:
Characteristics of measures of Central Tendency-Types of Averages – Arithmetic Mean, Geometric Mean, Harmonic Mean, Median, Mode, Deciles, Percentiles, Properties of averages and their applications.

Unit 3: Measures of dispersion and Skewness:
Properties of dispersion-Range-Quartile Deviation –Mean Deviation-Standard Deviation-Coefficient of Variation-Skewness definition-Karl Pearson's and Bowley's Measures of skewness.

Unit 4: Measures of Relation:
Meaning and use of correlation – Types of correlation-Karlpearson's correlation coefficient – Spearman's Rank correlation-probable error

Unit 5: Analysis of Time Series & Index Numbers:
Components of Time series- Measurement of trend and Seasonal Variations – Index Numbers-Methods of Construction of Index Numbers – Price Index Numbers – Quantity Index Numbers –Tests of Adequacy of Index Numbers – Cost of Index Numbers-Limitations of Index Numbers

Suggested Readings:
1. Business Statistics Reddy, C.R Deep Publications.
2. Statistics-Problems and Solutions Kapoor V.K.

Commerce	*CBTP-303G C*	*2020-2021*	*II.B.Com(gen)*

SEMESTER –III   SYLLABUS

Banking Theory & Practice

Unit-I: Introduction
Meaning & Definition of Bank – Functions of Commercial Banks – Kinds of Banks -Central Banking Vs. Commercial Banking.

Unit-II: Banking Systems
Unit Banking , Branch Banking, Investment Banking- Innovations in banking – e-banking - Online and Offshore Banking , Internet Banking - Anywhere Banking - ATMs- RTGS.

Unit-III: Banking Development
Indigenous Banking - Cooperative Banks, Regional Rural banks, SIDBI, NABARD -EXIM Bank.

Unit-IV: Banker and Customer
Meaning and Definition of Banker and customer – Types of Customers - General Relationship and Special Relationship between Banker and Customer - KYC Norms.

Unit-V: Collecting Banker and Paying Banker
Concepts - Duties & Responsibilities of Collecting Banker – Holder for Value – Holder in Due Course – Statutory Protection to Collecting Banker - Responsibilities of Paying Banker - Payment Gateways.

Books for Reference
1. Banking Theory: Law &Practice : K P M Sundram and V L Varsheney
2. Banking Theory, Law and Practice : B. Santhanam; Margam Publications
3. Banking and Financial Systems : Aryasri
4. .Introduction to Banking : Vijaya Raghavan
5. Indian Financial System : M.Y.Khan
6. Indian Financial System : Murthy & Venugopal

Commerce	*CBL-501(U)*	*2020-2021*	*III B.Com(gen/ comp)*

SEMESTER –V

SYLLABUS

Business Leadership

Unit-I: Introduction:
Leadership - Traits, Skills and Styles- Leadership Development - Qualities of a Good Leader.

Unit-II: Decision-Making and Leadership:
Leadership for Sustainability - Power, Influence, Impact - Leadership Practices - Organizations and Groups: Organizational Culture and Leadership - Leadership in Business Organizations

Unit-III: Special Topics:
Profiles of a few Inspirational Leaders in Business – Jemshedji Tata - Aditya Birla - Swaraj Paul - L N Mittal - N R Narayana Murthy - Azim Premji, etc.

References:
1. Northouse, Peter G., Leadership: Theory and Practice, Sage Publications.
2. Daloz Parks, S., Leadership can be taught: A Bold Approach for a Complex World, Boston: Harvard Business School Press.
3. Drucker Foundation (Ed.), Leading Beyond the Walls, San Francisco: Jossey Bass.
4. Al Gini and Ronald M. Green, Virtues of Outstanding Leaders: Leadership and Character, John Wiley & Sons Inc.
5. S Balasubramanian, The Art of Business Leadership – Indian Experiences, Sage Publications

Commerce	*CCOA-502 G/ C C*	*2020-2021*	*III B.Com(gen/ comp)*

SEMESTER –V

SYLLABUS

Cost Accounting

Unit-I:Introduction:
Distinguish between Financial Accounting, Cost Accounting and management accounting - Cost Concepts and Classification – Cost Centre and Cost Unit – Preparation of Cost Sheet.

Unit-II: Elements of Cost: Materials:
 Material control – Selective control, ABC technique –Methods of pricing issues – FIFO, LIFO, Weighted average, Base stock methods, choice of method(including problems).

Unit-III: Labour and Overheads:
 Labour: Control of labour costs – time keeping and time booking – Idle time –Methods of remuneration – labour incentives schemes - Overheads: Allocation and apportionment of overheads – Machine hour rate.

Unit-IV: Methods of Costing:
Job costing – Process costing - treatment of normal and abnormal process losses – preparation of process cost accounts – treatment of waste and scrap, joint products and by products (including problems).

Unit -V: Costing Techniques:
Marginal Costing – Standard costing – Variance Analysis (including problems).

References:
1. S.P. Jain and K.L. Narang – Advanced Cost Accounting, Kalyani Publishers, Ludhiana.
2. M.N. Aurora – A test book of Cost Accounting, Vikas Publishing House Pvt. Ltd.
3. S.P. Iyengar – Cost Accounting, Sultan Chand & Sons.
4. Nigam & Sharma – Cost Accounting Principles and Applications, S.Chand & Sons.
5. S.N .Maheswari – Principles of Management Accounting.
6. I.M .Pandey – Management Accounting, Vikas Publishing House Pvt. Ltd.

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| *Commerce* | *CTAX-503C C* | *2020-2021* | *III.B.Com(comp)* |

SEMESTER –V   *TAXATION*
                                  SYLLABUS

Unit-I: Introduction:
Objectives - Principles of Taxation - Brief History - Basic Concepts; Capitaland Revenue; Basis of Charge - Exempted Incomes - Residential Status – Incidence of Taxation.

Unit-II: Direct and Indirect Taxes –
Service Tax – VAT – Central Sales Tax – Latest Developments.

Unit-III: Computation of different heads income under:
Income from Salary; Income from House Property; Deductions u/s 80C to 80U - Income from Capital Gains; Income from Other Sources (simple problems).

Unit-IV: Taxation System in India:
Objectives; Tax Holiday; Modes of Tax Recovery (Section 190 and 202); Payments and Refunds; Filing of Returns.

Unit-V: Tax Planning:
Tax Avoidance and Tax Evasion; Penalties and Prosecutions; Income Tax Authorities.

References:
1. Vinod K. Singhania Direct Taxes - Law and Practice, Taxman Publication.
2. B.B. Lal: Direct Taxes, Konark Publisher (P) Ltd.
3. Bhagwati Prasad: Direct Taxes – Law and Practice, Wishwa Prakashan.
4. Dr. Mehrotra and Goyal: Direct Taxes – Law and Practice, Sahitya Bhavan Publication.

| *Commerce* | CGST-503G/C | *2020-2021* | *III.B.Com(gen)* |

GOODS &SERVICE TAX FUNDAMENTALS

SEMESTER –V

SYLLABUS

GOODS &SERVICE TAX FUNDAMENTALS

Unit I: Introduction:
Overview of GST - Concepts – Limitations of VAT – Need for Tax Reforms - Justification for introduction of GST - Shortcomings and advantages at the Central Level and State Level on introduction of GST- Process of Introduction of GST - Constitutional Amendments.

Unit II: GST: Principles
 Models of GST: Australian, Canadian, Kelkar-Shah – BagchiPoddar -Comprehensive structure of GST model in India: Single, Dual GST– Transactions covered under GST.

Unit-III:Taxes and Duties:
Subsumed under GST - Taxes and Duties outside the purview of GST: Tax on items containing Alcohol – Tax on Petroleum products - Tax on Tobacco products - Taxation of Services

Unit-IV: Inter-State Goods and Services Tax:
Major advantages of IGST Model – Interstate Goods and Service Tax: Transactions within a State under GST – Interstate Transactions under GST - Illustrations.

Unit-V: Time of Supply of Goods & Services:
Value of Supply - Input Tax Credit – Distribution of Credit -Matching of Input Tax Credit - Availability of credit in special circumstances- Cross utilization of ITC between the Central GST and the State GST.

References:
1. Goods and Services Tax in India – Notifications on different dates.
2. GST Bill 2012.
3. Background Material on Model GST Law, Sahitya Bhawan Publications, Hospital Road, Agra - 282 003.
4. The Central Goods and Services Tax Act, 2017, NO. 12 OF 2017 Published by Authority, Ministry of Law and Justice, New Delhi, the 12thApril, 2017.

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(AUTONOMOUS)
(MANAGED BY SIDDHARTHA ACADEMY OF GENERAL & TECHNICAL EDUCATION VIJAYAWADA)

Commerce	*CCG-504G/C C*	*2020-2021*	*III.B.Com(gen/comp)*

SEMESTER –V

SYLLABUS

Commercial Geography

Unit –I: The Earth:
Internal structure of the Earth – Latitude – Longitude – Realms of the Earth –Evolution of the Earth – Environmental pollution - Global Warming - Measures to be taken toprotect the Earth.

Unit -II: India – Agriculture:
Land Use - Soils - Major crops – Food and Non-food Crops –Importance of Agriculture – Problems in Agriculture – Agriculture Development.

Unit -III: India – Forestry:
Forests – Status of Forests in Andhra Pradesh – Forest (Conservation)Act, 1980 – Compensatory Afforestation Fund (CAF) Bill, 2015 - Forest Rights Act, 2006 and its Relevance – Need for protection of Forestry.

Unit -IV: India – Minerals and Mining:
Minerals – Renewable and non Renewable – Use of Minerals – Mines – Coal, Barites, etc. – Singareni Coal mines and Mangampeta Barites – District wise Profile.

Unit-V: India – Water Resources
 Rivers: Water resources - Rationality and equitable use ofwater – Protection measures - Rivers - Perennial and peninsular Rivers - Interlinking of Rivers -Experience of India and Andhra Pradesh.

References:
1. Shabiar Ahmad; Quazi ,Natural Resource Consumption and Environment Management, APH Publishing Corporation.
2. Tarachand, Economic and Commercial Geography of India, Vikas Publishing House.
3. Dr. S. Sankaran, Commercial Geography, Margam Publications, Chennai.
4. C. B. Memoria, Commercial Geography, Lal Agarwal & Co.

| *Commerce* | *CCB 505CE G/ C* | *2020-2021* | *III.B.Com(gen)* |

SEMESTER –V

SYLLABUS

Central Banking

Unit-I: Introduction:
 Evolution and Functions of Central Bank - Development of Central Banks in Developed and Developing countries - Trends in Central Bank Functions.

Unit-II: Central banking in India:
 Reserve Bank of India - Constitution and Governance, Recent Developments, RBI Act. - Interface between RBI and Banks.

Unit-III: Monetary and Credit Policies:
 Monetary policy statements of RBI - CRR - SLR – Repo Rates - Reverse Repo Rates - Currency in circulation - Credit control measures.

Unit-IV: Inflation and price control by RBI:
 Intervention mechanisms - Exchange rate stability -Rupee value - Controlling measures.

Unit-V: Supervision and Regulation:
Supervision of Banks - Basle Norms, Prudential Norms, Effect of liberalization and Globalization - Checking of money laundering and frauds.

References:
1. Reserve Bank of India Publication, Functions and Working of the RBI.
2. Vasant Desai, Central Banking and Economic Development, Himalaya Publishing.
3. S. Panandikar, Banking in India, Orient Longman.
4. Reserve Bank of India Publication, Report on Trends and Progress of Banking in India.
5. Annual Reports of Reserve Bank of India.
6. Rita Swami, Indian Banking System, International Publishing House Pt. Ltd..

| *Commerce* | *CRC-506 CE G/ C* | *2020-2021* | *III.B.Com(gen)* |

SEMESTER –V

SYLLABUS

Rural and Farm Credit

Unit-I: Rural Credit:
Objectives and Significance of Rural credit - Classification of rural credit -General Credit Card (GCC) – Financial Inclusion - Rupay Card.

Unit-II: Rural Credit Agencies:
Institutional and Non-institutional Agencies for financingagriculture and Rural development - Self-Help Groups (SHG) - Financing for Rural Industries.

Unit-III: Farm Credit:
Scope - Importance of farm credit - Principles of Farm Credit -Types- Cost of Credit - - problems and remedial measures - Kisan Credit Card (KCC) Scheme.

Unit-IV: Sources of Farm Credit:
Cooperative Credit: PACS - APCOB - NABARD SLBC- Lead Bank Scheme - Role of Commercial and Regional Rural Banks - Problems of recovery and over dues.

Unit-V: Farm Credit Analysis:
Eligibility Conditions - Analysis of 3 R's (Return, RepaymentCapacity and Risk-bearing Capacity) - Analysis of 3 C's of Credit (Character, Capacity and Capital) - Crop index reflecting use and farm credit - Rural Credit Survey Reports..

References:
1. National Bank of Agricultural and Rural Development (NABARD) Annual report.
2. Economic Survey, Government of India.
3. Rural Development, Sundaram I.S., Himalaya Publishing House, Mumbai.
4. Rural Credit in India, C.S.Rayudu, Mittal Publications.
5. Farm Credit and Co-operatives in India, Tiruloati V., Naidu. V T Naidu, Vora & Co. Pub. Ltd.

Project Work: Rural Creditsurvey/Banking operations/Credit Appraisal

HARTHA DEGREE COLLEGE OF ARTS & SCIENCE VUYYURU

(AUTONOMOUS)

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Department of Commerce

Minutes of the meeting of Board of Studies

15-4-2021

AG & SG SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE VUYYURU

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Commerce	CACC -201G/C C	2020-2021	*I.B.Com(gen/comp)*

SEMESTER – II   SYLLABUS

Fundamentals of Accounting – II

Unit-I: Depreciation
Meaning of Depreciation - Methods of Depreciation: Straight line – Written down Value – Sum of the Years' Digits - Annuity method (Problems).

Unit-II: Provisions and Reserves
Meaning – Provision vs. Reserve – Preparation of Bad debts Account – Provision for Bad and doubtful debts – Provision for Discount on Debtors – Provision for discount on creditors -Repairs and Renewals Reserve A/c (Theory only)

Unit-III: Bills of Exchange
Meaning of Bill –Features of bill – Parties in the Bill – Discounting of Bill – Renewal of Bill – Entries in the books of Drawer and Drawee (Problems).

Unit-IV: Consignment Accounts
Consignment - Features - Proforma invoice - Account sales – Del-credre Commission - Accounting treatment in the books of consigner and consignee - Valuation of closing stock - Normal and Abnormal losses (Problems).

Unit-V: Joint Venture Accounts
Joint venture - Features - Differences between Joint-venture and consignment – Accounting procedure - Methods of keeping records (Problems).

Reference Books:

1. R.L. Gupta & V.K. Gupta, Principles and Practice of Accounting, Sultan Chand

2. T. S. Reddy and A. Murthy - Financial Accounting, Margham Publications.

3. S.P. Jain & K.L Narang, Accountancy-I, Kalyani Publishers.

4. Tulsan, Accountancy-I, Tata McGraw Hill Co.

5. V.K. Goyal, Financial Accounting, Excel Books

6. T.S. Grewal, Introduction to Accountancy, Sultan Chand & Co.

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Commerce	BE-202G/C C	2020-2021	*I.B.Com(gen/comp)*

SEMESTER – II

Business Economics

Syllabus

Unit-I: Introduction:

Meaning and Definitions of Business Economics - Nature and Scope of Business Economics -Micro and Macro Economics and their Interface.

Unit-II: Demand Analysis

Meaning and Definition of Demand – Determinants to Demand –Demand Function -Law of Demand – Demand Curve – Exceptions to Law of Demand - Elasticity of Demand – Measurements of Price Elasticity of Demand

Unit – III: Production, Cost and Revenue Analysis:

Concept of Production Function – Law of Variable Proportion -Law of Returns to Scale - Classification of Costs -Break Even Analysis - Advantages

Unit-IV: Market Structure

Concept of Market – Classification of Markets -Perfect Competition – Characteristics – Equilibrium Price -Monopoly – Characteristics – Equilibrium Under Monopoly.

Unit-V: National Income:

Meaning – Definition – Measurements of National Income - Concepts of National Income - Components of National Income-Problems in Measuring National Income

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SEMESTER –II   *SYLLABUS*

Banking Theory & Practice

Unit-I: Introduction
Meaning & Definition of Bank – Functions of Commercial Banks – Kinds of Banks -Central Banking Vs. Commercial Banking.

Unit-II: Banking Systems
Unit Banking , Branch Banking, Investment Banking- Innovations in banking – e-banking - Online and Offshore Banking , Internet Banking - Anywhere Banking - ATMs- RTGS.

Unit-III: Banking Development
Indigenous Banking - Cooperative Banks, Regional Rural banks, SIDBI, NABARD -EXIM Bank.

Unit-IV: Banker and Customer
Meaning and Definition of Banker and customer – Types of Customers - GeneralRelationship and Special Relationship between Banker and Customer - KYC Norms.

Unit-V: Collecting Banker and Paying Banker
Concepts - Duties & Responsibilities of Collecting Banker – Holder for Value – Holder in Due Course – Statutory Protection to Collecting Banker - Responsibilities of Paying Banker - Payment Gateways.

Books for Reference:
1. Banking Theory: Law & Practice : K P M Sundram and V L Varsheney
2. Banking Theory, Law and Practice : B. Santhanam; Margam Publications
3. Banking and Financial Systems : Aryasri
4. .Introduction to Banking : Vijaya Raghavan
5. Indian Financial System : M.Y.Khan
6. Indian Financial System : Murthy & Venugopal

Commerce	*CASO-401G/C*	*2020-2021*	*II.B.Com(gen)*

SEMESTER –IV   *SYLLABUS*

Accounting for Service Organizations

Unit-I: Non-Trading/ Service Organizations:
Concept - Types of Service Organizations – Section (8) and other Provisions of Companies Act, 2013.

Unit – II Electricity Supply Companies:
Accounts of Electricity supply companies: Double Accounting system – Revenue Account – Net Revenue Account – Capital Account – General Balance Sheet (including problems).

Unit – III - Bank Accounts
Bank Accounts – Books and Registers to be maintained by Banks – Banking Regulation Act, 1969 - Legal Provisions Relating to preparation of Final Accounts (including problems).

Unit -IV:Life Insurance Companies
Life Insurance Companies –Preparation of Revenue Account, Profit and Loss Account, Balance Sheet (including problems) – LIC Act, 1956.

Unit – V: General Insurance
Principles – Preparation of final accounts – with special reference to fire and marine insurance (including problems) – GIC Act, 1972.

Suggested Readings
1. Corporate Accounting – RL Gupta & M. Radha Swami
2. Corporate Accounting – P.C. Tulsian
3. Company Accounts : Monga, Girish Ahuja and Shok Sehagal

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SEMESTER –IV   *SYLLABUS*

Business Laws

Unit-1 Contract
Meaning and Definition of Contract-Essential elements of valid Contract -Valid, Void and Voidable Contracts - Indian Contract Act, 1872.
Definition of Valid Offer, Acceptance and Consideration -Essential elements of a Valid Offer, Acceptance and Consideration.

Unit-2 Capacity of the Parties and Contingent Contract
Rules regarding to Minors contracts - Rules relating to contingent contracts – Different modes of discharge of contracts-Rules relating to remedies to breach of contract.

Unit-3 Sale of Goods Act 1930
Contract of sale – Sale and agreement to sell – Implied conditions and warranties –Rights of unpaid vendor.

Unit-4 Consumer Protection Act, 1986

Introduction, Aims and objectives of the Act - Definition - Consumer Rights - Unfair and restrictive trade practices - consumer protection Councils - Consumer disputes Redressal agencies - Penalties for violation.

Unit-5: Cyber Laws
Cyber Law and Contract Procedures - Digital Signature - Safety Mechanisms.

Suggested Readings:
1. J. Jayasankar, Business Laws, Margham Publication. Chennai -17
2. Kapoor ND, Mercentile Law , Sultan Chand
3. Balachandram V, Business law Tata
4. Tulsian , Business Law Tata

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SEMESTER –IV   *SYLLABUS*

Income Tax

Unit-I Introduction:
Income Tax Law – Basic concepts: Income, Person, Assesses, Assessment year, Agricultural Income, Residential status, Income exempt from tax (Theory only).

Unit-II Income from salary:
Allowances, perquisites, profits in lieu of salary, deductions from salary income, computation of salary income and qualified savings eligible for deduction u/s 80C(Simple- problems).

Unit-III Income from House Property:
Annual value, let-out/self occupied/deemed to be let-out house, deductions from annual value - computation of income from house property (Simple- problems)

Unit-IV Income from Capital Gains
Income from Capital Gains (Simple- problems).(from Individual point of view) Income from other sources (Theory)

Unit-V: Computation of total income:
Computation of total income of an individual – Deductions under section - 80 (Simple- problems).

Reference Books:
1. Dr. Vinod; K. Singhania; Direct Taxes – Law and Practice, Taxman Publications
2. B.B. Lal; Direct Taxes; Konark Publications
3. Dr. Mehrotra and Dr. Goyal; Direct Taxes – Law and Practice; Sahitya

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SEMESTER –IV   *SYLLABUS*

Banking Theory & Practice

Unit-I: Introduction
Meaning & Definition of Bank – Functions of Commercial Banks – Kinds of Banks -Central Banking Vs. Commercial Banking.

Unit-II: Banking Systems
Unit Banking , Branch Banking, Investment Banking- Innovations in banking – e-banking - Online and Offshore Banking , Internet Banking - Anywhere Banking - ATMs- RTGS.

Unit-III: Banking Development
Indigenous Banking - Cooperative Banks, Regional Rural banks, SIDBI, NABARD -EXIM Bank.

Unit-IV: Banker and Customer
Meaning and Definition of Banker and customer – Types of Customers - General Relationship and Special Relationship between Banker and Customer - KYC Norms.

Unit-V: Collecting Banker and Paying Banker
Concepts - Duties & Responsibilities of Collecting Banker – Holder for Value – Holder in Due Course – Statutory Protection to Collecting Banker - Responsibilities of Paying Banker - Payment Gateways.

Books for Reference
1. Banking Theory: Law & Practice : K P M Sundram and V L Varsheney
2. Banking Theory, Law and Practice : B. Santhanam; Margam Publications
3. Banking and Financial Systems : Aryasri
4. .Introduction to Banking : Vijaya Raghavan
5. Indian Financial System : M.Y.Khan
6. Indian Financial System : Murthy & Venugopal

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SEMESTER –VI

SYLLABUS

Event Management

Unit-I: Event Concept:
Corporate Events and Customer's needs - Types of Events - Corporate hospitality – Exhibitions – Trade Fairs – Conferences –Business and Government Meets - Corporate event packages - Menu Selection - Customization.

Unit-II: Outdoor Events:
Logistics, Types of Outdoor events, Risk management - Health and safety, Marketing and sponsorship, HR Management, Programming and Entertainment.

Unit-III: Celebrity Events:
Launches, Fashion shows, National festivals and high-profile charity events - Liaison with agents, Contract Negotiations, Client briefings, Celebrity wish lists and expectations - Liaisoning with Govt. Departments.

References:
1. Event Management: A Blooming Industry and an Eventful Career by Devesh Kishore, Ganga Sagar Singh - Har-and Publications Pvt. Ltd.
2. Event Management by Swarup K. Goyal - Adhyayan Publisher.
3. Event Management & Public Relations by Savita Mohan - Enkay Publishing House
4. Event Entertainment and Production - Mark Sonder, CSEP, Wiley & Sons, Inc.
5. Special Event Production - Doug Matthews. 6. Fenich, G. Meetings, Expositions, Events, and Conventions: An introduction to the industry. New Jersey: Pearson Prentice Hall.

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SEMESTER –VI

SYLLABUS

Marketing

Unit-I: Introduction:
Concepts of Marketing: Product Concept – Selling Concept – Societal Marketing Concept – Marketing Mix - 4 P's of Marketing – Marketing Environment.

Unit-II: Consumer Markets and Buyer Behaviour:
Buying Decision Process – Stages – Buying Behaviour – Market Segmentation – Selecting Segments – Advantages of Segmentation.

Unit-III: Product Management:
Product Life Cycle - New products, Product mix and Product line decisions - Design, Branding, Packaging and Labelling.

Unit-IV: Pricing Decision:
Factors influencing price determination, pricing strategies: Skimming and Penetration pricing.

Unit-V: Promotion and Distribution:
Mix - Advertising - Publicity – Public relations - Personal selling and Direct marketing - Distribution Channels – Online marketing- Global marketing.

References:
1. Philip Kotler, Marketing Management, Prentice Hall of India.
2. Philip Kotler & Gary Armstrong, Principles of Marketing, Pearson Prentice Hall
3. Stanton J. William & Charles Futrel, Fundamentals of Marketing, McGraw Hill Company
4. V.S. Ramaswamy S. Nama Kumari, Marketing Management – Planning, McMillan

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SEMESTER –VI

SYLLABUS

Auditing

Unit-I: Auditing:
Meaning – Objectives – Importance of Auditing – Auditing as a VigilMechanism – Role of Auditor in checking corporate frauds.

Unit-II: Types of Audit:
Based on Ownership and time - Independent, Financial, Internal, Cost,Tax, Government, Secretarial audits
.
Unit-III: Planning of Audit:
Steps to be taken at the commencement of a new audit – Audit program me - Audit note book - Internal check, internal audit and internal control.

Unit-IV: Vouching and Investigation:
Vouching of cash and trading transactions - Investigation, Auditing vs. Investigation

Unit-V: Company Audit and Auditors Report:
Auditor's Qualifications – Appointment and Reappointment – Rights, duties, liabilities and disqualifications - Audit report: Contents –Preparation - Relevant Provisions of Companies Act, 2013.

References:
1. S.Vengadamani, "Practical Auditing", Margham Publications, Chennai.
2. Ghatalia, "Principles of Auditing", Allied Publishers Pvt. Ltd., New Delhi.
3. Pradeesh Kumar, Baldev Sachdeva & Jagwant Singh, "Auditing Theory and Practice, Kalyani Publications, Ludhiana.
4. N.D. Kapoor, "Auditing", S. Chand, New Delhi.
5. R.G. Saxena, "Principles and Practice of Auditing", Himalaya Publishing House, New Delhi.
6. Jagadesh Prakesh, "Principles and Practices of Auditing" Kalyani Publications, Ludhiana.

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SEMESTER –VI

SYLLABUS

Management Accounting

Unit–I: Management Accounting:
Interface with Financial Accounting and Cost Accounting -Financial Statement analysis and interpretation: Comparative analysis – Common size analysis and trend analysis (including problems).

Unit–II: Ratio Analysis:
Classification, Importance and limitations - Analysis and interpretation of Accounting ratios - Liquidity, profitability, activity and solvency ratios (including problems).

Unit–III: Fund Flow Statement:
Concept of fund: Preparation of funds flow statement. Uses and limitations of funds flow analysis (including problems).

Unit–IV: Cash Flow Statement:
Concept of cash flow – Preparation of cash flow statement – Uses and limitations of cash flow analysis (including problems).

Unit–V: Break-Even Analysis and Decision Making:
Calculation of Break-even point - Uses and limitations - Margin of safety – Make/Buy Decision - Lease/own Decision (including Problems).

References:
1. S.N. Maheswari, A Textbook of Accounting for Management, S. Chand Publishing, New Delhi.
2. I.M Pandey, "Management Accounting", Vikas Publishing House, New Delhi,
3. Shashi K. Gupta & R.K. Sharma, "Management Accounting: Principles and Practice", Kalyani Publishers, Ludhiana.
4. Jawahar Lal, Accounting for Management, Himalaya Publishing House, New Delhi.
5. Charles T. Horngren, et.al, "Introduction to Management Accounting" Person EducationIndia, New Delhi, 2002.

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SEMESTER –VI

SYLLABUS

Financial Services

Unit-I: Financial Services:
Role of Financial Services - Banking and Non Banking Companies – Activities of Non Banking Finance Companies- Fund Based Activities - Fee Based Activities .

Unit-II: Merchant Banking Services:
Scope and importance of merchant banking services -Venture Capital - Securitization - Demat services - Commercial Papers – Treasury bills

Unit-III: Leasing and Hire-Purchase:
Types of Lease, Documentation and Legal aspects –Fixation of Rentals and Evaluation - Hire Purchasing- Securitization of debts - House Finance.

Unit-IV: Credit Rating:
Purpose – Types – Credit Rating Symbols – Agencies: CRISIL and CARE – Equity Assessment vs. Grading – Mutual funds.

Unit-V: Other Financial Services:
Factoring and Forfeiting - Procedural and financial aspects – Installment System - Credit Cards - Central Depository Systems: NSDL, CSDL.

References:
1. B. Santhanam, Financial Services, Margham Publication, Chennai.
2. M.Y. Khan, Financial Services, Tata McGraw – Hill, New Delhi.
3. Machendra Raja, Financial Services, S.Chand Publishers, New Delhi.
4. V. A. Avdhani, Marketing of Financial Services.
5. Machiraji, "Indian Financial System", Vikas Publishers.
6. Sandeep Goel, Financial Services, PHI Learning.

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SEMESTER –VI

SYLLABUS

Marketing of Financial Services

Unit-I: Difference between Goods and Services:

Managing Service Counters – Integrated Service Management – Service Elements.

Unit-II: Constructing Service Environment

Managing People for service Advantage – Service Quality and Productivity – Customer Loyalty.

Unit-III: Pricing and Promotion Strategies:

Pricing strategies – Promotion strategies – B2B Marketing – Marketing Planning and Control for services.

Unit-IV: Distributing Services:

Cost and Revenue Management – Approaches for providing services - Channels for Service provision – Designing and managing Service Processes.

Unit-V: Retail Financial Services

Investment services – Insurance services - Credit Services - Institutional Financial Services - Marketing practices in select Financial Service Firms.

References:

1. Aradhani "Marketing of Financial Services" Himalaya Publications
2. Sinha and Saho, Services Marketing, Himalaya Publishing House
3. Reddy Appanaiah, Anil Kumar and Nirmala, Services Marketing, Himalaya Publishing.

LEADERSHIP EDUCATION

SYLLAUBUS (SEMESTER-IV)

1. Organisation-

Management-Leadership-Meaning and significance-different theories-trait theory, black&mountan theory-other functions of management.

2. Behavioral concepts-

Individual behaviour-perception-learning-attitude formation and change-motivation-theories of motivation-personality development.

3. Interpersonal behaviour-

Communication-leadership-influencing-relations-transactional analysis.

4. Group dynamics-

Roles-morale-conflict-group-inter-group behaviour-inter-group collaboration and conflict management.

5. Team building and management-

Developing team resources-designing team-participation and repercussion-team building

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SEMESTER –II　　　# ADVERTISING

Total 30 hrs (2hrs/wk) 02 credits &　　　　　**Maximum 50 Marks**

UNIT I: Introduction of advertising

Concepts- functions - Types of advertising - Creative advertising messages - Factors determining opportunities of a product/service/Idea

UNIT II: Role of advertising agencies and their responsibilities

Scope of their work and functions - - Ethical issues - Identifying target groups -Laws in advertising. Advertising Statutory Bodies in India - Role of AAAI (Advertising Agencies Association of India), ASCI (Advertising Standard Council of India)

UNIT III: Types of advertising –

Basic characteristics of a typical advertisement –Reaching target groups - Local advertising – Feedback on impact of advertisement - Business promotion.

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DEPARTMENT OF CMMERCE PG

HIGHLIGHTED SYLLABUS OF COMMERCE PG

2020-21

Syllabus in Relevance to Employability, Skill Development and Entrepreneurship is highlighted as mentioned: Employability in yellow Color, Skill Development in Sky blue colour and Entrepreneurship in Green colour

Employability ⬜

Skill-Development ⬜

Entrepreneurship ⬜

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M.COM   SEMESTER – I
SYLLABUS
CO101: MANAGEMENT THEORY AND PRACTICE

Unit–I: **Introduction: Management, Concept, Significance, Levels, Skills**, Functions and Principles - Management as an Art, Science and Profession – **Social responsibilities of business**.

Unit–II: Planning: Nature, Purpose, Process of Planning, Types of Plans – Premising & Forecasting, Decision Making: Concept, Process, Management By Objectives: Concepts, Process. Advantages and Limitations.

Unit–III: **Organizing: Process - Formal and Informal Organizations -Depart mentation: Methods of departmentation**, Span of Control; V.A. Graicuna's Theory - Factors Determining Span of Control - Delegation: Concept, Process, Advantages and Principles of Effective Delegation; Decentralization: Factors, Advantages and Disadvantages. Line and Staff: Concept- Reasons for Conflicts between Line and Staff and Measures to Overcome; Committees, Types of Committees.

Unit–IV: **Staffing: Nature and Importance of Staffing, Elements of Staffing**. **Directing:** Meaning, Assumptions of Human Behavior by Douglas McGregor, Edgar Shien and Elton Mayo.
Unit–V: **Motivation: Significance, Process**-Theories of Maslow, Herzberg, Porter and Lawler; Leadership: Trait Approach, Leadership Styles, Managerial Grid; Likert's Four Systems of Leadership-**Communication: Importance, Process, Barriers, Measures to overcome Barriers of an Effective Communication.Controlling:** Basis - Control Process, Requirements of adequate Control - Techniques of control, PERT and CPM

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M.COM   SEMESTER – I
SYLLABUS

CO102: BUSINESS ECONOMICS

Unit-I: ==Introduction – Definition, Nature and Scope of Managerial Economics==; Economic Goals of a Business Firm: Profit Maximization Vs Wealth Maximization, Sales Revenue Maximization.

Unit-II: ==Consumer Equilibrium under Cardinal and Ordinal Utility - Demand Analysis== – Law of Demand – Demand Function and determinants of Market Demand – Concept of Price, Cross, Income and Promotional Elasticity; their measurement and relevance in Managerial Decision – Making Methods of Demand Forecasting.

Unit-III: ==Firm's Equilibrium – Iso-quant and Iso-cost analysis; Least – Cost Combination of inputs== – The law of Diminishing Marginal Returns in Production – Production Function – Total Product, Marginal and Average Product Curves, their inter – relationships – Cobb – Douglas Production Function and its relevance - Scale and proportion, Cost Functions – Derivation of total, marginal and average cost functions – Long run cost curves

Unit-IV: ==Market Structures and their characteristics== – Pricing and output Decisions of firm under different Market structures – Perfect Competition, Pure Monopoly, Oligopoly, Monopolistic / Imperfect Competition under short and long runs. Discriminative Monopoly Regulation of Monopoly through Prices and Taxes.

Unit-V: ==Pricing Practices of Firms – Objectives of Pricing Policy== – Approaches to Pricing New Products; Skimming Price, Penetration Pricing, Costs Plus Pricing, Managerial Cost Pricing, Psychological Pricing, Odd Number Pricing, Regulated Pricing, Predatory Pricing

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M.COM   SEMESTER – I
SYLLABUS

CO103: BUSINESS ENVIRONMENT

Unit-I: **Business Environment**: Components and Significance - Nature of Business Environment - Techniques of Environmental Scanning and Monitoring **– Economic Scope – Cultural, Political, Technological and External Factors Influencing Business Environment – Challenges- Economic systems.**

Unit-II: **Economic Environment of Business**: Significance for Business – Economic Planning – Objectives and Achievements; Government policies – Industrial policy of 1991; Fiscal policy; **Economic Reforms and LPG**

Unit-III: **Political and Legal Environment of Business**: Political Institutions – Legislature, Executive and Judiciary – Changing Dimensions of Legal Environment in India; **Patents Act-1970, SICA-1985, SEZ Act-2005.**

Unit-IV: **Cultural and Technological Environment**: **Elements of Socio – Cultural Environment; Impact on Business – Social Audit** - Technological Environment in India; Technology Transfer – Technology Policy.

Unit -V: International and Recent Issues in Environment: Multinational Corporations; Foreign Collaborations and Indian Business; International Economic Institutions: **WTO, World Bank, IMF and their importance to India;** Foreign Trade Policies.

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M.COM   SEMESTER – I
SYLLABUS

CO104: ENTREPRENEURSHIP DEVELOPMENT

UNIT-I:

Entrepreneur: Evolution, Characteristics, Types, Functions of Entrepreneur - Factors influencing entrepreneurship - Barriers to entrepreneurship -   Growth of Entrepreneurship in India -Women entrepreneurship in India - Role of Entrepreneurship in Economic Development

UNIT-II:

Idea Generation and Opportunity Assessment: Importance of Ideas in Entrepreneurship - Sources of New Ideas – Techniques for generating ideas- Steps in assessing business potential of an idea- Opportunity Recognition- sources and process- Steps in tapping opportunity.

UNIT-III:

Financing Of Enterprises: Need for Financial Planning- Sources of finance, Capital Structure, Term-loan, - Sources of Short-Term Finance, Venture capital, Export Finance**,-** Institutional Finance To Entrepreneurs, - Preparation of Business Plans**.**

UNIT-IV:

 Institution support in small business enterprises: Introduction **–** central level institutions- KVIC;SIDO;NSIC ltd; National Productivity Council (NPC); EDII – State level institutions –DIC-SFC-SSIDC-Industry Associations- CII;FICCI;ASSOCHAM**.**

UNIT-V:

Government Policy and Taxation Benefits : Government Policy for SSIs- Need for tax benefits-Tax Holiday; Rehabilitation allowance ; Investment allowance ; Tax concessions for SSIs in rural and Rural and backward areas**.**

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M.COM   SEMESTER – I
SYLLABUS

CO105:INFORMATION TECHNOLOGY FOR BUSINESS

Unit-I: Information Technology (IT) in Business Environment: Business in the Information Age - Pressures and Responses, Why do we need to know about Information Technology, What is an Information System, Capabilities of Information Systems - Basic concepts of Information Systems, organizations - Structures and IT support - IT support at different organizational levels, Managing IT in organizations

Unit-II: IT Infrastructure: Computer Hardware - Input Technologies, Output Technologies - Computer Software - Types of software, general functions of Operating system, Types of application software - Managing organizational Data and Information - Basics of Data arrangement and Access, Traditional file Environment. Databases: Modern Approach, Database Management Systems - Logical Data Models, Data Warehouse. Telecommunications systems and Networks - Network communications software, Internet: Services provided by Internet, World Wide Web, Intranets and Extranets.

Unit-III: Information Systems to Support Business Functions: Transaction Processing Systems, Accounting and Finance Systems, Production Management Systems, Human Resources Management Systems, Integrated Information Systems and Enterprise Resource Planning, Inter-organizational/Global Information Systems. Electronic Commerce - Types, Benefits of E- Commerce, Infrastructure and E-commerce support, Legal and ethical issues in E-commerce. Computer-based Supply chain management and IS Integration: IT supply chain support and systems Integration: Enterprise Resource Planning.

Unit-IV: Data, Knowledge and Decision Support: Decision making and Decision support systems, Enterprise Decision support, Knowledge Management and Organizational Knowledge bases. Intelligent systems in Business: Export systems, Intelligent Agents.

Unit-V: Strategic Advantage and Information Technology: Strategic Organizations in the Information Age, Business Process Re-engineering, Virtual corporations and Information Technology - Implementing IT: Ethics, Impacts and Society, Ethical Issues, Impact of IT on Organizations and Jobs, on Individuals at Work, Societal Impact and Internet Communities, Protecting Information Systems.

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M.COM   SEMESTER – I
SYLLABUS

CO106: QUANTITATIVE TECHNIQUES FOR BUSINESS DECISIONS

UNIT-I: **Matrices, Differentiation, Permutations and combinations**: **Matrices –Basic concepts** ,Solving system of equations with Cramer's rule and Inverse method - Differentiation and integration of simple functions and their applications- Permutations and Combinations.

UNIT-II: **Correlation and Regression: Correlation**: **Types of Correlation** - Simple and Rank Correlation coefficient in the case of two variables- **Regression**: **Meaning and importance of Regression Analysis**. Estimation of Lines of Regression in the case of two variables.

UNIT-III: **Probability: Concept of Probability: Definitions of Probability**, Addition Theorem of Probability, Conditional Probability and Multiplication theorems of Probability, Baye's Theorem of Probability and its **Applications**.

UNIT- IV: **Theoretical distributions:** Binomial Distribution, Poisson distribution and Normal distribution – their **Properties and Applications.**

UNIT-V: **Testing of Hypothesis: Concept of Testing of Hypothesis, Types of Errors, Standard deviations and Proportions**, Z- test for Means, T-test, F-test for two variances and Chi-Square test for goodness of fit and independent of Attributes and their Applications – Confidence intervals.

Business Laws

Unit –I
Companies Act 2013: Definition and Nature of Company - Incorporation of company – Prospectus - Shares and Debentures - Acceptance of Deposits - Appointment and Qualification of Directors - Meetings of Boards and its powers - Inspection and investigation - Compromises, arrangements and amalgamations - Prevention of oppression and Mismanagement - SEBI Act, 1992

Unit- II
Depositories Act, 1996 – Prevention of Money Laundering Act, 2002.

Unit- III
Consumer Protection Act, 1986 – Competition Act, 2002 – Environment Protection Act – Right to Information Act, 2005

Unit –IV
Foreign Exchange Management Act, 1999- Cyber laws-Information Technology Act, 2000.

Unit – V
Corporate Governance and Business Ethics – Ethical practices and guidelines: Internal to the Organization – Power and freedom: External to the organization.

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FINANCIAL MANAGEMENT

Unit–I: Introduction: Nature, Scope and Objectives of Financial Management: Finance Function–Profit Goal vs. Wealth Goal Maximization - Financial Manager in Modern business Organizations (Theory)

Unit–II: **Investment decision**: Capital Budgeting process –Methods of appraisal: Traditional Techniques and Discounted Cash Flow Methods – NPV vs. IRR - Capital rationing (Theory & problems)

Unit–III: Financing decisions: Concept of leverage – Types of Leverages –EBIT – EPS Analysis – Capital Structure – Theories of Capital Structure – Net Income approach – Net Operating income approach – Traditional view – MM Hypothesis Cost of Capital**:** Types of Cost of Capital - Weighted average Cost of capital. Capital Structure Determinants.(Theory & problems)

Unit–IV: **Dividend decisions**: Kinds of dividends, Dividend Policy types, Dividend Theories –Walter's Model – Gordon's Model – M-M Hypothesis (Theory & problems)

Unit–V: Working Capital Management: Meaning, Significance, Types of Working capital, Determinants of working capital, and Methods of Measuring working Capital Requirements - Operating cycle -Financing of Working Capital-Management of Cash, Receivables, and Inventory (Theory & problems)

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HUMAN RESOURCE MANAGEMENT

Unit- I: Human Resource Management: Nature and significance, functions of HRM, Qualities and Role of HR Manager, HRM Model, HRM in a changing Environment.

Unit-II: Human Resource Planning: Objectives, process, factors affecting HR Planning, Requisites for successful HR Planning, Recruitment – Factors influencing, Sources of Recruitment – E- Recruitment-Selection Process – Placement, induction and Socialization – Promotion and Transfers

Unit-III: Employee Training: Significance – Identification of Training Needs – Employee Training Methods – Executive Development Methods – Evaluation of Training and Development Programs – Methods of Evaluation -Limitations to its effectiveness

Unit-IV: Performance Appraisal: Scope & Significance – Methods of Appraisal – Limitations of Appraisal - Career Planning and Development – Counseling- Mentoring-Coaching

Unit – V:Wage and Salary Administration: Wage Structure and Policy – Wage Differentials – Wage Payment Methods – Incentives – Fringe Benefits –Industrial Relations: Causes of Disputes and Settlement - Role of State in Industrial Relations - Collective Bargaining -Employee Participation in Management - Quality of Work Life.

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MARKETING MANAGEMENT

Unit-I: Marketing-Concepts-Approaches to the Study of Marketing – Functions of Marketing-Marketing Environment.

Unit-II: Consumer Behavior – Factors affecting Consumer Behavior- Market Segmentation –Market Targeting and Positioning – Marketing Information System and Marketing Research.

Unit-III: Marketing Mix: Product Planning – New Product Development – Product Life Cycle–Branding &Packaging – Product line- Product Mix Management- Product Vs Service.

Unit-IV: Pricing and Distribution: Pricing Objectives – Methods and Strategies ; Channels of distribution – Channel Selection and Management -Retail Management.

Unit-V: Promotion: Promotion Mix-Personal Selling-Advertising - Sales Promotion, Publicity and Public Relations – Direct Marketing; Promotional strategies- Web Marketing – Integrated Marketing Communications.

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BUSINESS ANALYTICS AND RESEARCH METHODS

Unit –I : Introduction-Importance of Research, Types of research , Research Process-Problem Identification- Formulation-Classification, Concept and Construction of Hypothesis – Steps in Testing Hypothesis.

Unit-II: Research Design-Meaning, purpose and Principles – Types of Research Design – Exploratory-Descriptive- Experimental, Data Collection-Sources of Data-Methods of Data Collection-Questionnaire Design and Pre Testing of Questionnaire.

Unit-III: Sampling & Sampling Designs-Determination of Sample Size-Census Survey Vs Sample Survey –Advantages of Sampling-Sampling Methods-Probability Sampling-Non Probability Sampling.

Unit-IV: Data Tabulation-Analysis and Interpretation: Tabulation of data and general rules of tabulation Graphic and Diagrammatic Representation of Data-ANOVA-One way and Two way classification.

Unit-V: Research Report Writing and Presentation: Concept, Purpose, Guidelines for Research Report Writing –Steps in Report Writing-Layout of Report-Types of Research Reports-Presentation of Research Report.

E-COMMERCE

Unit-I : <mark>History of E-commerce and Indian Business Context</mark>: origin of E-commerce – Traditional vs. E-Commerce - Internet and World Wide Web- Business Models for e-Commerce-B2C, B2B, C2C & C2B, Merits and Limitations- Advantages and Disadvantages of E-commerce - Introduction to E-business -E-commerce vs E-business

Unit-II: <mark>Technologies of the World Wide Web</mark>- Internet client-server application-Telnet, PTP, IRC, Chat, ICQ & MIME, Networks & Internet :communication switching -Network routers-URL-IPv6-TCP web site-Website goals & Objectives Strategies for website Development-ISP Broadband Technologies-Hypertext- JavaScript and XML

Unit-III: <mark>E-Marketing</mark>- Traditional Marketing, Online Marketing- Advantages of online Marketing - Advertisements in E-commerce- various means of advertising- advertisement strategies-Intelligent Agents.

Unit-IV: <mark>CRM-</mark>Traditional methods-Technology support-E-CRM-Customer Life Cycle- CRM Capabilities and Customer Life Cycle-Data Mining in CRM - e-Supply Chain- Old ways of Managing supply and information flow-new ways of managing supply chain- several ways to reduce inventory-Real time benefits of e-Supply Chain- objectives of SCM -E-supply chain Components and architecture-Major trends in E-SCM

Unit-V: <mark>E-Commerce Payment Systems</mark>-Electronic Payments with Protocols-Security schemes-Electronic Fund Transfer and Debit Cards-E-Cash, Properties of E-Cash-E-Cash in Action- Operational Risk and E-Cash-Legal issues- E- Cheque - Risk and E-Payments Systems- Cashless Economy

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HUMAN VALUES AND ETHICS (1L + 1T + 1P)

Unit – I: Introduction –Need, Basic Guidelines and Content

1. Understanding the need , basic guidelines, content and process for value Education
2. Self-Exploration – What is it? – its content and process: 'Natural Acceptance' and Experiential Validation – as the mechanism for self-explanation
3. Continuous Happiness and Prosperity – A look at basic Human Aspirations

Unit – II: Process for Value Education

1. Right Understanding, Relationship and Physical Facilities – basic requirements for fulfillment of aspirations of every human being with their correct priority
2. Understanding Happiness and prosperity correctly – A critical appraisal of the current Scenario 17
3. Method to fulfill the above human aspirations; understanding and living in harmony at various levels

Unit – III: Understanding Harmony in the Human Being

1. Understanding human being as a co-existence of the sentient 'I' and the material 'Body'
2. Understanding the needs of Self ('I') and 'Body'
3. Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer)

Unit –IV: Harmony in Myself

1. Understanding the characteristics and activities of 'I' and harmony in 'I'
2. Understanding the harmony of I with the Body - correct appraisal of Physical needs, meaning of Prosperity in detail
3. Programs to ensure Sanyam and Swasthya – practice exercises and Case Studies will be taken up in Practice Sessions.

Unit – V: Understanding Harmony in the Family and Society – harmony in Human - Human Relationship

1. Understanding harmony in the family – the basic unit of human interaction
2. Understanding values in human relationship; meaning of Nyaya and Program for its fulfillment to ensure Ubhay-tripti
3. Trust (Vishwas) and Respect (Samman) as the foundational values of relationship.

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DEPARTMENT OF ENGLISH

HIGHLIGHTED SYLLABUS OF ENGLISH

2020-21

Syllabus in Relevance to Employability, Skill Development and Entrepreneurship is highlighted as mentioned: Employability in yellow Color, Skill Development in Sky blue colour and Entrepreneurship in Green colour

Employability   🟨

Skill-Development   🟦

Entrepreneurship   🟩

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ENGLISH	ENGT11B	2020-2021	B.A,B.Com & B.Sc

English Syllabus-Semester-I
(English Praxis Course-I)
A Course in Communication and Soft Skills

Learning Outcomes

By the end of the course the learner will be able to:

- Use grammar effectively in writing and speaking.
- Demonstrate the use of good vocabulary.
- Demonstrate an understating of writing skills.
- Acquire ability to use Soft Skills in professional and daily life.
- Confidently use the tools of communication skills.

I. UNIT: Listening Skills
    a. Importance of Listening
    b. Types of Listening
    c. Barriers to Effective Listening

II. UNIT: Speaking Skills
    a. Sounds of English: Vowels and Consonants
    b. Word Accent
    c. Intonation

III. UNIT: Grammar
    a. Concord
    b. Modals
    c. Articles
    d. Prepositions
    e. Tenses (Present/Past/Future)
    f. Question Tags
    g. Sentence Transformation (Voice, Reported Speech & Degrees of Comparison)
    h. Error Correction

IV. UNIT: Writing
    a. Punctuation
    b. Spelling

V. UNIT: Soft Skills
    a. Positive Attitude
    b. Emotional Intelligence
    c. Telephone Etiquette

VI. UNIT: Communicative and Competitive English
    1. Names and Actions
    2. Descriptions and Connections

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ENGLISH	ENGT21B	2020-2021	B.A,B.Com & B.Sc

Unit – I - Prose:
1. *Netaji Subhas Chandra Bose on students & politics: Every problem is related to politics (An Excerpt from Presidential address at the Students' Conference held at Lahore on October 19, 1929)*
2. The Night Train at Deoli -
3. The Doll's House

Unit – II - Poetry
1. Upagupta
2. Coromandel Fishers
3. Ode to the West Wind

Unit –III
Short Fiction (Short Story)
1. Girls – Mrinal Pande
2. An Astrologer's Day
3. Florence Nightingale- Abrar Mohsin

Unit – IV Grammar
1. Vocabulary: Conversion of Words
2. One Word Substitutes
3. Collocations
4. Note Making/Taking

Unit – V
Language Skills
1. Notices, Agendas and Minutes
2. Expansion of Ideas and Paragraph Writing
3. Curriculum Vitae and Resume
4. Official Letters
5. E-Correspondence

Unit – VI
Communicative and Competitive English
1. Resources & Environment
2. Comprehension and Composition

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ENGLISH	ENG 301C	2020-2021	B.A,B.Com & B.Sc

Unit – I

PROSE

1. Shyness My Shield (Taken from *The Story of My Experiments with Truth)* - M.K. Gandhi

2. Aurangzeb's Letter To His Teacher

3. A Letter From Abraham Lincoln To His Son's Teacher

Unit – II

POETRY

1. Once Upon a Time - Gabriel Okara

2. Our Casuarina Tree - Toru Dutt

Unit – III

SHORT STORY

1. The Open Window – Saki (H.H.Munro)

2. The Beloved Charioteer - Shashi Deshpande

Unit – IV

ONE ACT PLAY

Kanyasulkam,(Acts I & II) – Gurajada Apparao

Unit – V

LANGUAGE ACTIVITY

1. Classroom and Laboratory Activities

   i. JAM Sessions

   ii. Note Taking

   iii. Reporting for the Media

   iv. Expansion of an idea

2. Classroom Activity

   i.   Information Transfer – Tables, Bar Diagrams, Line Graphs, Pie Diagrams, Flow Charts, Tree Diagrams and Pictures

   ii. Note Making

   iii. Writing for the Media

Unit-IV

Communicative and Competitive English

1. Composition

   i.   Use of passive structures to write reports

   ii.   Recognize& write emails

   iii.   Develop hints by farming sentences & write paragraphs

   iv.   Read texts using higher order thinking skills (academic reading comprehension)

SKILL DEVELOPMENT COURSE
Arts Stream (II SEMESTER)

Title: JOURNALISTIC REPORTING
Total 30 hrs (02 h/wk, 02 Cr & Max 50 Marks)

Course Outcomes:

After successful completion of this course, the student will be able to:

1. *Understand the evolution of journalism with a focus on its development in India.*
2. *Comprehend the role of Press in the Indian democracy and various reportingmethods.*
3. *Realise the ethical aspects of Journalism in India*
4. *Develop basic writing skills for news papers, Radio and Television.*

Syllabus:

Unit-I: **06 Hrs**

Introduction to Journalism-Nature, Growth and Development in post independence era -Print Media, Mass Media and Electronic Media, Press as a Fourth Estate-Role of Press in Democracy.

Unit-II: **10 Hrs**

Concept of News-News Values-Sources of News - News gathering ways: Press Conferences, Press Releases, Events, Meets, Interviewing-Types of Interviews and Interviewing Techniques- Methods of News Writing: Leads, News Stories and Body Development.

Unit-III: 10 Hrs

Reporting-Kinds of Reporting-Objectives, Interpretative, Investigative, Legal, Developmental, Political, Sports, Crime, Economic, Commercial, Disaster, Technical and Scientific Reporting-Writing Special features: Photo features, Human interest features, Profiles, Column Writing, Writing for Radio and Television-Values and Ethics of Journalism.

Co-curricular Activities Suggested: (04 Hrs)

1. Collection and study of various English and Telugu Newspapers
2. Invited lecture/basic training by local experts
3. Visit to local Press office
4. Informally attending Press Conferences and Meets and taking notes
5. Assignments, Group discussion, Quiz etc.

B.A., B. Com & B. Sc Programmes
Revised CBCS w.e.f 2020-21
SKILL DEVELOPMENT COURSE
Commerce Stream (II Semester)

Title: BUSINESS COMMUNICATION
Total 30 hrs (02hrs/wk), 02 Credits, Max 50 marks

Learning Outcomes:

After successful completion of this course, students will be able to;
1. *Understand the types of business communication and correspondence*
2. *Comprehend the processes like receiving, filing and replying*
3. *Acquire knowledge in preparing good business communications*
4. *Acquaint with organizational communication requirements and presentations.*

SYLLABUS

UNIT I : 06hrs
Introduction and Importance of communication an overview - meaning and process ofcommunication - organizational communication and its barriers.

UNIT II: 10hrs
Types of Business Communications –Categories, methods and formats - Business vocabulary - Business idioms and collocations – Organizational Hierarchy - Various levels of communication in an organization – Top-down, Bottom-up and Horizontal-Business reports, presentations– Online communications.

UNIT III: 10hrs
Receiving business communications -Filing and processing -Sending replies. Routine cycle of communications – Writing Communications - Characteristics of a good business communication -Preparation of business meeting agenda – agenda notes - minutes – circulation of minutes –Presentations of communication using various methods.

Recommended Co-curricular Activities (04hrs):
1. Collection of various model business letters
2. Invited lecture/field level training by a local expert
3. Reading of various business reports and minutes and its analysis
4. Presentations of reports, charts etc.
5. Assignments, Group discussion, field visit etc.

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CSS	CSS 401C	2020-2021	B.A,B.Com &B.Sc

COMMUNICATION AND SOFT SKILLS -3 (CSS -3)
FOUNDATION COURSE SYLLABUS
Semester – IV

Unit I: Soft Skills

1. Positive Attitude
2. Body Language
3. SWOT/SWOC Analysis
4. Emotional Intelligence
5. Netiquette

Unit II: Paragraph Writing and Para Jumbles
1. Paragraph Structure
2. Development of Ideas
3. Matching Para Jumbles

Unit III: Paraphrasing and Summarizing

1. Elements of Effective Paraphrasing
2. Techniques for Paraphrasing
3. What Makes a Good Summary?
4. Stages of Summarizing

Unit IV: Letter Writing

1. Letter Writing (Formal and Informal)
2. E-correspondence

Unit V: Job Application, CV and Dialogue Writing

1. Resume and CV
2. Dialogue Writing

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DEPARTMENT OF ENVIRONMENTAL STUDIES

HIGHLIGHTED SYLLABUS OF ENVIRONMENTAL STUDIES
2020-21

Syllabus in Relevance to Employability, Skill Development and Entrepreneurship **is** highlighted as mentioned: Employability in yellow Color, Skill Development in Sky blue colour and Entrepreneurship in Green colour

Employability ▮

Skill-Development ▮

Entrepreneurship ▮

ENVIRONMENTAL STUDIES

Common for BA/B.Com/BSc Programmes

COURSE CODE: ENS101   Semester – I(Total 30 Hours)

Unit-I : Natural Resources:

Definition, scope and importance. Need for public awareness. Brief description of; Forest recourses: Use and over-exploitation. Deforestation; timber extraction, mining, dams. Effect of deforestation environment and tribal people   Water resources: Use and over–utilization. Effects of over utilisation of surface and ground water. Floods, drought. Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources.   Food resources: World food problems, Effects of modern agriculture; fertilizer-pesticide, salinity problems.   Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources.   Land resources: Land as resources, land degradation, man induced landslides, soil erosion and desertification

Unit-II : Ecosystems, Biodiversity and its conservation

  Concept of an ecosystem   Structure and function of an ecosystem   Producers, consumers and decomposers Food chains, food webs and ecological pyramids   Characteristic features of the following ecosystems:- Forest ecosystem, Desert ecosystem, Aquatic ecosystem. Value of biodiversity: Consumptive use, productive use. Biodiversity in India.   Threats to biodiversity: habitat loss, poaching of wildlife, man wildlife   conflicts.   Endangered and endemic species of India   Conservation of biodiversity

Unit-III : Environmental Pollution

Definition Causes, effects and control measures of :- a. Air pollution b. Water pollution
c. Soil pollution d. Noise pollution   Solid waste management; Measures for safe urban and industrial waste disposal   Role of individual in prevention of pollution   Disaster management: Drought, floods and cyclones

Unit-IV : Social Issues and the Environment

  From Unsustainable to Sustainable development   Water conservation, rain water harvesting, watershed management.   Climate change, global warming,   ozone layer depletion,   Environment protection Act   Wildlife Protection Act, Forest Conservation Act

Unit-V : Human Population and the Environment

Population explosion, impact on environment.   Family welfare Programme   Environment and human health   Women and Child Welfare   Value Education   Role of Information Technology in Environment and humanhealth.

Reference Books :
1. Environmental Studies by Dr.M.Satyanarayana,
Dr.M.V.R.K.Narasimhacharyulu, Dr.G. Rambabu andDr.V.VivekaVardhani,
Published by Telugu Academy, Hyderabad.
2. Environmental Studies by R.C.Sharma, Gurbir Sangha, published by Kalyani Publishers.
3. Environmental Studies by Purnima Smarath, published by Kalyani Publishers.

HUMAN VALUES AND PROFESSIONAL ETHICS

Common for BA/B.Com/BSc/ Programmes

COURSE CODE: HVPE101

I Semester(Total 30 Hrs)

Unit-I: Introduction to Value Education

1. Value Education, Definition, Concept and Need for Value Education 2. The Content and Process of Value Education 3. Self-Exploration as a means of Value Education 4. Happiness and Prosperity as parts of Value Education

Unit-II: Harmony in the Human Being

1. Human Being is more than just the Body 2. Harmony of the Self ('I') with the Body 3. Understanding Myself as Co-existence of the Self and the Body 4. Understanding Needs of the Self and the Needs of the Body

Unit-III: Harmony in the Family and Society and Harmony in the Nature

1. Family as a basic unit of Human Interaction and Values in Relationships 2. The Basics for respect and today's Crisis : Affection, Care, Guidance, Reverence, Glory, Gratitude and Love
3. Comprehensive Human Goal : The Five dimensions of Human Endeavour

Unit-IV: Social Ethics

1. The Basics for Ethical Human conduct 2. Defects in Ethical Human Conduct
3. Holistic Alternative and Universal order 4. Universal Human Order and Ethical Conduct

Unit-V: Professional Ethics

1. Value Based Life and Profession 2. Professional Ethics and Right Understanding
3. Competence in Professional Ethics 4. Issues in Professional Ethics – The Current scenario
5. Vision for Holistic Technologies, Production System and Management Models

Reference Books:

1. A.N.Tripaty, Human Values, New Age International Publishers, 2003
2. Bajpai.B.L., Indian Ethos and Modern Management, New Royal Book Co., Lucknow, Reprinted, 2004
3. Bertrand Russell, Human Society in Ethics and Politics
4. Corliss Lamont, Philosophy of Humanism

ENTREPRENEURSHIP

Syllabus, For all Degree Programmes.

COURSE CODE: ENP201

Semester – IV   (Total   30   Hrs)

Unit-I: Entrepreneurship: Entrepreneur Characteristics – Classification of Entrepreneurships – Incorporation of Business – Forms of Business organizations –Role of Entrepreneurship in economic development – Start-ups.

Unit-II: Idea Generation and Opportunity Assessment: Ideas in Entrepreneurships – Sources of New Ideas – Techniques for generating ideas – Opportunity Recognition – Steps in tapping opportunities.

Unit-III: Project Formulation and Appraisal : Preparation of Project Report –Content; Guidelines for Report preparation – Project Appraisal techniques –economic – Steps Analysis; Financial Analysis; Market Analysis; Technical Feasibility.

Unit-iv: Institutions Supporting Small Business Enterprises: Central level Institutions: NABARD; SIDBI, NIC, KVIC; SIDIO; NSIC Ltd; etc. – state level Institutions –DICs- SFC-SSIDC- Other financial assistance.

Unit-V: Government Policy and Taxation Benefits: Government Policy for SSIs- tax Incentives and Concessions –Non-tax Concessions – Rehabilitation and Investment Allowances.

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DEPARTMENT OF ECONOMICS

HIGHLIGHTED SYLLABUS OF ECONOMICS

2020-21

Syllabus in Relevance to Employability, Skill Development and Entrepreneurship **is** highlighted as mentioned: Employability in yellow Color, Skill Development in Sky blue colour and Entrepreneurship in Green colour

Employability

Skill-Development

Entrepreneurship

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MICRO ECONOMIC ANALYSIS
SYLLABUS

Unit-I Economic Analysis and Methodology (15HRS)

1.1 Definitions of Economics
  1.1.1 Wealth Definition (2h)
  1.1.2 Welfare Definition (2h)
  1.1.3 Scarcity Definition (2h)
  1.1.4 Growth Oriented Dynamic Definition- (2h)
 1.2 Methodology in Economics
    1.2.1 Micro and Macro Economics- (3h)
    1.2.2 Deductive and Inductive Methods (3h)
    1.2.3 Production Possibility Curve (PPC) (1h)

Unit-II THEORY OF CONSUMPTION (23HRS)

2.1 Demand Analysis (2h)
    2.1.1 Concept & Factors Determining Demand (2h)
    2.1.2 Law of Demand and Exceptions (1h)
2.2 Elasticity of Demand (1h)
2.2.1 Types of Price Elasticity of Demand (2h)
2.2.2 Methods to measure Price Elasticity of Demand (2h)
2.3 Indifference Curve Analysis
    2.3.1 Indifference Schedule & Indifference map (2h)
    2.3.2 Marginal Rate of Substitution (2h)
    2.3.3 Properties of Indifference curves (2h)
    2.3.4 Budget line & Consumers Equilibrium through Indifference Curve (5h)
    2.3.5 Consumer's Surplus through Indifference Curve Analysis (2h)

Unit-III THEORY OF PRODUCTION (20HRS)

3.1 Concept of Production Function (1h)
3.1.1 Cobb-Douglas Production Function (1h)
    3.1.2 The law of variable proportions (2h)
    3.1.3 The law of Returns to Scale (2h)
    3.1.4 Economies of large Scale Production (2h)
3.2 Concepts of cost (1h)
    3.2.1 Short run Cost Curves (3hrs)
3.3 Law of supply (1hr)

3.4   Revenue Concepts (T.R., A.R. & M.R.)   (3hrs)
        3.4.1   Relationship between AR, MR &E.D   (2hrs)
        3.4.2   Cost minimization   (1h)
        3.4.3   Profit Maximization   (1h)

Unit-IV   THEORY OF EXCHANGE   (12HRS)

4.1   Classification of Markets   (1h)
4.2   Features of Perfect Market Conditions   (2h)
4.3   Price Determination under Perfect Competition Market   (2hrs)
4.4   Features of Monopoly Market   (2h)
4.5   Features of Monopolistic Competition Market   (2h)
4.6   Features of Oligopoly Market   (2h)
4.7   Kinky Demand Curve Analysis   (2hrs)

Unit-V THEORY OF DISTRIBUTION   (20HRS)

5.1   Concepts of Functional and Personal Distribution   (2h)
5.2   Marginal Productivity Theory of Distribution   (2h)
5.3   Theories of Rent
        5.3.1   Ricardian Theory of Rent   (1hr)
        5.3.2   Marshall's Economic rent   (2h)
5.4   Theories of Wage
5.4.1   Standard of Living Theory of wages   (1h)
        5.4.2 Modern Theory of wages   (2h)
5.5   Theories of Interest
        5.5.1   Classical Theory of Interest   (2h)
        5.5.2   Loanable Funds Theory of Interest   (2h)
        5.5.3   Keynes Liquidity Preference Theory of Interest (2h)
5.6   Theories of Profit
5.6.1 Risk Theory of Profit   (1h)
5.6.2   Uncertainty Theory of Profit   (1h)
        5.6.3   Dynamic Theory of Profit   (1h)
5.6.4   Innovation Theory of Profit   (1h)

A.G. & S.G.SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE (AUTONOMOUS), VUYYURU

B. A. ECONOMICS

II Year B. A. Programme (UG) Courses – Under

CBCS Semester – III

Paper – III (Core Paper) (5Hours)

Macro Economics - National Income, Employment and Money

Module - 1 Meaning, definition of Macro Economics - Importance of Macro Economics- Difference between Micro and Macro Economics - Paradox of Macro Economics -Limitations

Module – 2 National Income - Definitions, Concepts of National Income - Measurement of National Income- Circular flow of Income in Two, Three and Four Sector Economy.

Module – 3 Classical theory of Employment - Say's Law of Markets.

Module - 4

Keynesian Theory of Employment - Consumption function – Investment Function - Marginal Efficiency of Capital (MEC)- Concepts of multiplier and accelerator

Module - 5

Meaning and Functions of Money - Classification of money - Gresham's Law - RBI classification of Money. Theories of Money - Fisher's Quantity theory of Money Cambridge approach (Marshall, Pigou, Robertson& Keynes).

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Final year BA Economics Syllabus Semester Paper – V

ECONOMIC DEVELOPMENT AND INDIAN ECONOMY – Semester –V

Weekly 5 Hours,   **Credits - 4**

PAPER CODE: ECO-501

Module - 1
Concept of Economic Growth - Distinction between economic growth and development - Measurement of economic development -Theories of Economic Growth:
Adam Smith, Rostow, Karl Marx and Harrod&Domar Models.

Module - 2
Sustainable development - Balanced and unbalanced growth-choice of techniques Labour intensive and capital intensive methods.

Module - 3
Basic features of the Indian Economy - Natural Resources - Important Demographic features- Concept of Population Dividend - Population Policy.

Module - 4
National Income in India - trends and composition-poverty, inequalities and Unemployment - Measures taken by the Government. - MGNREGS

Module - 5

Economic reforms - liberalization, privatization and globalisation - concept of inclusive growth.

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Final year BA Economics Syllabus Paper – V
INDIAN AND ANDHRAPRADESH ECONOMY – Semester –V
Weekly 5 Hours,   **Credits - 4**
Paper Code : ECO-502   **Semester-5**
Indian and Andhra Pradesh Economy
Syllabus

Module - 1
Indian Agriculture - Importance of Agriculture in India - Agrarian structure and relations- Factors determining Productivity- Agricultural Infrastructure - Rural credit - Micro Finance - Self Help Groups (SHGs) - Agricultural Price policy- concept of Crop Insurance - Food Security.

Module - 2
Structure and growth of Indian Industry - Industrial policies of 1956 &1991   Meaning   of Micro small and Medium Enterprises (MSMEs)- Problems and Prospects of small scale Industries in India.

Module - 3
Disinvestment in India - FEMA - Foreign direct investment - Services Sector in India – Reforms in Banking and Insurance -, IT, Education and Health.

Module - 4
Planning in India Economy - Objectives of Five year plans - Review of Five year Plans - Current Five year plan- NITI Aayog

Module - 5
Andhra Pradesh Economy - Population - GSDP - Sector Contribution and trends - IT – Small Scale Industry - SEZs.

A.G. & S.G.SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE(AUTONOMOUS), VUYYURU(2020 -2021)

SEMESTER – II	COURSE CODE:ECO-201
PAPER TITLE : MACRO ECONOMIC ANALYSIS	

MACRO ECONOMIC ANALYSIS

Module - 1: National Income

Macroeconomics - Definition, Scope and Importance - Difference between Micro economic and Macro economic Analyses – Circular Flow of Income -National Income: Definitions, Concepts, Measurement of National Income - Difficulties - Importance - Concept of Green Accounting

Module -2: Theory of Employment

Classical Theory of Employment - Say's Law of Markets - Criticism -Keynesian Theory of Employment - Consumption Function - Keynes' Psychological Law of Consumption - Average and Marginal Propensity to Consume - Factors determining Consumption Function –Brief Review of Relative, Life Cycle and Permanent Income Hypotheses - Investment Function: Marginal Efficiency of Capital -Multiplier and Accelerator - Keynesian Theory of Employment - Applicability to Developing countries

Module – 3: Money and Banking

Definitions of Money - Concepts of Money, Liquidity and Finance - Money Illusion - Gresham's Law - RBI classification of Money - Theories of Money: Fisher and Cambridge (Marshall, Pigou, Robertson and Keynes equations) - Banking - Definition and types of Banking - Commercial Banks - Functions -Recent Trends in Banking - Mergers and Acquisitions - Central Bank - Functions - Control of Credit by Central Bank - NBFCsFactors contributing to their Growth and their Role

Module – 4: Inflation and Trade Cycles

Inflation: Concepts of Inflation, deflation, reflation and stagflation - Phillip's Curve - Measurement of Inflation - CPI and WPI -Types of Inflation - Causes and Consequences of Inflation -Measures to Control Inflation. Trade Cycles: Phases of a Trade Cycle -Causes and Measures to control Trade Cycles

Module -5: **Finance and Insurance**

Financial Assets and Financial Instruments - Financial Markets - Functions of Money Market - Functions of Capital Market - Stock Market - Exchanges – Indices:Sensex and Nifty - Concept of Insurance -Types and Importance of Insurance

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(AUTONOMOUS) VUYYURU (2020 – 2021

B. A. ECONOMICS

II Year B. A. Programme (UG) Courses – Under CBCS

Semester – IV

Paper – IV (Core Paper)

Banking and International Trade

Module - 1

Trade Cycles - meaning and definition - Phases of a Trade Cycle -Inflation - definition - types of inflation - causes and effects of inflation measures to control inflation.

Module - 2

Banking: Meaning and definition -Functions of Commercial Banks - Concept of Credit creation-Functions of RBI - Recent developments in banking sectors.

Module – 3

Non-Bank Financial Institutions – Types of NBFIs - Factors contributing to the Growth of NBFIs —-Money market – Defects of Indian money market

Module – 4

Concepts of Shares-Debentures - Stock Market - Functions - Primary and Secondary Markets -SEBI - - Insurance - Life Insurance and General Insurance.

Module - 5

Macro Economic Policy - Fiscal, Monetary and Exchange rate policies

Objectives and Significance - Importance of International Trade - Regional and International

Trade – Defining Balance of Trade and Balance of Payment.

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(AUTONOMOUS), (VUYYURU (2020-2021)

B. A. ECONOMICS

III Year B. A. Programme (UG) Courses – Under CBCS

Semester – VI

Paper – VII-(A) (Elective Paper VII-(A)

AGRICUTURAL ECONOMICS

Module-1

Nature and Scope of Agricultural Economics. Factors affecting agricultural development: technological, institutional and general. Interdependence between agriculture and industry.

Module-2

Concept of production function : input-output and product relationship in farm production.

Module-3

Growth and productivity trends in Indian agriculture with special reference to Andhra Pradesh.Agrarian reforms and their role in economic development.

Module-4

Systems of farming, farm size and productivity relationship in Indian agriculture with special reference to Andhra Pradesh- New agriculture strategy and Green revolution : and its Impact

Module-5

Emerging trends in production, processing, marketing and exports; policy controls and regulations relating to industrial sector with specific reference to agro-industries in agribusiness enterprises.

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DEPARTMENT OF HISTORY

2020-2021

HIGHLIGHTED SYLLABUS OF B.A

Courses on Employability, Entrepreneurship and Skill-Development in the curriculum of all programs are highlighted as mentioned: Employability in yellow Color, Skill-Development in Sky blue colour and Entrepreneurship in Green colour

Employability   ⬜

Skill-Development   ⬜

Entrepreneurship   ⬜

AG & SG SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE VUYYURU, 521165

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CLASS: I B.A   **SEMESTER – I (CBCS)**   **PAPER-I**   **SYLLABUS: HISTORY**

Title of the Paper: **ANCIENT INDIAN HISTORY & CULTURE**

Paper Code: HIS 101   **(W.e.f. 2020-2021)**   **Max Marks 70**

Pass Marks 28

No. of Hours per week: 5   **No. of Credits: 4**

UNIT -1

Survey of Sources –Literary Sources – Archaeological Sources, Ancient Indian Civilization(From Circa 3000 BC to 6th C.BC) Indus Valley Civilization: Salient Features, Vedic Age –Society, Polity, Economy, Culture during early and later Vedic Period. (20 Hrs)

UNIT –II

Ancient Indian History & Culture (6th Century BC to 2nd Century AD):Doctrines and Impact of Jainism – Buddhism :Mauryan Administration, Society, Economy & Culture-Ashoka's Dhamma, Kanishka's Contribution to Indian Culture. (15 Hrs)

UNIT-III

History & Culture of South India(2nd Century BC to 8th Century AD):Sangam Literature, Administration, Society, Economy and Culture under Satavahanas Cultural Contribution of pallavas.(20 Hrs)

UNIT-IV

India from 3rd Century AD to 8th Century AD: Administration, Society, Economy , Religion, Art, Literature and Science &Technology under Guptas – Samudra Gupta, Cultural contribution of Harsha: Arab Conquest of Sind and its Impact.(20 Hrs)

UNIT-V

History & Culture of South India (9th Century AD to 13 Century AD): Local Self Government of Cholas: Administration, Society, Economy and Culture under Kakatiyas- Rudrama Devi. (15 Hrs)

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(AN AUTONOMOUS COLLEGE IN THE JURISDICTION OF KRISHNA UNIVERSITY, MACHILIPATNAM)
CLASS: I B.A   HISTORY,   SEMESTER – II(CBCS)   PAPER-II
SYLLABUS: Title of the Paper: MEDIEVAL INDIAN HISTORY & CULTURE
**   (From 1206 to 1764 A.D)   Pass Marks 28**
Paper Code: HIS 201   (W.e.f. 2020-21)   Max Marks 70
No. of Hours per week:5   No. of Credits:4

UNIT –I   20Hrs

Impact of Turkish Invasions –Balban, Allauddin Khilji, Mohammad –bin-Tughlaq, Administration, Society, Economy, Religion, and Cultural developments under Delhi Sultanate (from 1206to 1526AD)

UNIT – II   15 Hrs

Impact of Islam on Indian Society and Culture –Bhakti Movement , Administration, Society Economy, Religion and Cultural developments under Vijayanagara Rulers.

UNIT – III   25Hrs

Emergence of Mughal Empire –Babur –Sur Interregnum –Expansion & Consolidation of Mughal Empire – Akbar, Jahangir, Shah Jahan, Aurangazeb.

UNIT –IV   15Hrs

 Administration, Economy, society and Cultural Developments under the Mughals ; Dis integration of the Mughal Empire – Rise of Marathas under Shivaji. .

UNIT –V   15Hrs

 India under Colonial Hegemoney; Beginning of European Settlements – Anglo –French Struggle –Conquest of Bengal by East India Company.

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CLASS: II B.A   **SEMESTER – III (CBCS)**
PAPER-III

SYLLABUS: HISTORY
Title of the Paper: <u>LATE MEDIEVAL & COLONIAL HISTORY OF INDIA</u>
(From 1526 -1857A.D)

		Pass Mark: 30
Paper Code: HIS 301 C	**(W.e.f. 2020-2021)**	**Max Marks: 75**
No. of Hours per week: 5		**No. of Credits: 4**

<u>Unit – I</u>

India from1526 to 1707 A.D. Emergence of Mughal Empire- Sources – Political Condition in India on the eve of Babur Invasions, Brief Summary of Mughal Polity, Sher Sha – Sur Interregnum – Expansion & Consolidation of Mughal Empire.   (20hours)

<u>Unit – II</u>

Administration –Economy- Society – Cultural Developments Under Mughals, Dis integration of Mughals -Rise of Marathas-Peshwas. (20hours)

<u>Unit – III</u>

India Under Colonial Hegemony: Beginning of European Settlements – English and French Struggle – Policies of Expansion   – Subsidiary Alliance – Doctrine of Lapse. Consolidation of British Power in India up to 1857   (20hours)

<u>Unit – IV</u>

Economic Policies of the British (1757 -1857) – Land Revenue Settlements – Permanent – Ryotwari – Mahalwari Systems – Commercialization of Agriculture – Impact of Industrial Revolution on Indian Industry, Administration of Company –Regulating Acts, Cultural & Social Policies; Humanitarian Measures & Spread of Modern Education. (15hours)

<u>Unit – V</u>   Anti-

Colonial Upsurge-Peasant and Tribal Revolts – 1857 Revolt-Causes: Results and Nature Consequences.   (15hours)

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Class: II B.A   SEMESTER – IV (CBCS)   Paper - IV

Syllabus: HISTORY   Title of the Paper: <u>SOCIAL REFORM MOVEMENT&FREEDOM STRUGGLE</u>

(From 1820-1947A.D) Pass Mark: 30

Paper Code: HIS 401 C   (W.e.f. 2020-2021)   Max Marks: 75

No. of Hours per week: 5   No. of Credits: 4

Unit – I
(20 hours)

Social –Religious & Self Respect Movements: Social and cultural awakening – Brahma Samaj – Arya Samaj – Theosophical Society –Ramakrishna Mission – Aligarh Movement – Emancipation of Women-Struggle Against Caste – Jyotiba Phule – Narayana Guru – Periyar and Dr. B. R. Ambedkar.

Unit – II
(15 hours)

Growth of Nationalism in the 2nd Half of 19th Century-Impact of British Colonial Policies under Viceroys Rule and the Genesis of Freedom Movement-Birth of Indian National Congress.

Unit - III
(25 hours)

 Freedom Struggle from (1885-1920) Moderate Phase Partition of Bengal-Emergence of Militant Nationalism – Swadeshi & Boycott Movement-Home Rule Movement.

Unit - IV
(15 hours)

Freedom Struggle from 1920 to1947: Gandhiji's Role in National Movement. – Revolutionary Movements – Subhas Chandra Bose.

Unit – V
(15 hours)

Muslim League & the Growth of Communalism – Partition of India – Advent of Freedom -Integration of Princely States into Indian Union – Sardar Vallabhai Patel.

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III BA History Syllabus:: Semester – V (CBCS)   Paper – V

Age of Rationalism and Humanism –The World Between 15th & 18th Centuries.

Paper Code; HIS-501   (w .e. f . 2020 - 2021)

No. of Hours per week:5   **No. of Credits:4**

Unit – 1

Feudalism -Geographical Discoveries: Causes – Compass & Maps – Portugal Leads

and Western World Follows – Consequences;(15 Hrs)

Unit – II

The Renaissance Movement: Factors for the Growth of Renaissance – Characteristic

Features - Transformation from Medieval to Modern World; Reformation & Counter

Reformation Movements: The Background – Protestantism – Spread of the

Movement– Counter Reformation– Effects of Reformation(20Hrs)

Unit - III

Emergence of Nation States: Contributory Factors - England and other Nation States

– Impact due to the Emergence of Nation States.; Age of Revolutions: The Glorious

Revolution (1688) – Origin of Parliament – Constitutional Settlement – Bill of Rights

– Results(15Hrs)

.   **Unit – IV**

Age of Revolutions: The American Revolution (1776) – Opening of New World –

Causes – Course – Declaration of Independence, 1776 – Bill of Rights, 1791 – Significance(20Hrs).

Unit – V

Age of Revolutions: The French Revolution (1789) – Causes - Teachings of

Philosophers - Course of the Revolution – Results(20Hrs)

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III BA. Semester – V (CBCS) Paper – VI

Subject:: History : Syllabus - Title of the Paper – History & Culture of Andhra Desa (from 12th to 19th Century A.D)

Paper Code : HIS-502   (w .e. f 2020 - 2021)

No. of Hours per week:5   No. of Credits:4

Unit – 1

Andhra during 12th& 13th Centuries A.D.: Kakatiyas – Origin & its Antecedents – Administration – Social & Economic Life – Industries & Trade - Promotion of Literature and Culture – Architecture & Sculpture – Decline; The Age of Reddy Kingdoms: Patronage to Literature – Trade & Commerce.(20Hrs)

Unit – II

Andhra between 14th & 16th Centuries A.D.: Vijayanagara Empire: Polity, Administration, Society & Economy – Sri Krishna Devaraya and his contribution to Andhra Culture –Development of Literature & Architecture – Decline and Downfall.(15Hrs)

Unit - III

Andhra through 16th& 17th Centuries A.D.: Evolution of Composite Culture – The QutbShahis of Golkonda – Origin & Decline – Administration, Society & Economy –Literature & Architecture.(15Hrs)

Unit – IV

The 18th& 19th Centuries in Andhra: East India Company's Authority over Andhra – Three Carnatic Wars – Occupation of Northern Circars and Ceeded Districts –Early Uprisings – Peasants and Tribal Revolts.(20Hrs)

Unit – V

The 18th& 19th Centuries in Andhra: Impact of Company Rule on Andhra – Administration – Land Revenue Settlements – Society – Education - Religion – Impact of Industrial Revolution on Economy – Peasantry & Famines – Contribution of Sir Thomas Munroe, C. P. Brown & Sir Arthur Cotton – Impact of 1857 Revolt in Andhra.(20Hrs)

III BA   **Semester – VI (CBCS)**   **Paper – VII (General Elective)**

Subject: **History**

Syllabus: Title of the Paper – **History of Modern Europe (from 19th Century to 1945 A.D)**

Paper Code ; **HIS-601GE**   (w .e. f 2020 - 2021)

No. of Hours per week:5   **No. of Credits:4**

UNIT – 1

Industrial Revolution: Origin, Nature and Impact.   (10 Hrs)

UNIT – II

Unification Movements in Italy & Germany and their Impact.   (25 Hrs)

UNIT – III

Communist Revolution in Russia – Causes, Course and Results – Impact on World Order.   (15 Hrs)

UNIT - IV

World War I: Age of Rivalry in Europe between 1870 and 1914 – Results of the War – Paris Peace Conference - League of Nations.   (20 Hrs)

UNIT – V

World War II: Causes, Fascism & Nazism – Results; the United Nations Organization: Structure, Functions and Challenges.   (20 Hrs)

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DEPARTMENT OF HINDI

HIGHLIGHTED SYLLABUS OF HINDI

Syllabus in Relevance to Employability, Skill Development and Entrepreneurship **is** highlighted as mentioned: Employability in yellow Color, Skill Development in Sky blue colour and Entrepreneurship in Green colour

Employability

Skill-Development

Entrepreneurship

Hindi	Hindi - 101C	2020-2021	I Degree

SYLLABUS FOR B.A., B.COM., B.Sc.

I Semester - Hindi

Text Book	Gadya Sandesh
1. गद्य संदेश (Prose)	साहित्य की महत्ता सच्ची वीरता मित्रता
2. कथा लोक (Non-detailed)	मुक्तिधन गूदड़ साई उसने कहा था
3. व्याकरण (Grammar)	लिंग वचन काल वाच्य वाक्यों की शुद्धि
4. व्याकरण (Grammar)	शब्द प्रयोग कार्यालयी हिन्दी (पारिभाषिक शब्दावली अंग्रेजी से हिन्दी) विलोम शब्द
5. पत्र लेखन (Letter Writing)	व्यक्तिगत और सरकारी पत्र

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Hindi	Hindi - 301 C	2020-2021	II Degree
	Syllabus for B.A., B.Com., B.Sc		
	III Semester - Hindi		

पाठ्य पुस्तक = काव्य दीप

A) पुरानी कविता =
1. कबीरदास साखी
2. सूरदास का बाल वर्णन

B) आधुनिक कविता =
1. मातृभूमि
2. तोडती पत्थर
3. मातृभाषा के प्रति

C. हिन्दी साहित्य का इतिहास = भक्तिकाल
1. ज्ञानाश्रयी शाखा- कबीरदास
2. प्रेमाश्रयी शाखा - जायसी

D) सामान्य निबंध =
1. सामाचार पत्र
2. बेकारी की समस्या
3. कंप्यूटर
4. पर्यावरण और प्रदूषण
5. साहित्य और समाज

E) अनुवाद = अंग्रेजी से हिन्दी
5 sentences from prescribed text book

F) कार्यालय हिन्दी =
1. परिपत्र
2. ज्ञापन
3. सूचना

* * *

Hindi	Hindi - 201C	~~2020-21~~	I Degree

SYLLABUS FOR B.A., B.COM., B.Sc.

II Semester - Hindi

Text Book	Gadya Sandesh
1. गद्य संदेश (Prose)	1. संस्कृति और साहित्य का परस्पर संबंध 2. भारत एक है 3. ऐच.आइ.वी (एड्स)
2. कथा लोक (Non-detailed)	कथा लोक 1. जरिया 2. भूख हडताल 3. परमात्मा का कुत्ता
3. व्याकरण (Grammar)	1. शब्दों का प्रयोग 2. संधिविच्छेद 3. शुद्ध करके लिखना
4. अनुवाद (Translation)	हिन्दी से अंग्रेजी
5. पत्र लेखन (Letter Writing)	अधिकारिक पत्र

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DEPARTMENT OF MATHEMATICS

HIGHLIGHTED SYLLABUS OF MATHEMATICS

2020-21

Syllabus in Relevance to Employability, Skill Development and Entrepreneurship is highlighted as mentioned: Employability in yellow Color, Skill Development in Sky blue colour and Entrepreneurship in Green colour

Employability

Skill-Development

Entrepreneurship

A.G & S.G SIDDHARTHA DEGREE COLLEGE OF ARTS AND SCIENCE
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MATHEMATICS	MAT-101	I B.Sc	2020-2021
SEMESTER-I	PAPER-I		Max.Marks:70
Hours/ Week: 6	DIFFERENTIAL EQUATIONS		No. of Credits: 5

UNIT – I (12 Hours), Differential Equations of first order and first degree:
Linear Differential Equations; Differential Equations Reducible to Linear Form; Exact Differential Equations; Integrating Factors; Change of Variables.

UNIT – II (12 Hours): Orthogonal Trajectories, Differential Equations of first order but not of the first degree.
Equations solvable for p, Equations solvable for y, Equations solvable for x, Equations that do not contain x (or y), **Equations homogeneous in x and y**, Equations of the first degree in x and y – Clairaut's Equation.

UNIT – III (14 Hours), Higher order linear differential equations-I :
Solution of homogeneous linear differential equations of order n with constant coefficients; Solution of the non-homogeneous linear differential equations with constant coefficients by means of polynomial operators.
General Solution of f(D)y=0
General Solution of f(D)y=Q when Q is a function of x.
1/f (D) is Expressed as partial fractions.
P.I. of $f(D)y = Q$ when $Q= be^{ax}$
P.I. of $f(D)y = Q$ when Q is b sin ax or b cosax.

UNIT – IV (12 Hours), Higher order linear differential equations-II :
Solution of the non-homogeneous linear differential equations with constant coefficients.
P.I. of $f(D)y = Q$ when $Q= bx^k$
P.I. of $f(D)y = Q$ when $Q= e^{ax}V$
P.I. of $f(D)y = Q$ when $Q= xV$
P.I. of $f(D)y = Q$ when $Q= x^mV$

UNIT –V (10 Hours), Higher order linear differential equations-III :
Method of variation of parameters; Linear differential Equations with non-constant coefficients; The Cauchy-Euler Equation, **Legendre's linear equations, Miscellaneous differential equations.**

Reference Books :
1. Differential Equations and Their Applications by Zafar Ahsan, published by Prentice-Hall of India Learning Pvt. Ltd. New Delhi-Second edition.
2. A text book of mathematics for BA/BSc Vol 1 by N. Krishna Murthy & others, published by S. Chand & Company, New Delhi.
3. Ordinary and Partial Differential Equations Raisinghania, published by S. Chand & Company, New Delhi.
4. Differential Equations with applications and programs – S. BalachandraRao& HR Anuradha universities press.

Co – Curricular Activities(15 Hours) :
Seminar/ Quiz/ Assignments/ Project on Application of Differential Equations in Real life Problem/ Problem solving.

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MATHEMATICS	MAT-201	I B.Sc	2020-2021

SEMESTER-IIPAPER-II   **Max.Marks:70**

Hours/Week: 6SOLID GEOMETRYNo.of Credits: 5

UNIT – I:- The Plane : (12 Hours)
Equation of plane in terms of its intercepts on the axis, Equations of the plane through the given points, Length of the perpendicular from a given point to a given plane, Bisectors of angles between two planes, Combined equation of two planes, Orthogonal projection on a plane.

UNIT – II:- The Line : (12 hrs)
Equation of a line; Angle between a line and a plane; The condition that a given line may lie in a given plane; The condition that two given lines are coplanar; Number of arbitrary constants in the equations of straight line; Sets of conditions which determine a line; The shortest distance between two lines; The length and equations of the line of shortest distance between two straight lines; Length of the perpendicular from a given point to a given line.

UNIT – III:- The Sphere : (12 hrs)
Definition and equation of the sphere; Equation of the sphere through four given points; Plane sections of a sphere; Intersection of two spheres; Equation of a circle; Sphere through a given circle; Intersection of a sphere and a line; Power of a point; Tangent plane; Plane of contact; Polar plane; Pole of a Plane; Conjugate points; Conjugate planes.

UNIT – IV:- The Sphere and Cones : (12 hrs)
Angle of intersection of two spheres; Conditions for two spheres to be orthogonal; Radical plane; Coaxial system of spheres; Simplified from of the equation of two spheres.
Definitions of a cone; vertex; guiding curve; generators; Equation of the cone with a given vertex and guiding curve; equations of cones with vertex at origin are homogenous; Condition that the general equation of the second degree should represent a cone;

UNIT – V:- Cones: (12 hrs)
Enveloping cone of a sphere; right circular cone: equation of the right circular cone with a given vertex, axis and semi vertical angle: Condition that a cone may have three mutually perpendicular generators; intersection of a line and a quadric cone; Tangent lines and tangent plane at a point; Condition that a plane may touch a cone; Reciprocal cones; Intersection of two cones with a common vertex.

Co-Curricular Activities(15 Hours)

Seminar/ Quiz/ Assignments/Three dimensional analytical Solid geometry and its applications/ Problem Solving.

Reference Books :

1.Analytical Solid Geometry by Shanti Narayan and P.K. Mittal, Published by S. Chand & Company Ltd. 7th Edition.

2. A text book of Mathematics for BA/B.ScVol 1, by V Krishna Murthy & Others, Published by S. Chand & Company, New Delhi.

3.A text Book of Analytical Geometry of Three Dimensions, by P.K. Jain and Khaleel Ahmed, Published by Wiley Eastern Ltd., 1999.

4.Co-ordinate Geometry of two and three dimensions by P. Balasubrahmanyam, K.Y. Subrahmanyam, G.R. Venkataraman published by Tata-MC Gran-Hill Publishers Company Ltd., New Delhi.

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MATHEMATICS   MAT-301   B.Sc.(E.M,T.M& CS)   2020-2021

SEMESTER-IIIPAPER-III   Max.Marks:100

Hours per week: 6Abstract Algebra and Real Analysis-INo.of Credits:5

UNIT – 1 : (10Hrs) GROUPS : -
Binary Operation – Algebraic structure – semi group-monoid – Group definition and elementaryproperties Finite and Infinite groups – examples – order of a group. Composition tables with examples.

UNIT – 2 : (10Hrs) SUBGROUPS : -
Complex Definition – Multiplication of two complexes Inverse of a complex-Subgroup definition– examples-criterion for a complex to be subgroups.Criterion for the product of two subgroups to be a subgroup-union and Intersection of subgroups.
Co-sets and Lagrange's Theorem: -Cosets Definition – properties of Cosets–Index of a subgroups of a finite groups–Lagrange'sTheorem.

UNIT –3 : (12Hrs) NORMAL SUBGROUPS : -
Definition of normal subgroup – proper and improper normal subgroup–Hamilton group –
criterion for a subgroup to be a normal subgroup – intersection of two normal subgroups – Subgroup of index 2 is a normal sub group – simple group – quotient group – criteria for the existenceof a quotient group.

UNIT – 4 (14 hrs) : REAL NUMBERS :
The algebraic and order properties of R, Absolute value and Real line, Completeness property of R, Applications of supreme property; intervals. **No. Question is to be set from this portion**.
Real Sequences: Sequences and their limits, Range and Boundedness of Sequences, Limit of a sequence and Convergent sequence. The Cauchy's criterion, properly divergent sequences, Monotone sequences, Necessary and Sufficient condition for Convergence of Monotone Sequence, Limit Point of Sequence, Subsequences and the Bolzano-weierstrass theorem – Cauchy Sequences – Cauchey's general principle of convergence theorem.

UNIT –5 (14 hrs) : INFINITIE SERIES :
Series: Introduction to series, convergence of series. Cauchey's general principle of convergence for series tests for convergence of series, Series of Non-Negative Terms.
1. P-test, 2. Cauchey's n^{th}root test or Root Test. 3.D'-Alemberts' Test or Ratio Test.
4. Alternating Series – Leibnitz Test. Absolute convergence and conditional convergence.

Reference Books:
1. Abstract Algebra, by J.B. Fraleigh, Published by Narosa Publishing house.
2. Real Analysis by Rabert&Bartely and .D.R. Sherbart, Published by John Wiley.
3.A text book of Mathematics for B.A. / B.Sc. by B.V.S.S. SARMA and others, Published byS.Chand& Company, New Delhi.
4.Modern Algebra by M.L. Khanna.

Suggested Activities:
Seminar/ Quiz/ Assignments/Group discussions.

A.G & S.G SIDDHARTHA DEGREE COLLEGE OF ARTS AND SCIENCE,
VUYYURU-521165, KRISHNA Dt, A.P.

(An Autonomous College in the jurisdiction of Krishna University, Machilipatnam)
Accredited with "A" Grade by NAAC, Bengaluru

MATHEMATICS	MAT-401	B.Sc (E.M,T.M, CCs & CS)	2020-2021

SEMESTER-IV	PAPER-IV	Max.Marks:100
Hours/ Week: 6		No.of Credits: 5

Abstract Algebra and Real Analysis – II

UNIT – 1 : (14Hrs) HOMOMORPHISM : -
Definition of homomorphism – Image of homomorphism elementary properties of Homomorphism – Isomorphism – automorphism definitions and elementary properties–kernel of ahomomorphism – fundamental theorem on Homomorphism and applications.

UNIT – 2 : (12Hrs) PERMUTATIONS AND CYCLIC GROUPS : -
Definition of permutation – permutation multiplication – Inverse of a permutation – cyclic permutations – transposition – even and odd permutations – Cayley's theorem.

Cyclic Groups: -Definition of cyclic group – elementary properties – classification of cyclic groups.

UNIT – III (10 hrs) : LIMITS AND CONTINUITY :
Limits : Real valued Functions, Boundedness of a function, Limits of functions. Some extensions of the limit concept, Infinite Limits.Limits at infinity.**No. Question is to be set from this portion.**
Continuous functions: Continuous functions, Combinations of continuous functions, Continuous Functions on intervals, uniform continuity.

UNIT – IV (12 hrs) : DIFFERENTIATION AND MEAN VALUE THEORMS :
The derivability of a function, on an interval, at a point, Derivability and continuity of a function, Graphical meaning of the Derivative, Mean value Theorems; Role's Theorem, Lagrange's Theorem, Cauchhy's Mean value Theorem

UNIT – V (12 hrs) : RIEMANN INTEGRATION :
Riemann Integral, Riemann integral functions, Darboux theorem. Necessary and sufficient condition for R – integrability, Properties of integrable functions, Fundamental theorem of integral calculus, integral as the limit of a sum, Mean value Theorems.

Reference Books :
1. Real Analysis by Rabert&Bartely and .D.R. Sherbart, Published by John Wiley.
2. A Text Book of B.Sc Mathematics by B.V.S.S. Sarma and others, Published by S. Chand
& Company Pvt. Ltd., New Delhi.
3. Elements of Real Analysis as per UGC Syllabus by Shanthi Narayan and Dr. M.D.
Raisingkania Published by S. Chand & Company Pvt. Ltd., New Delhi.
4. Modern Algebra by M.L. Khanna.
Suggested Activities:
Seminar/ Quiz/ Assignments/Group discussions.

MATHEMATICS	MAT-501C	2020-21	III B.Sc.

SEMESTER-V   **PAPER-V**   **Max.Marks:100**

Hours/ Week: 5   **No.of Credits: 5**

RING THEORY & VECTOR CALCULUS

UNIT – 1 RINGS-I: -   **(18 hrs)**

Definition of Ring and basic properties, Boolean Rings, divisors of zero and cancellation laws Rings,

Integral Domains, Division Ring and Fields, The characteristic of a ring – The characteristic of an Integral

Domain, The characteristic of a Field. Sub Rings, Ideals

UNIT – 2 RINGS-II: -   **(18 hrs)**

Definition of Homomorphism – Homorphic Image – Elementary Properties of Homomorphism – Kernel of a

Homomorphism – Fundamental theorem of Homomorphism

Maximal Ideals – Prime Ideals.

UNIT –3 VECTOR DIFFERENTIATION: -   **(18 hrs)**

Vector Differentiation, Ordinary derivatives of vectors, Differentiability, Gradient, divergence, Curl

operators, Formulae Involving these operators.

UNIT – 4 VECTOR INTEGRATION: -   **(18 hrs)**

Line Integral, Surface Integral and Volume integral with examples.

UNIT – 5 VECTOR INTEGRATION APPLICATIONS: -   **(18 hrs)**

Theorems of Gauss and Stokes, Green's theorem in plane and applications of these theorems.

Reference Books:-

1. Abstract Algebra by J. Fralieh, Published by Narosa Publishing house.

2. Vector Calculus by SanthiNarayana, Published by S. Chand & Company Pvt. Ltd., New Delhi.

3. A text Book of B.Sc., Mathematics by B.V.S.S.Sarma and others, published by S. Chand &

Company Pvt. Ltd., New Delhi.

4. Vector Calculus by R. Gupta, Published by Laxmi Publications.

5. Vector Calculus by P.C. Matthews, Published by Springer Verlagpublicattions.

6. Rings and Linear Algebra by Pundir&Pundir, Published by PragathiPrakashan.

Suggested Activities:

Seminar/ Quiz/ Assignments/ Project on Ring theory and its applications.

A.G & S.G SIDDHARTHA DEGREE COLLEGE: VUYYURU-521165

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MATHEMATICS   **MAT-502C**   **2020-21**   **III B.Sc (MPC, MPCs)**

SEMESTER-V   **PAPER-VI**
Hours/ Week: 5   **No. of Credits: 5**
LINEAR ALGEBRA

UNIT – I Vector Spaces-I: (12 hrs)
Vector Spaces, General properties of vector spaces, n-dimensional Vectors, addition and scalar multiplication of Vectors, internal and external composition, Null space, Vector subspaces, Algebra of subspaces, Linear Sum of two subspaces, linear combination of Vectors, Linear span Linear independence and Linear dependence of Vectors.

UNIT –II Vector Spaces-II: (12 hrs)
Basis of Vector space, Finite dimensional Vector spaces, basis extension, co-ordinates, Dimension of a Vector space, Dimension of a subspace, Quotient space and Dimension of Quotient space.

UNIT –III Linear Transformations: (12 hrs)
Linear transformations, linear operators, Properties of L.T, sum and product of LTs, Algebra of Linear Operators, Range and null space of linear transformation, Rank and Nullity of linear transformations – Rank – Nullity Theorem.

UNIT –IV Matrix: (12 hrs)
Matrices, Elementary Properties of Matrices, Inverse Matrices, Rank of Matrix, Linear Equations, Characteristic Roots, Characteristic Values & Vectors of square Matrix, Cayley – Hamilton Theorem.

UNIT –V Inner product space: (12 hrs)
Inner product spaces, Euclidean and unitary spaces, Norm or length of a Vector, Schwartz inequality, Triangle in Inequality, Parallelogram law, Orthogonality, Orthonormal set, complete orthonormal set, Gram – Schmidt orthogonalisation process. Bessel's inequality and Parseval's Identity.

Reference Books:

1. Linear Algebra by J.N. Sharma and A.R. Vasista, published by Krishna Prakashan
Mandir, Meerut- 250002.
2. Matrices by Shanti Narayana, published by S.Chand Publications.
3. Linear Algebra by Kenneth Hoffman and Ray Kunze, published by Pearson Education
   (low priced edition), New Delhi.
4. Linear Algebra by Stephen H. Friedberg et al published by Prentice Hall of India Pvt. Ltd.
4th Edition 2007.

Suggested Activities:

Seminar/ Quiz/ Assignments/ Project on "Applications of Linear algebra Through Computer Sciences"

A.G & S.G SIDDHARTHA DEGREE COLLEGE: VUYYURU-521165

(An Autonomous College in the jurisdiction of Krishna University, Machilipatnam)

Accredited with "A" Grade by NAAC, Bengaluru

MATHEMATICS	MAT-601GE	2020-21	III B.Sc

SEMESTER-VI   **PAPER-VII**   **Max.Marks:100**

Hours/ Week: 5   **No.of Credits: 5**

ELECTIVE–VII-(B); NUMERICAL ANALYSIS

UNIT- I: **10 hours**

Errors in Numerical computations: Errors and their Accuracy, Mathematical Preliminaries, Errors and their Analysis, Absolute, Relative and Percentage Errors, A general error formula, Error in a series approximation.

UNIT – II: **12 hours**

Solution of Algebraic and Transcendental Equations: The bisection method, the iteration method, the method of false position, Newton Raphson method, Generalized Newton Raphson method.

UNIT – III: **12 hours**

Finite Differences and Interpolation: Errors in polynomial interpolation, Finite Differences, Forward differences, Backward differences, Symbolic relations, Detection of errors by use of Differences Tables, Differences of a polynomial, Newton's formulae for interpolation

UNIT – IV: **12 hours**

Central Differences: Central Differences, Central Difference Interpolation Formulae, Gauss's central difference formulae, Stirling's central difference formula, Bessel's Formula, Everett's Formula.

UNIT – V: **14 hours**

 Interpolation – III:

Interpolation with unevenly spaced points, Lagrange's formula, Error in Lagrange's formula, Divided differences and their properties, Relation between divided differences and forward differences, Relation between divided differences and backward differences Relation between divided differences and central differences, Newton's general interpolation Formula, Inverse interpolation.

Reference Books:

1. Numerical Analysis by S.S.Sastry, published by Prentice Hall of India Pvt. Ltd., New Delhi. (Latest Edition)

2. Numerical Analysis by G. SankarRao published by New Age International Publishers, New – Hyderabad.

3. Finite Differences and Numerical Analysis by H.C Saxena published by S. Chand and Company, Pvt. Ltd., New Delhi.

4. Numerical methods for scientific and engineering computation by M.K.Jain, S.R.K.Iyengar, R.K. Jain.

Suggested Activities:

Seminar/ Quiz/ Assignments.

A.G & S.G SIDDHARTHA DEGREE COLLEGE: VUYYURU-521165

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MATHEMATICS	MAT-602CE	2020-21	III B.Sc

SEMESTER-VI   **PAPER-VIII**   **Max.Marks:100**

Hours/ Week: 5   **No.of Credits: 5**

Cluster Elective- VIII-A-1: INTEGRAL TRANSFORMS

UNIT–1:Application of Laplace Transform to solutions of Differential Equations   **12 hrs**

Solutions of ordinary Differential Equations. Solutions of Differential Equations with constants co-efficient Solutions of Differential Equations with Variable co-efficient

UNIT – 2:Application of Laplace Transform : -   **12 hrs**

Solution of simultaneous ordinary Differential Equations.Solutions of partial Differential Equations.

UNIT – 3:Application of Laplace Transforms to Integral Equations : -   **12 hrs**

Integral Equations-Abel's, Integral Equation-Integral Equation of Convolution Type, Integro Differential Equations. Application of L.T. to Integral Equations.

UNIT –4: Fourier Transforms-I : -   **12 hrs**

Definition of Fourier Transform – Fourier'sine Transform – Fourier cosine Transform – Linear Property of Fourier Transform – Change of Scale Property for Fourier Transform – sine Transform and cosine transform shifting property – modulation theorem.

UNIT – 5: Fourier Transform-II : -   **12 hrs**

Convolution Definition – Convolution Theorem for Fourier transform – parseval'sIndentify Relationship between Fourier and Laplace transforms – problems related to Integral Equations.

Finte Fourier Transforms : -

Finte Fourier Sine Transform – Finte Fourier Cosine Transform – Inversion formula for sine and cosine Transforms only statement and related problems.

Reference Books :-

1. Integral Transforms by A.R. Vasistha and Dr. R.K. Gupta Published by Krishna Prakashan Media Pvt. Ltd. Meerut.

2. A Course of Mathematical Analysis by ShanthiNarayana and P.K. Mittal, Published by S. Chand and Company pvt. Ltd., New Delhi.

3. Fourier Series and Integral Transforms by Dr. S. Sreenadh Published by S.Chand and Company Pvt. Ltd., New Delhi.

4. Lapalce and Fourier Transforms by Dr. J.K. Goyal and K.P. Gupta, Published by Pragathi Prakashan, Meerut.

5. Integral Transforms by M.D. Raising hania, - H.C. Saxsena and H.K. Dass Published by S.Chand and Company pvt. Ltd., New Delhi.

Suggested Activities:

Seminar/ Quiz/ Assignments

A.G & S.G SIDDHARTHA DEGREE COLLEGE: VUYYURU-521165

(An Autonomous College in the jurisdiction of Krishna University, Machilipatnam)

Accredited with "A" Grade by NAAC, Bengaluru

MATHEMATICS	MAT-603CE	2020-21	III B.Sc

SEMESTER-VI	PAPER-VIII	Max.Marks:100
Hours/ Week: 5		No.of Credits: 5

ELECTIVE – VIII-A-2: ADVANCED NUMERICAL ANALYSIS

Unit – I Curve Fitting: **10 Hours**

Least – Squares curve fitting procedures, fitting a straight line, Polynomial fitting,

Curve fitting by a power functions and exponential function.

UNIT- II Numerical Differentiation: **12 hours**

Derivatives using Newton's forward difference formula, Newton's backward difference formula,

Derivatives using central difference formula, stirling's interpolation formula, Newton's divided difference

formula, Maximum and minimum values of a tabulated function.

UNIT- III Numerical Integration: **12 hours**

General quadrature formula, Trapezoidal rule, Simpson's 1/3 – rule, Simpson's 3/8 – rule, Boole's rule and

Weddle's rules (only problems),

UNIT – IV Solutions of simultaneous Linear Systems of Equations: **14 hours**

Solution of linear systems – Direct methods, Matrix inversion method, Gaussian elimination methods,

Gauss-Jordan Method , Method of factorization. Iterative methods – Jacobi's method,   Gauss-siedal

method.

UNIT – V Numerical solution of ordinary differential equations: **12 Hours**

Introduction, Solution by Taylor's Series, Picard's method of successive approximations, Euler's method,

Modified Euler's method, Runge – Kutta methods.

Reference Books :

1. Numerical Analysis by S.S.Sastry, published by Prentice Hall India (Latest Edition).

2. Numerical Analysis by G. SankarRao, published by New Age International Publishers,

   Hyderabad.

3. Finite Differences and Numerical Analysis by H.C Saxena published by S. Chand and

Company, Pvt. Ltd., New Delhi.

4. Numerical methods for scientific and engineering computation by M.K.Jain, S.R.K.Iyengar,

   R.K. Jain.

Suggested Activities:

Seminar/ Quiz/ Assignments

MATHEMATICS	MAT-604CE	2020-21	III B.Sc

SEMESTER-VI	PAPER-VIII	Max.Marks:100
Hours/ Week: 5		**No.of Credits: 5**

ELECTIVE – VIII-A-3: Project

Applications of advanced Numerical Analysis with 'C' Programme

AdusumilliGopalakrishnaiah& Sugar Cane Growers Siddhartha Degree
College ofArts & Science, Vuyyuru, Krishna District, Andhra Pradesh
(An Autonomous College in the Jurisdiction of Krishna University, Machilipatnam)
Accredited by NAAC with "A" GradeISO 9001:2015 Certified Institution

DEPARTMENT OF PHYSICS

HIGHLIGHTED SYLLABUS OF PHYSICS

2020-21

Syllabus in Relevance to Employability, Skill Development and Entrepreneurship is highlighted as mentioned: Employability in yellow Color, Skill Development in Sky blue colour and Entrepreneurship in Green colour

Employability   🟨

Skill-Development   🟦

Entrepreneurship   🟩

A.G. & S.G.SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS), VUYYURU – 521 165
I B.Sc. 1st Semester
(2020-2021)
Physics Paper I: Mechanics ,Waves and Oscillations
Work load: 60hrs per semester   4 hrs/week

UNIT-I:
1. Mechanics of Particles (5 hrs)
Review of Newton's Laws of Motion, Motion of variable mass system, Motion of a rocket, Multistage rocket, Concept of impact parameter, scattering cross-section, Rutherford scattering-concept only.
2. Mechanics of Rigid bodies (7 hrs)
Rigid body, rotational kinematic relations, Equation of motion for a rotating body, Angular momentum and Moment of inertia tensor, Euler equations, Precession of a spinning top, Gyroscope, Precession of atom and nucleus in magnetic field, Precession of the equinoxes
Unit-II:
3. Motion in a Central Force Field (12hrs)
Central forces, definition and examples, characteristics of central forces, conservative nature of central forces, Equation of motion under a central force, Kepler's laws of planetary motion- Proofs, Kepler's third law from inverse-square law of Gravitation. Motion of satellites, Basic idea of Global Positioning System (GPS).
UNIT-III:
4. Relativistic Mechanics (12hrs)
Introduction to relativity, Frames of reference, Galilean transformations, absolute frames, Michelson-Morley experiment, Postulates of Special theory of relativity, Lorentz transformation, time dilation, length contraction, variation of mass with velocity, Einstein's mass-energy relation
Unit-IV:
5. Undamped, Damped and Forced oscillations: (07 hrs)
Simple harmonic oscillator and solution of the differential equation, Damped harmonic oscillator, Forced harmonic oscillator – Their differential equations and solutions, Resonance, Logarithmic decrement, Relaxation time and Quality factor.
6. Coupled oscillations: (05 hrs)
Coupled oscillators-Introduction, Two coupled oscillators, N-coupled oscillators and wave equation.

Practical paper 1: Mechanics Waves and Oscillations

Exam duration : 3Hours   Maximum marks : 50 marks

Minimum of 6 experiments to be done and recorded

1. Young's modulus material a rod by uniform bending
2. Young's modulus material a rod by non- uniform bending
3. Surface tension of a liquid by capillary rise method

.   4.Fly-wheel- Determination of moment of inertia.

   5. Determination of 'g' by compound/bar pendulum
   6. Determination of the elastic constants of the material of a flat spiral spring.
  7. Determination of the frequency of a bar- Melde's experiment.
  8. Study of a damped oscillation using the torsional pendulum immersed in liquid-decay constant and damping correction of the amplitude.

A.G. & S.G.SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE (AUTONOMOUS), VUYYURU – 521 165
II B.Sc. 3rd Semester
(2020-2021)

III SEMESTER   Paper III: Wave Optics
Work load: 60 hrs per semester   4 hrs/week

UNIT- I .. (7 hrs)   1. Aberrations:

Introduction – monochromatic aberrations, spherical aberration, methods of minimizing spherical aberration, coma, astigmatism and curvature of field, distortion. Chromatic aberration-the achromatic doublet. Achromatism for two lenses (i)in contact and (ii) separated by a distance.

UNIT –II .. (9 hrs) 2. Interference : Division of wavefront:

Principle of superposition-coherence-conditions for interference of light..Fresnel's biprism-determination of wavelength of light. Determination of thickness of a transparent material using biprism –Determination of the thickness of a thin sheet of transparent material. Change of phase on reflection – Stoke's Law.

UNIT –III .. (10 hrs)   3. Division of Amplitude:

Oblique incidence of a plane wave on a thin film due to reflected and transmitted light (cosine law) –colors of thin films-Non reflecting films-interference by a plane parallel film illuminated by a point source- Interference by a film with two non-parallel reflecting surfaces (Wedge shaped film).   Determination of diameter of wire- Newton's rings in reflected light-Determination of wavelength of monochromatic light. Michelson interferometer- Determination of wavelength of monochromatic light.

UNIT- IV .. (12 hrs)   4. Diffraction:

Introduction,distinction between Fresnel and Fraunhoffer diffraction, Fraunhoffer diffraction – Diffraction due to single slit and circular aperture-Limit of resolution-Fraunhoffer diffraction due to double slit-Fraunhoffer diffraction pattern with N slits (diffraction grating).Resolving power of grating-Determination of wavelength of light in normal and oblique incidence methods using diffraction grating.Fresnel's half period zones-area of the half period zones-zone plate-comparison of zone plate with convex lens-difference between interference and diffraction.

UNIT- V   5.Polarisation (12 hrs) :

Polarized light: methods of polarization polarization by reflection, refraction, double refraction, scattering of light-Brewster's law-Mauls law-Nicol prism polarizer and analyzer-Quarter wave plate, Half wave plate-optical activity, analysis of light by Laurent's half shade polarimeter-Babinet's compensator.

6. Lasers and Holography: (10 hrs)

Lasers: introduction, spontaneous emission, stimulated emission. Population Inversion, Laser principle-Einstein coefficients-Types of lasers-He-Ne laser, Ruby laser- Applications of lasers. Holography: Basic principle of holography-Gabor hologram and its limitations, Applications of holography.

Practical Paper III: Wave Optics
Exam duration : 3Hours   Maximum marks : 50 marks

Work load:30 hrs

Minimum of 6 experiments to be done and recorded

1. Determination of radius of curvature of a given convex lens-Newton's rings.
2. Resolving power of grating.
3. Study of optical rotation –polarimeter.
4. Dispersive power of a prism.
5. Determination of wavelength of light using diffraction grating- minimum deviation method.
6. Wavelength of light using diffraction grating-normal incidence method.
7. Resolving power of a telescope.
8. Refractive index of a liquid-hallow prism
9. Determination of thickness of a thin fiber by wedge method
10. Spectrometer- i-d curve.
11. Determination of refractive index of liquid-Boy's method.
12. Determination of wavelength-Hartmann formula (prism)

A.G. & S.G.SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS), VUYYURU – 521 165
III B.Sc. 5th Semester
(2020-2021)
Paper V: Electricity, Magnetism and Electronics

Work load:60 hrs per semester   4 hrs/week   Course Code : PHY 501C

Unit – I(12hrs)
1.Electrostatics
Gauss's law Statement and its proof-Electric field intensity due to (1) Uniformly charged sphere and (2) an infinite conducting sheet of charge. Electric potential- Equipotential surface –potential due to i) a point charge ii) charged spherical shell .
2.Dielectrics
Electric dipolement and molecular polarizability- Electric displacement D, electric polarization P – relation between D, E, and P- Dielectric constant, susceptibility .

Unit – II(12hrs)
3. Electric and magnetic field   Biot – Savart's law and calculation of B due to long straight wire, a circular current loop and solenoid.   Hall effect-determination of Hall coefficient and applications.
4.Electromagnetic
Faraday's law – Lenz's law self and mutual inductance, coefficient of coupling, calculation of self inductance of a long solenoid, energy stored in magnetic field. Tansformer- energy losses and efficiency.

Unit-III(12hrs)
5.Alternating current and electro magnetic waves
Alternating current –Relation between current and voltage in LR and CR circuits, vector diagrams, LCR series and parallel resonant circuit , Q- factor, power in AC circuits.
6.Maxwell's equations
 Idea of displacement current- Maxwell's equations (integral and differential forms) (no derivation) Maxwell's wave equation(with derivation), Transverse nature of electromagnetic wave. Pointing Vector (statement and proof) production of electromagnetic wave Hertz experiment.
Unit-IV(12hrs)
7.Basic electronics:
PN junction diode Zener diode ,I-V characteristics, PNP and NPN Transistors, CB,CE and CC configuration Relation between α β and Γ transistors (CE) characteristics,Transistor as an amplifier.

 Unit-V(12hrs)
Digital electronics:
Number systems-conversion of binary to decimal system and vice versa. Binary addition and subtraction (1's and 2's complement methods) laws of Boolean algebra-De Morgan's laws-

statement and proof basic logic gates, NAND and NOR as universal gates Half adder and FULL
adder.

Practical paper V: Electricity, Magnetism and Electronics
Exam duration : 3Hours   Maximum marks : 50 marks
Work load:30hrs

Minimum of 6 experiments to be done and recorded

1.   Figure of merit of a moving coil galvanometer.
2.   LCR circuit series/parallel resonance, Q-factor
3.   Determination of Ac-frequency-sonometer
4.   Verification of Kirchoff's laws
5.   Field along the axis of a circular coil carrying current.
6.   PN Junction diode Characteristics
7.   characteristics of Zener diode
8.   Transistor CE Characteristics.
9.   Logic Gates –OR ,AND, NOT,and NAND gates verification of truth tables.
10.   Verification of De Morgan's theorems

A.G. & S.G.SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS), VUYYURU – 521 165
III B.Sc. Physics – V Semester – Paper –VI
(2020 – 2021)
Modern Physics
Course Code : PHY 502C   Work Load : 60 hrs per semester   4 hrs/week

Unit – I (12 hrs)
1. Atomic and molecular physics

Introduction – Drawbacks of Bohr's atomic model – Sommerfeld's elliptical orbits-relativistic correction (no derivation). Vector atom model and Stern & Gerlach experiment - quantum numbers associated with it. L-S and j-j coupling schemes. Zeeman Effect and its experimental study.

Raman effect, stokes and Anti stokes lines . Quamtum theory of Raman effect. Experimental arrangement – Applications of Raman effect.

UNIT – II (12 hrs)

2. Matter waves & Uncertainty Principle

Matter waves, de Broglie's hypothesis – wavelength of matter waves, Properties of matter waves – Davisson and Germer experiment, uses of electron diffraction-Phase velocity and Group velocity (definitions only)- relation between phase velocity and Group velocity– Heisenberg's uncertainty principle for position and momentum (x and p) & energy and time (E and t). Experiment verification.

UNIT – III (12 hrs)
3.Quantum (wave) mechanics

Basic postulates of quantum mechanics – Schrodinger time independent and time dependent wave equation – derivations. Physical interpretation of wave function. Applications of Schrodinger wave equation to particle in one dimensional infinite box. Harmonic oscillator.

UNIT – IV (12 hrs)
4.General properties of Nuclei

Basic ideas of nucleus – size,mass,charge density(matter energy), binding energy,angular momemtum, parity, magnetic moment, electric quadrupole moments.Liquid drop model and shell model (qualitative aspects only)- Magic numbers.

5. Radioactivity decay

Alpha decay : basis of α – decay processes. Range of α-particles , Geiger- Nuttal law. β – decay, β ray continuous and discrete spectrum, neutrino hypothesis.

UNIT – V (12 hrs)

6.Crystal structure

Amorphous and crystalline materials, unit cell, Miller indices, reciprocal lattice, types of lattices, diffraction of X- rays by crystals, Bragg's law, experimental techniques, Laue's method and powder diffraction method.

7. Superconductivity:

Introduction – experimental facts, critical temperature – critical field – Meissner effect – isotope effect – Type I and Type II superconductors – BCS theory (elementary ideas only) – applications of superconductors.

Practical Paper VI : Modern Physics

Exam duration : 3Hours   Maximum marks : 50 marks
 Work load : 30 hrs   3 hrs.
 Minimum of 6 experiments to be done and recorded

1. e/m of an electron by Thomson method.

2. Determination of Planck's Constant (photocell)

3. Verification of inverse square law of light using photovoltaic cell.

4. Study of absorption of α – rays.

5. Study of absorption of . β – rays.

6. Determination of range of β – particles.

7. Determination of M & H.

8. Analysis of powder X- ray diffraction pattern to determine properties of crystals.

9. Energy gap of semiconductor using junction diode.

10. Energy gap of a semiconductor using Thermistor.

A.G. & S.G.SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS) , VUYYURU – 521 165
I B.Sc. 2ⁿᵈ Semester
(2020-21)

Paper II: Waves Optics   II SEMESTER
Work load: 60 hrs per semester   credits - 3   **4 hrs/week**

UNIT-I Interference of light: (12hrs)

Introduction, Conditions for interference of light, Interference of light by division of wave front and amplitude, Phase change on reflection Stokes' treatment, Lloyd's single mirror, Interference in thin films: Plane parallel and wedge shaped films, colours in thin films, Newton's rings in reflected light-Theory and experiment, Determination of wavelength of monochromatic light, Michelson interferometer and determination of wavelength.

UNIT-II Diffraction of light: (12hrs)

Introduction, Types of diffraction: Fresnel and Fraunhoffer diffractions, Distinction between Fresnel and Fraunhoffer diffraction, Fraunhoffer diffraction at a single slit, Plane diffraction grating, Determination of wavelength of light using diffraction grating, Resolving power of grating, Fresnel's half period zones, Explanation of rectilinear propagation of light, Zone plate, comparison of zone plate with convex lens.

UNIT-III Polarisation of light: (12hrs)

Polarized light: Methods of production of plane polarized light, Double refraction, Brewster's law, Malus law, Nicol prism, Nicol prism as polarizer and analyzer, Quarter wave plate, Half wave plate, Plane, Circularly and Elliptically polarized light-Production and detection, Optical activity, Laurent's half shade polarimeter: determination of specific rotation, Basic principle of LCDs

UNIT-IV Aberrations and Fibre Optics: (12hrs)

Monochromatic aberrations, Spherical aberration, Methods of minimizing spherical aberration, Coma, Astigmatism and Curvature of field, Distortion; Chromatic aberration-the achromatic doublet; Achromatism for two lenses (i) in contact and (ii) separated by a distance.

Fibre optics: Introduction to Fibres, different types of fibres, rays and modes in an optical fibre, Principles of fibre communication (qualitative treatment only), Advantages of fibre optic communication.

UNIT-V Laser sand Holography :(12hrs)

Lasers: Introduction, Spontaneous emission, stimulated emission, Population Inversion, Laser principle, Einstein coefficients, Types of lasers-He-Ne laser, Ruby laser, Applications of lasers; Holography: Basic principle of holography, Applications of holography

Practical Paper II: Wave Optics

Exam duration : 3Hours   credits - 2   Maximum marks : 50 marks
Work load: 30 hrs   2 Hours per week

Minimum of 6 experiments to be done and recorded

 1. Determination of radius of curvature of a given convex lens-Newton's rings.
 2. Resolving power of grating.
3. Study of optical rotation –polarimeter.
 4. Dispersive power of a prism.
5. Determination of wavelength of light using diffraction grating-minimum deviation method.
 6. Determination of wavelength of light using diffraction grating-normal incidence method.
7. Resolving power of a telescope.
8. Refractive index of a liquid-hallow prism
9. Determination of thickness of a thin wire by wedge method
10. Determination of refractive index of liquid-Boy's method.

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(AUTONOMOUS) , VUYYURU – 521 165
II B.Sc. 4th Semester

(2020-21)

Paper IV: Thermodynamics &Radiation Physics

Work load:60 hrs per semester   credits - 3   4 hrs/week

UNIT- I .. (11 hrs)
1.Kinetic theory of gases
Introduction –Deduction of Maxwell's law of distribution of molecular speeds, Transport phenomena-Viscosity of gases-thermal conductivity-diffusion of gases.

UNIT- II ..(14 hrs)
2. Thermodynamics
Introduction- Isothermal and adiabatic process- Reversible and irreversible processes-Carnot's engine and its efficiency-Carnot's theorem-Second law of thermodynamics. Kelvin's and Claussius statements-Entropy, physical significance –Change in entropy in reversible and irreversible processes-Entropy and disorder-Entropy of Universe-Temperature-Entropy (T-S) diagram-Change of entropy of a perfect gas- change of entropy when ice changes into steam.

UNIT- III ..(11 hrs)
3. Thermodynamic potentials and Maxwell's equations
Thermodynamic potentials-Derivation of Maxwell's thermodynamic relations-Clausius-Clayperon's equation-Derivation for ratio of specific heats-Derivation for difference of two specific heats for perfect gas. Joule Kelvin effect-expression for Joule Kelvin coefficient for perfect.

UNIT- IV ..(10 hrs)
4. Low temperature Physics
Introduction-Joule Kelvin effect-liquefaction of gas using porous plug experiment Joule expansion-Distinction between adiabatic and Joule Thomson expansion-Expression for Joule Thomson cooling-Liquefaction of helium, Kapitza's method-Adiabatic demagnetization, Production of low temperatures -applications of substances at low-temperature-effects of chloro and fluoro carbons on ozone layer.

UNIT- V ..(14 hrs)
5. Quantum theory of radiation
Blackbody-Ferry's black body-distribution of energy in the spectrum of black body-Wein's displacement law, Wein's law, Rayleigh-Jean's law-Quantum theory of radiation-Planck's law-Measurement of radiation-Types of pyrometers –Angstrom pyroheliometer-determination of solar constant, Temperature of Sun.

Practical Paper IV: Thermodynamics

Exam duration : 3Hours   credits - 2   Maximum marks : 50 marks

Work load: 30 hrs   2 Hours per week

Minimum of 6 experiments to be done and recorded

1. Specific heat of a liquid –Joule's calorimeter –Barton's radiation correction
2. Thermal conductivity of bad conductor-Lee's method
3. Thermal conductivity of rubber.
4. Measurement of Stefan's constant.
5. Specific heat of a liquid by applying Newton's law of cooling correction.

6. Heating efficiency of electrical kettle with varying voltages.

7. Mechanical equivalent of heat
8. Thermo emf - thermo couple potentiometer
9. Coefficient of thermal conductivity of copper- Searle's apparatus.
10. Thermal behavior of an electric bulb (filament/torch light bulb)
11. Measurement of Stefan's constant- emissive method

12. Temperature variation of resistance- thermistor

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<u>**III B.Sc. Physics – VI Semester – Paper –VII**</u>

(2020-21)

Elective VII (A):(Electronics)   Course Code: PHY – 601GE

SEMISTER-VI   credits - 3   4 hrs/week

<u>**ELECTIVE PAPER –VII-A: ANALOG AND DIGITAL ELECTRONICS**</u>

UNIT- I (14 hours)   Total Lectures: 60 hours

1. FET Construction ,Working ,Characteristics and uses; MOSEFT-enhancement MOSEFT,Depletion MOSEFT, Construction and Working, drain Characteristics of MOSEFT, applications of MOSEFT.
2. Photo electric devices: structure and operation, Characteristics and applications of LED and LCD.

UNIT- II (10hours)

3. Operational amplifier: Characteristics of ideal and practical OP-amp (IC-741),Basic differential OP-amp supply voltage, IC identification, internal blocks of OP-amp, its parameter off set voltages and currents, CMRR, slew rate, Concept of Virtual ground.

UNIT- III (10hours)

4. Applications of OP-amp: OP-amp as voltage amplifier, inverting amplifier, Non- inverting amplifier, Voltage follower, summing amplifier, difference amplifier, comparator, Integrator, Differentiator.

UNIT- IV (14hours)

5. Data processing circuits: Multiplexers, De –Multiplexers, encoders, decoders, Characteristics

6.For Digital IC's –RTL, DTL,TTL, CMOS (NAND&NOR Gates).

UNIT- V (12hours)

7 . Sequential digital circuits: Flip-flops, RS, clocked SR, JK, D, T, Master-Slave Flip-flops .

  8. Counters: Asynchronous counters-modulo 4counter-modulo 16 ripple counter, Decade counter, Synchronous counter.

ELECTIVE PAPER –VII PRACTICAL:

ANALOG AND DIGITAL ELECTRONICS

credits – 2   2 Hours per week

Minimum of 6 experiments to be done and recorded

1. Characteristics of FET

2. Characteristics of MOSEFT

3. Characteristics of LDR

4. Characteristics of OP-amp.(IC-741)

5. OP-amp as amplifier/inverting amplifier

6. OP-amp as integrator/differentiator

7. OP-amp as summing amplifier /difference amplifier

8. Master-Slave Flip-flop

9. JK Flip-flop

SEMISTER-VI   Course Code: PHY -602 CE   credits - 3   4 hrs/week

CLUSTER ELECTIVES VIII-A

PAPER-VIII-A-1: INTRODUCTION TO MICROPROCESSOR AND MICROCONTROLLER

UNIT- I (10hours)
MICROPROCESSOR:
General architecture of microprocessor, architecture of 8085 microprocessor, 8085 pin diagram, Concept of data bus, address bus, and control bus, 8085 programming instruction classification.

UNIT-II: (10hours)
8085 Interfacing Memory
Introduction-Memory structure and its requirements-basic concepts in memory interfacing. Address Decoding-Interfacing circuit. Port-mapped I/O or Direct I/O interface (8-bit Addressing)-Memory Indirect I/O mapped Interfaces (16-bit Addressing)-Port mapped versus Memory mapped I/O. I/O Device Interfacing.

UNIT-III (15hours)
8085 Microprocessor Applications
Introduction-Programmed data transfer scheme. Direct Memory Access (DMA) –Types. 8255A PPI-Block diagram. 8259A PIC-Pin diagram and functional description. 8257 Programmable DMA controller-Block diagram and Pin description.

UNIT-IV: (13hours)
8051 Architecture-I:
 Types of microcontrollers- microcontroller architecture, CISC, RISC, operation of microcontroller, basic building blocks of microcontroller, comparison of microcontroller and microprocessor- block diagram of 8051-I/o pins and ports.Microcontroller Resources.

UNIT-V: (12hours)
8051 Architecture-II:
8051 Flag bits and PSW register and DPTR register- Memory Organization-Special function registers- PSW register-Counters and Timers-Serial I/O-8051 Microcontroller Interrupts.

PAPER-VIII-A-1: Practical:

INTRODUCTION TO MICROPROCESSOR AND MICROCONTROLLER

credits – 2   2 Hours per week

Minimum of 6 experiments to be done and recorded

1. To find that the given number is prime or not.

2. To find the factorial of a number.

3. Write a program to make the two numbers equal by increasing the smallest number and decreasing the largest number.

4. Use one of the four ports of 8051 for O/P interfaced to eight LED's simulate binary counter (8 bit) on LED's.

5. Program to glow first four LED then next four using TIMER application.

6. Program to rotate the contents of the accumulator first right and then left.

7. Program to run a count down from 9-0 in the 7 segment LED display.

8. To interface 7 segment LED display with 8051 Microcontroller and display 'HELP' in the 7 segment LED display.

9. To toggle '1234' as '1324' in the 7 segment LED.

10. Interface stepper motor with 8051 and write a Program to move the motor through a given angle in clock wise or counter clock wise direction.

11. Application of Embedded system: Temperature measurement, some information on LCD display, interfacing a key board.

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III B.Sc. 6ᵗʰ Semester

(2020-21)

COURSE CODE : PHY-603 CE   credits - 3

Cluster Elective Paper – VIII- A-2 : Computational Methods and Programming

No. of Hours per week : 04   Total Lectures : 60

UNIT – I (12 hrs)
1. Fundamentals of C language: C character set – Identifiers and keywords – structure of c program. Constants- variables- Data types- Declarations of variables – Declaration of storage class – Defining symbolic constants – Assignment statement.
2. Operators : Arithmetic operators- Relational operators – Logic operators – Assignment operators – Increment and decrement operators – Conditional operators.

UNIT –II (12 hrs)
3. Expressions and I/O statements : Arithmetic expressions – precedence of arithmetic operators – Type converters in expressions – Mathematical (Library) functions – Data input and output – The getchar and putchar functions – Scanf – Printf simple programs.
4. Control statements: IF – ELSE statements – Switch statements – The operators – GO TO-while, DO-While, FOR statements – BREAK and CONTINUE statements.

UNIT – III (12 hrs)
5.Arrays: One dimensional and two dimensional arrays – Initialization –Type declaration – Inputting and outputting of data for arrays – Programs of matrices addition, subtraction and multiplication.
6.User defined functions: The form of C functions – Return values and their types – Calling a function – Category of functions. Nesting of functions. Recursion. ANSI C functions – Function declaration. Scope and life of variables in functions.

UNIT – IV (12 hrs)

7.Linear and Non-Linear equations: Solution of Algebra and transcendental equations – Bisection, Falsi position and Newton – Rhapson methods – Basic principles – Formulae – algorithms.
8.Simultaneous equations: Solutions of simultaneous linear equations – Guass elimination and Gauss seidel iterative methods – Basic principles – Formulae- Algorithms.

UNIT – V (12 hrs)
 9.Interpolations : Concept of linear interpolation – Finite differences –
 Newton's and Lagrange's interpolation formulae – principles and Algorithms.

10.Numerical differentiation and integration : Numerical differentiation – algorithm for evaluation of first order derivatives using formulae based on Taylor's series – Numerical integration – Trapezodal and Simpson's 1/3 rule – Algorithms.

Cluster Elective Paper – VIII-A-2 : Practical

Computational Methods and Programming

2 hrs/ week   credits – 2

Minimum of 6 experiments to be done and recorded

1. Write a program that reads an alphabet from keyboard and display in the reverse order.
2. Write a program to read and display multiplication of tablets.
3. Write a program for converting centigrade to Fahrenhit temperature and Fahrenheit temperature centigrade.
4. Write a program to find the largest element in an array.
5. Write a program based on percentage calculation , the grade by entering the subject marks . (If percentage > 60, I class, if percentage between 50 &60 II class, if percentage between 35 & 50 III class, if percentage below 35 fail)
6. Write a program for generation of even and odd numbers up to 100 using while, do – while and for loop.
7. Write a program to solve the quadratic equation using Bisection method.
 8. Write a program for integration of function using Trapezoidal rule.
 9. Write a program for solving the differential equation using Simpson's 1/3 rule.

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III B.Sc. 6th Semester
(W.E.F 2020-21)

COURSE CODE : PHY-604 CE

Cluster Elective Paper – **VIII-A-3**: **Electronic Instrumentation**

No.of Hours per week: 04   Total Lectures: 60

UNIT -1 (12 Hours)

1.Basic of measurements: Instruments accuracy, precision, sensitivity- errors in measurements- Basic meter movement-PMMC (Permanent Magnetic Moving Coil).
 2.Measurement of dc current: DC ammeter- multi range ammeters-the ARYTON Shunt or universal Shunt.
3.Measurement of dc voltage: DC Voltmeter – Multi Range Voltmeter- Voltmeter sensitivity.
UNIT – II (10 HOURS)

4.Analog Multimeter**:** Multimeter - as dc ammeter-as dc voltmeter-as ac voltmeter- as ohm meter-Multimeter operating instructions.

5.Digital instruments: Principle and working of digital instruments, characteristics of a digital meter, working principle of digital voltmeter.

UNIT –III (14 HOURS)

6.CRO: Block diagram of basic CRO, construction of CRT, electron gun, electrostatic focusing and acceleration (only explanation), time base operation, synchronization, front panel controls, specifications of CRO and their significance.
7.Applications CRO: Measurement of voltage- dc and ac, frequency, time period. Special features of dual trace CRO. Digital storage oscilloscope: block diagram and principle of working.

UNIT – IV (12 HOURS)

8.Diode as Rectifier – Half wave rectifier, Full wave rectifier – construction, working and efficiency. (no derivation)
9.Feedback in Electronic circuits – Positive and Negative feedback, expressions for gains, advantages of negative feedback, Oscillators, Barkhausen criteria, RC phase shift oscillator (no derivation)

UNIT – V (12 HOURS).

10.Signal Generators: Block diagram, working and specifications of low frequency signal generators, pulse generator, function generator .
11.Bridges: Measurement of resistance by Wheat stone's Bridge- Sensitivity of Wheat stone's Bridge- Applications of Wheat stone's Bridge-Limitations of Wheat stone's Bridge.

Cluster Elective Paper – VIII-A-3-Practical: Electronic Instrumentation 2hrs/Week.

Paper Title: Project Work   Paper code: PHY-604 CE

The students have chosen Physics as cluster elective and "Ardino microcontroller based projects" for this Academic year.

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DEPARTMENT OF POLITICAL SCIENCE

HIGHLIGHTED SYLLABUS OF POLITICAL SCIENCE

2020-21

Syllabus in Relevance to Employability, Skill Development and Entrepreneurship is highlighted as mentioned: Employability in yellow Color, Skill Development in Sky blue colour and Entrepreneurship in Green colour

Employability

Skill-Development

Entrepreneurship

DEPARTMENT OF POLITICAL SCIENCE
A.G. & S.G.SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE
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I B.A. 1st Semester
(2020-2021)

Paper I: Introduction to Political Science   Semester-I   Paper code:POLT11A
Work load: 90 hrs per semester   credits - 4   5 hrs/week

UNIT- I (20 hours) Introduction
 1)Definition,Nature,Scope and Importance of Political Science-Relations
 with Allied Disciplines (History,Economics,Philosophy and Sociology)
 2)Approaches to the Study of Political Science:
  Traditional Approaches:Historical,Normative and EmpiricalApproaches
  Modern Approaches: Behavioral and System Approach

 UNIT- II (15 hours)
 State

 Definition of the State,Elemenst of the Stae,Theories of Origin of the State- Devine
 Origin Theory,Social contract Theories,Historical Evolutionary Theory
 1)Concepts of Modren State and Welfare State

 UNIT- III (20 hours)
  Concepts of Political Science
 1.Law-Liberty
 2Power,.Authority and Legitimacy

 UNIT –IV (15 hours)
 Theories of Rights
 1)Meaning,Nature and Classification of Rights

 UNIT- V
 Political Ideologies
 1)Liberalism,Individualism and Anarchism
 2)Socialsm,Marxism and Multicultuarlism

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I B.A 2nd Semester
(2020-2021)

Paper II: Basic Organs of the Government   Paper code:POLT21B

Work load: 90 hrs per semester   credits - 4   5 hrs/week

UNIT- I .. (15 hrs)
1.Constitution
1)meaning,Definition,Origin and Evolution of Constitution
2)Classion of the Constitution-Written and Unwritten,Rigid and Flexible

UNIT- II ..(20 hrs)
 2.Organs of the Government
1)Theory of Seperation of Powers-B.D Montesquieu.
2)Legislature-Unicameral and Bicameral-Powers and Functions,Executive-Types,Powers and Functions.
3)Judiciary-Powers and Functions.

UNIT- III ..(20 hrs)
3.Forms of Government
1)Unitary and Federal Forms of Government-Merits and Demerits
2)Parliamentary and Presidential Forms of Government-Merits and Demerits

UNIT- IV ..(15 hrs)
4.Democracy
1)Meaning,Definition,Significance,Theories and Principles of Democracy
2)**Types of Democracy:Direct and Indirect Democracy**-Methods,Merits and-Essential Conditions for Success of Democracy

UNIT- V ..(20 hrs)
5.Political Parties-Pressure Groups-Public Opinion
1)Meaning,Definition and Classification of Political Parties:National and Reigional-Functions of Political Parties
2)Pressure Groups (Interest Groups)-Meaning,Definition,Types,Functions and Significance of Public Opinion

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II B.A – III Semester

(2020-2021)

Course Code:POL301   SEMESTER:III

Work load:90 hours per Semester   credits - 4
5hours/week work

Paper Name:Indian government and Politics

 UNIT- I (20 hours)
 Social and Ideological Base of the Indian Constitution
1)Constituional Development in India During British Rule-A Historical Perspective with the Reference to Government of India Acts,1909,1919 and 1935.
2)Constituent Assembly Nature,Composition,Socio-Economic,Philosophical Dimensions and Salient Features of The Indian Constitution

UNIT- II (20hours)
Individual and State
1)Fundamental Rights, Directive Principles of State Policy and Fundamental Duties-Differences Between Fundamental Rights and Directive Principles of State
2)The Doctrine of Basic Structure of The ConstitutionWith Referance To Judicial Interpretation And Socio-Political Realities

UNIT- III (15hours)
Union Executive
1)President of India Mode of Elections,Powers and Functions
2)Parliament –Composition,Powers and Functions,Legislative Committees,Prime Minster and and Council of Ministers-Powers and functions,role in CoalitionPolitics
UNIT- IV (15hours)
State Executive
1)Governer-Mode of Appointement,Powers nad Functions
2)Legislature-Composition,Powers and Functions,Chief Minstser and Council of Minister-Powers and Functions
UNIT- V (20hours)
The Indian Judiciary
1)Supreme court-Composition and Appointements,Powers and Functions or Jurisdiction of the Supreme Court,Judicial Review,Judicial Activism.

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II B.A – IV Semester

(2020 – 2021)

SEMISTER-VI   **Course Code: POL401**   **credits – 4**
Work Load:90 hours per semester   **Paper Title:Indian Political Process**

UNIT- I (15hours)
Federal Process
1)Central State Relations-Legislative,Administrative and Finanacial
2)Eemerging Trends in Centrla State Relations-Restructing Centre State Relations-Recommenadations of Sarkaria Commission,M.M punchi Commission
UNIT-II: **(15hours)**
Electoral Process
1)The Election Commission of India Powers and Functions
2)Issue of Electoral Reforms,Voting Behaviour-Determinants and Problems of Defections
UNIT-III (20hours)
Grossroot Democracy-Decentralisation
1)Panchayati Raj System-Local and Urban Governments Structure, Powers and Functions
2)Democratic Decentralization-Rural Development and Poverty Alieviation with Referance to 73rd and 74th Constututional Amendment Acts Challenges and Prospects
UNIT-IV: (20hours)
Social Dynamics-Emerging Challenges To Indian Political System
1)Role of Caste,Religion,Language and Regionlism in India
2)Politics of Reservation,Criminalization of Politics and Internal Threats to Security
UNIT-V: **(20hours)**
Regularity and Governance-Instituions
1)NITI Ayog,Finance Commission,Comptroler and Auditior General of India
2)Central Vigilance Commission,Central information Commision,Lokpal and Lokayukta

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(AUTONOMOUS), VUYYURU – 521 165
III B.A. 5th Semester
(2020-2021)
Paper V: Indian Political Thought

Work load : 90 hrs per semester   **5 hrs/week**
Course Code : POL 501C

Unit – I (15hours)
1.Traditions of Ancient Indian Political Thought
1)Sources and Feautures of Ancient Indian Political Thought
2)Manu-Social Laws
2)Kautilya—Theory of State

Unit – II (15hours)
2. Renaissance Thought
1)Rammohun Roy-Religious and Social Reforms
2)PanditaRamabai-Gender

Unit-III(20hours)
3.Early Nationalism
1)Dadabai Naoroji-Drain Theory and Poverty
2)Ranad,M.G-The Role of the State and Religious Reform

Unit-IV (20hours)
4. Religious Nationalism
1)Savaskar V.D-Hindutva or Hindu Culture Nationalism
2)Mohammed Iqbal-Islamic Communitarian Nationalism

Unit-V(20hours)
5.Democratic Egalitarianism
1)Gandhi-Swaraj and Satyagraha
2)Jawahalal Nehru-Democratic Socialism
3)D.R B.R Ambedkar-Annhhilation of Caste System
4)M.N Roy-Radical Humanism

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III B.A– V Semester
(2020 –2021)
Paper-V-Western Political Thought

Course Code : POL 502C　　　　　　**Work Load : 90 hrs per sem 5 hrs/week**

Unit – I (20 hours)
1.Classical Western Political Thought
1)Plato-Theories of Forms,Critique of Democracy,Justice
2)Aristotle-Citizenship,Satte,Justice,Virtue

UNIT – II (15 hours)
2. Early Medieval to the Beginning of Modern Thought
1)Saint Augustine-Earthly City and Heavenly City,Evil,Free Will,Moral Action
2)Machiavelli-Statecraft,Virtue,Fortuna

UNIT – III (20 hours)
3.Liberal Thought
1)Thomas Hobbs-Human Nature,Social Contract,Liberty,State
2)Jhon Lock-Natural Rights,Consent,Social Contract,State
3)Rousseau-Social Instituions and Moral Man Equality,liberty and General will

UNIT – IV (20 hrs)
4. Liberal Democratic Thought
1)Jeremy Bendham-Utilitarianism
2)J.S Mill-Individual Liberty,Representative Government

UNIT – V (15 hours)
5.Philosophical Idealism and it's Critique
1)Hegel-Individual Freedom,Civil Society,State
2)Karl Marx-Alienation,Surplus Value,Materialistic Conception of History,State

General Elective   **Course Code: POL – 601GE**

SEMISTER-VI   **5 hrs/week**

<u>GENERAL ELECTIVE PAPER –LOCAL SELF –GOVERNMENT IN ANDHRA PRADESH</u>

UNIT- I (20 hours)   **Total Lectures: 90 hours**
1.Evolution of Local Self Government in India
1)Constitution of Provisions on Local Self Government
2)Recommendations of Balwanth Roy Mehta and Ashok Mehta Committees on Local Self Government

UNIT- II (15hours)
2.Importance of Constitutional Amendments
1)73rd Amendment-Rural Local Bodies;Basic feautures
2)74th Amendment-Urban Local Bodies;Basic Feautures

UNIT-III
3.Structure and Functions of Panchayat Raj in Andhra Pradesh
1)Gram Panchayati
2)Mandal Parishad
3)Zilla Parishad

UNIT- IV (20hours)
4. Structure and Functions of Urban Local Bodies in Andhra Pradesh
1)Nagarapanchayats
2)Municipalities
3)Municipal Corporations

UNIT- V (15hours)
1.Role of the Leadership and Emerging Challenges
1)Emerging Pattrens of Leadership
2)Problems of Autonomy:Financial and Administrative Spheres

DEPARTMENT OF POLITICAL SCIENCE
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(AUTONOMOUS), VUYYURU – 521 165
III B.A – VI Semester – Paper –VI
(2020–2021)

**SEMISTER-VI   Course Code: POL -602CE   Total Lectures:90 hrs
5 hrs/week**

CLUSTER ELECTIVES
INTERNATIONAL RELATIONS
PAPER UNIT- I (15 hours)

UNIT-I (15 hours)
1.Basic Concepts of International Relations
1)Meaning,Nature and Scope of International Relations
2) (a).Balance of Power (b).National Interest (c).Collective Security (d).Diplomacy

UNIT-II: (20hours)
2.Approaches to the Study of International Relations
1)Idealism-Woodrow Wilson
2)Classical Realism-Hans Morgenthau
3)Neo-Realism-Kenneth Waltz
UNIT-III (20hours)
3.Phases of International Relations (1914-1945)
1)Causes for the first World War
2)Causes for he Second World War

UNIT-IV: (20hours)
 4.Phases of International Relations (1945 Onwards)
1)Origins of First Cold War
2)Rise and Fall of Detente
3)Origins and the End of Second Cold War

UNIT-V: (15hours)
5.International Organizations
1)The Role of U.N.O in the Protection of International Peace
2)Problems of the 3rd World:Struggle for New International Economic Order

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(AUTONOMOUS), VUYYURU – 521 165

III B.A 6th Semester
(2020-2021)

(COURSE CODE : POL-603 CE   Paper VIII

(Cluster)

Cluster Elective Paper – VIII- C-2 : Indian Foreign Policy

No. of Hours per week : 05   **Total Lectures : 90**

UNIT – I (25 hours)
 1.Evolution of Indian Foreign Policy
 1)Determinants of Indian Foreign of Policy
 2)Continuity and Change in Indian Foreign Policy

UNIT –II (20 hours)
 2. Non Alignment and U.N.O
1)The Role of India in Non-Alignment Movement
2)Relevance of Non-Alignment Movement in the Contemporary World

UNIT – III (25 hours)
1. India's Relations With USA and China
1)Indo-U.S Relations:Pre-Cold War Era,Post-Cold War Era
2)India-China Relations:Pre-Cold War Era,Post-Cold War Era

UNIT – IV (20 hours)
1. India and It's Neighbours
1)Indo-Pakistan Relations
2)India's Rule in South Asian Association of Regions Cooperations (SAARC)

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DEPARTMENT OF TELUGU

HIGHLIGHTED SYLLABUS OF TELUGU

2020-21

Syllabus in Relevance to Employability, Skill Development and Entrepreneurship **is** highlighted as mentioned: Employability in yellow Color, Skill Development in Sky blue colour and Entrepreneurship in Green colour

Employability

Skill-Development

Entrepreneurship

TELUGU   TEL-101C   2020 -2021   I B.A., B.COM., B.SC

I SEMESTER – SYLLABUS

యూనిట్ -1

మధుర స్నేహం   -   పోతన

ఆంధ్ర మహాభాగవతం – దశమ స్కందము (962 – 983) పద్యాలు

ప్రతి పదార్థాలకు ఇవ్వవలసిన పద్యాలు

1. వరదుడు ....సమాన సంపదల్.

2. కలలో నందను .... సంపద్వికేషాన్న తుల్.

3. కనిడాయం జనునంత .... దల్పమున్.

4 తన మృదుతల్పమందు .... భాగ్యవంతుడే.

యూనిట్ – II

రాజనీతి   - నన్నయ

మహాభారతం – సభాపర్వం – ప్రథమాశ్వాసం- (26 – 57) పద్యాలు

ప్రతి పదార్థాలకు ఇవ్వవలసిన పద్యాలు

1. కడు జనువాడు .... దుర్విమోహమున్.

2. ఉత్తమ మధ్యమాధమ .... దప్పకుండగన్.

3. బహు ధన ధాన్య .... దుర్గముల్.

4. వదలక బుద్ధి .... నిర్ఘాతుల్కలన్

యూనిట్ – III

ధౌమ్య ధర్మోపదేశం   -   తిక్కన

మహాభారతం – విరాటపర్వం – ప్రథమాశ్వాసం –(116 – 146) పద్యాలు

యూనిట్ – IV

సుభద్రాపరిణయం   -   చేమకూర వెంకటకవి

విజయ విలాసం – తృతీయాశ్వాసం – (93 -139) పద్యాలు

యూనిట్ - V

సీతారావణ సంవాదం -   మొల్ల

రామాయణము – సుందరకాండము – (40 -87) పద్యాలు

వ్యాకరణము :-

సంస్కృతసంధులు :- సవర్ణదీర్ఘసంధి, గుణసంధి, యణాదేశసంధి, వృద్ధి సంధి.

తెలుగు సంధులు :- ఉకారసంధి, త్రికసంధి, ద్విరుక్తటకారసంధి,

గసడదవాదేశసంధి.

సమాసాలు :- తత్పురుష, కర్మధారయ, ద్వంద్వ, ద్విగు, బహుప్రీహిసమాసములు.

అలంకారాలు :-

అర్థాలంకారాలు :- ఉపమ, ఉత్ప్రేక్ష, రూపక, స్వభావోక్తి, అతిశయోక్తి, శ్లేష.

శబ్దాలంకారాలు :- వృత్యనుప్రాస, ఛేకానుప్రాస, లాటానుప్రాస, అంత్యానుప్రాస.

ఛందస్సు :-

వృత్తాలు :- ఉత్పలమాల, చంపకమాల, శార్దూలము, మత్తేభము.

జాతులు :- కందం.

ఉపజాతులు :- ఆటవెలది, తేటగీతి.

TELUGU

Accredited at 'A' NACC

TEL – 301   2020-21

IB.A.,B.COM.,B.SC

III SEMESTER – SYLLABUS

TELUGU – I

పాఠ్య ప్రణాళిక

యూనిట్ – 1: వ్యక్తీకరణ నైపుణ్యాలు

1. భాష – ప్రథమికాంశాలు: భాష నిర్వచనం, లక్షణాలు, ఆవశ్యకత, ప్రయోజనాలు.

2. వర్ణం – పదం-వాక్యం: వాక్య లక్షణాలు, సామాన్య; సంయుక్త, సంశ్లిష్ట వాక్యాలు.

3. భాష నిర్మాణంలో 'వర్ణం-పదం-వాక్యం' ప్రాధాన్యత.

యూనిట్ –II : సృజనాత్మక రచన

4. కవితా రచన   :   ఉత్తమ కవిత – లక్షణాలు

5. కథారచన   :   ఉత్తమ కథ – లక్షణాలు

6. వ్యాస రచన   :   ఉత్తమ వ్యాసం – లక్షణాలు

యూనిట్ – III : అనువాద రచన

7. అనువాదం – నిర్వచనం, అనువాద పద్ధతులు.

8. అనువాద సమస్యలు – భౌగోళిక, భాషా, సాంస్కృతిక సమస్యలు, పరిష్కారాలు.

9. అభ్యాసము : ఆంగ్లం నుండి తెలుగుకు అనువదించడం.

యూనిట్ – IV : మాధ్యమాలకు రచన – 1 (ముద్రణా మాధ్యమం/ప్రింటు మీడియా)

10. ముద్రణా మాధ్యమం (అచ్చు మాధ్యమం): పరిచయం, పరిధి, వికాసం.

11. వివిద రకాల పత్రికలు – పరిశీలన, పత్రికాభాష, శైలి, వైవిద్యం.

12. పత్రికా రచన : వార్తా రచన, సంపాదకీయాలు, సమీక్షలు – అవగాహన.

యూనిట్ – V : మాధ్యమాలకు రచన – 2 (ప్రసార మాధ్యమం/ఎలక్ట్రానిక్ మీడియా)

13. ప్రసార మాధ్యమాలు : నిర్వచనం, రకాలు, విస్తృతి, ప్రయోజనాలు

14. శ్రవణ మాధ్యమాలు – రచన : రేడియో రచన, ప్రసంగాలు, నాటికలు, ప్రసార సమాచారం.

15. దృశ్య మాధ్యమాలు – రచన : వ్యాఖ్యానం (యాంకరింగ్), టెలివిజన్ రచన

AG & SG Siddhartha Degree College of Arts & Science

Vijayawada - 521 165, Krishna District

(An Autonomous College in the Jurisdiction of Krishna University, Machilipatnam, A.P, India)

Re-Accredited at 'A' Grade by NACC

Subject : Telugu   **Subject Code : Tel-201C**

2020 - 2021 1st Year B.A., B.Com. & B.Sc.

II Semester - Syllabus

యూనిట్ - I : ఆధునిక కవిత్వం

1. ఆధునిక కవిత్వం - పరిచయం
2. మనిషి - డా.అందెశ్రీ
3. హరిజన శతకం - కుసుమ ధర్మన్న

యూనిట్ - II : కథానిక

1. తెలుగు కథానిక - పరిచయం
2. దయ్యం (కథ) - కాళీపట్నం రామారావు
3. ఆకలి (కథ) - డా.కొలకలూరి ఇనాక్

యూనిట్ - III : నవల

1. తెలుగు నవల - పరిచయం
2. రథ చక్రాలు (నవల) సంక్షిప్త ఇతి వృత్తం మాత్రం - మహీధర రామ్మోహన రావు

యూనిట్ - IV : నాటకం

1. తెలుగు నాటకం - పరిచయం
2. యక్షగానం (నాటిక) - ఎం.వి.ఎస్.హరనాథ రావు

యూనిట్ - V : విమర్శ

1. తెలుగు సాహిత్య విమర్శ - పరిచయం
2. విమర్శ స్వరూప స్వభావాలు - ఉత్తమ విమర్శకుడు లక్షణాలు

Adusumilli Gopala krishnaiah& Sugar Cane Growers Siddhartha Degree
College ofArts & Science, Vuyyuru, Krishna District, Andhra Pradesh
(An Autonomous College in the Jurisdiction of Krishna University, Machilipatnam)
Accredited by NAAC with "A" GradeISO 9001:2015 Certified Institution

DEPARTMENT OF ZOOLOGY
B.Sc. AQUACULTURE (NEW COURSE INTRODUCED)

HIGHLIGHTED SYLLABUS OF B.Sc. AQUACULTURE
2020-21

Syllabus in Relevance to Employability, Skill Development and Entrepreneurship **is** highlighted as mentioned: Employability in yellow Color, Skill Development in Sky blue colour and Entrepreneurship in Green colour

Employability   ⬛

Skill-Development   ⬛

Entrepreneurship   ⬛

ADUSUMILLI GOPALAKRISHNAIAH & SUGAR CANE GROWERS SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE, VUYYURU-521165, KRISHNA Dt. ,A.P. (AUTONOMOUS).

Semester – I

Class: I B.Sc (ABC)   *(Code: Aqu-101C)*

Title of the paper: Basic principles of aquaculture.

UNIT- I: *Introduction*   10

1.1: Concept of Blue Revolution - History and definition of Aquaculture.

1.2: Scope of Aquaculture at global Level, India and Andhra Pradesh.

1.3: Fresh water aquaculture, brackish water aquaculture and mariculture

1.4: Different Aquaculture systems – Pond, Cage, Pen, Running water, Extensive, Intensive and & Semi- Intensive Systems and their significance. Monoculture, Polyculture and Monosexculturesystems

1.5: Aquaculture versus Agriculture; Present day needs with special reference to AndhraPradesh.

UNIT-II :*Pond Ecosystem   15hrs.*

 2.1 General Concepts of Ecology, Carrying Capacity and Food Chains

2.2: Lotic and lentic systems, streams and springs

2.3: Nutrient Cycles in Culture Ponds – Phosphorus, Carbon and Nitrogen

2.4. Importance of Plankton and Benthos in culture ponds, nutrient dynamics and algal blooms

2.5 Concepts of Productivity, estimation and improvement of productivity.

UNIT-III: *Types of fish ponds*   *10*

3.1 Classification of ponds based on water resources – spring, rain water, flood water, well water and water course ponds

3.2: Functional classification of ponds– head pond, hatchery, nursery, rearing, production, stocking and quarantine ponds

3.3: Hatcherydesign.

UNIT-IV : *pond preparation*   *15*

4.1 Important factors in the construction of an ideal fish pond – site selection, topography, nature of the soil, water resource

4.2. Lay out and arrangements of ponds in a fishfarm

4.3. Construction of an ideal fish pond – space allocation, structure and components of barrage pond.

UNIT- V :*Pond management factor*

5.1: Need of fertilizer and manure application in culture ponds; Role of nutrients; NPKcontents of different fertilizers and manures used in aquaculture; and precautions in theirapplication.

5.2. Physico-chemical conditions of soil and water optimum for   culture– temperature, depth, turbidity, light, water and shore currents, PH, DOD, CO2 and nutrients; measures to increase oxygen and reduce ammonia & hydrogen **sulphide** in culture ponds; correction ofPH

5.3 Eradication of predators and weed control – advantages and disadvantages of weed, weed plants in culture ponds, aquatic weeds, weed fish, toxins used for weed control and control of predators

UNIT- VI – *Competitive Aquaculture*

6.1. Fish Biology,

6.2. Biology of Indian major carps. 6.3. Taxonomy of Indian major carp.

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Aquaculture   *Semester – III*

Class: II B.Sc .(ABC)   PAPER-III   w.e.f. 2020-2021

Credits : 3   (Code: Aqu-301C)

Title of the paper: Fish nutrition & Feed technology

60 hrs.(4hrs/week)   Max.Marks : 70   --

UNIT-I**: Nutritional requirements of cultivable fish**

1.1 Requirements for energy, proteins, carbohydrates, lipids, fiber, micronutrients for different stages of cultivable fish and prawns

1-2 Essential amino acids and fatty acids, protein to energy ratio, nutrient interactions and protein sparing effect

1-3 Dietary sources of energy, effect of ration on growth, determination of feeding rate, check tray

 1-4 factors affecting energy partitioning and feeding

UNIT-II**: Forms of feeds & Feeding methods**

2-1 Fed conversion efficiency, feed conversion ratio and protein efficiency ratio

2-2 Wet feeds, moist feeds, dry feeds, mashes, pelleted feeds, floating and sinking pellets, advantages of pelletization

2-3 Manual feeding, demand feeders, automatic feeders, surface spraying, bag feeding and tray feeding

2-4 Frequency of feeding

 UNIT-III: **Feed manufacture & Storage**

3-1 Feed ingredients and their selection, nutrient composition and nutrient availability of feed ingredients

3-2 Feed formulation – extrusion processing and steam pelleting, grinding, mixing and drying, pelletization, and packing

 3-3 Water stability of feeds, farm made aqua feeds, micro-coated feeds, micro-encapsulated feeds and

     micro- bound diets

 3-4 Microbial, insect and rodent damage of feed, chemical spoilage during storage period and proper

storage methods.

UNIT-IV: **Feed additives & Non-nutrient ingredients**

4-1 Binders, anti-oxidants, probiotics

4-2 Feed attractants and feed stimulants

4-3 Enzymes, hormones, growth promoters and pigments

4-4 Anti-metabolites, affla toxins and fiber .

UNIT-V**: Nutritional Deficiency in Cultivable fish**

5-1 Protein deficiency, vitamin and mineral deficiency symptoms

5-2 Nutritional pathology and ant-nutrients

5-3 Importance of natural and supplementary feeds, balanced diet.

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(AUTONOMOUS).

Aquaculture   *Semester – II*
Class: I B.Sc .(ABC)PAPER-II   *w.e.f. 2020-2021*
Credits: 3   *(Code: Aqu-201C)*
Title of the paper*:* **Biology of fin fish & shell fish**   Max.Marks : 70

UNIT- I: **General character & Classification of Cultivable fin &
Shellfish**

   1.1 General Characters and classification of fishes &crustaceans up to the level of Class
   1.2 Fish and Crustaceans of commercial importance
1-3 Sense organs of fishes and crustaceans .
   1.4 Specialized organs in fishes **–** electric organ, venom and toxins
   1.5 Buoyancy in fishes- swim bladder and mechanism of gas secretion

UNIT- II: Food, Feeding and Growth
2.1 Natural fish food, feeding habits, feeding intensity, stimuli for feeding, utilization of food, gut
         content analysis, forage ratio
    2.2 Principles of Age and growth determination; growth regulation, Growth rate measurement–
         scale method, otolith method, skeletal parts as age indicators
    2.3   Length-frequency method, age composition, age-length keys, absolute and specific
          growth, back calculation of length and growth, annual survival rate,
    2.4   Length-weight relationship.
UNIT- III: Reproductive Biology
    3.1 Breeding in fishes, breeding places, breeding habits & places, breeding in natural
         environment and in artificial ponds, courtship and reproductive cycles
     3.2.Induced breeding in fishes
      3-3 Breeding in shrimp, oysters, mussels, clams, pearl oyster, pila, and cephalopods.
*UNIT- IV:*Development
     4.1.Parental care in fishes, ovo-viviparity, oviparity, viviparity, nest building &brooding
    4.2 Embryonic and larval development of fishes.
4.3 Embryonic and larval development of shrimp, crabs and molluscs of commercial
         importance
    4.4 Environmental factors affecting reproduction and development of cultivable aquatic
         fin &shell fish
*UNIT- V:*Hormones&Growth.
1.1 Endocrine system infishes.
1.2 Neurosecretary cells, androgenic gland, ovary,chromatophores,
1.3 Molting, molting stages, metamorphosis in crustacean shellfish

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Aquaculture   *Semester – IV*
Class: II B.Sc. (ABC)   PAPER-IVw.e.f. 2020-2021
Credits: 3   (Code: Aqu-401C)
Title of the paper: Fresh water & Brackish water Aquaculture.
6hrs. (4hrs/week) Max.Marks : 70
Objective of the course: The students understand Fresh water & Brackish water Aquaculture.
Course outcomes:
1.Learn the Status, Scope and Prospects of fresh water aquaculture in the world, India and AP.
2. Learnabout Major Cultivable Indian Carps and Exotic fish Species introduced in India
3. Know about recent developments in the culture of clarius, anabas and murrels and special systems of aquaculture.
4.Gain knowledge of commercially valuable Fresh water prawns of India and their culturing methods.
5. Learn about culturing of brackish water Prawn Species P.mondon and L.vannamei and hatchery
technology's involved
UNIT-1: Introduction to Freshwater Aquaculture
        1.1 Status, scope and prospects of fresh water aquaculture in the world, India and AP
        1.2 Different fresh water aquaculture systems
 UNIT-II: **Carp Culture**
2-1 Major cultivable Indian carps – Labeo, Catla and Cirrhinus& Minor carps
       2-2 Exotic fish species introduced to India – Tilapia, Pangassius and Clarius sp.
       2-3 Composite fish culture system of Indian and exotic carps
2-4 Impact of exotic fish, Compatibility of Indian and exotic carps and competition among them
 UNIT-III: **Culture of air-breathing and cold water fish**
       3-1. Recent developments in the culture of clarius, anabas, murrels,
       3-2 Advantages and constraints in the culture of air-breathing and cold water fishes- seed resources,feeding, management and production
3-3 Special systems of Aquaculture- brief study of culture in running water, re-circulatory systems, Cages and pens, sewage-fed fish culture

       UNIT-IV: **Culture of Prawn**
4 -1 Fresh water prawns of India - commercial value
        4-2 Macrobrachiumrosenbergii and M. Malcomsonii– biology, seed production, pond preparation, stocking, management of nursery and grow-out ponds, feeding, mprphotypes and harvesting

       UNIT-V: **Culture of Brackish water Species**
5-1 Culture of P.mondon – Hatchery technology and Culture practices including feed and disease management
      5-2 Culture of L. vannamei – hatchery technology and culture practices including feed and disease management.
      5-3. Mixed culture of fish and prawns.

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DEPARTMENT OF ZOOLOGY

2020-2021

MINUTES OF BOARD OF STUDIES

04-07-2020 (ODD SEMESTER)

HIGHLIGHTED SYLLABUS OF B.Sc. BZC

Courses on Employability, Entrepreneurship and Skill-Development in the curriculum of all programs are highlighted as mentioned: Employability in yellow Color, Skill-Development in Sky blue colour and Entrepreneurship in Green colour

Employability

Skill-Development

Entrepreneurship

A.G & S.G.S.DEGREE COLLEGE OF ARTS & SCIENCE, VUYYURU -521165

ZOOLOGY

Semester – I
Class: I B.Sc .   PAPER-I   w.e.f. 2020-2021
Credits : 3   (Code: Zoo-101C)
Title of the paper: Biology of Non – Chordates.   Max.Marks : 70
60 hrs.(4hrs/week)
UNIT- I   10hrs.
1.1: Whittaker's five kingdom concept and classification of Animal Kingdom.
 1.2 General Characters and classification of protozoa up to classes with suitable examples
1.3: *Phylum - Protozoa:*Type study: *Elphidium*
UNIT-II16 hrs
Phylum Porifera
2.1 General characters and classification up to classes with suitable examples
2.2 Skelton in Sponges, Canal system in sponges
Phylum – Coelenterata
2.3 General characters and classification up to classes with suitable examples
2.4 type study: Obelia – Morphology, Structure of polyp & Medusa
2.5 Polymorphism in coelenterates
2.6 Corals and coral reefs
UNIT-III10 hrs
Phylum Platyhelminthes
 3.1 General characters and classification up to classes with suitable examples
3.2 Life cycle and pathogen city of Fasciola hepatica
3.3 Parasitic Adaptations in helminthes Phylum Nemathelminthes
3.4. Life cycle and pathogen city of Ascarislumbricoides
UNIT-IV *15hrs*
Phylum Annelida
 4.1 General characters and classification up to classes with suitable examples
4.2 Evolution of Coelom and Coelomoducts
4.3 Vermiculture - Scope, significance, earthworm species, processing, Vermicompost, economic importance of vermicompost
Phylum Arthropoda
4.4 Vision and respiration in Arthropoda
4.5Peripatus - Structure and affinities
UNIT- V
Phylum Mollusca *9 hrs*
5.1 General characters and classification up to classes with suitable examples
 5.2 Pearl formation in Pelecypoda
5.3 Water vascular system in star fish
5.4 Larval forms of Echinodermata
PhylumHemichordata
5.5Balanoglossus - Structure and affinities
UNIT- VI – **COMPETITIVE ZOOLOGY**
6.1: Cells-Cell Definition- Discovery of cells- Characteristics of cells- Types of cells.
6.2:Cell Structure-Cell Organelles and Functions. Cell Theory.
6.3Defference between Prokaryotic and Eukaryotic Cells

ADUSUMILLI GOPALKRISHNAIAH & SUGARCANE GROWERS SIDDHARTHA DEGREE
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OF ARTS & SCIENCE, VUYYURU- 521165, KRISHNA Dt., A.P. (AUTONOMOUS)
SEMESTER - III

w.e.f. - 2018 – 2019.

Class: II B.Sc (B.Z.C)   *Paper Code: ZOO -301C* **60 Hrs (4hrs/**
week)   **Max.Marks: 70**
Credits: 3   **Title of the Paper :Cytology, Genetics and Evolution.**

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Unit – I 10 Hrs
1.1Cytology - I :-Electron microscopic structure of cell .
1.2 Plasma membrane - Fluid mosaic model, Transport functions of plasma membrane
(Active
&Passive)

Unit – II 15 Hrs
2.1 Cell Organelles :- Stricture and functions of Endoplasmic reticulum, Golgi
body,
Ribosome's, Lysosomes, Mitochondria.
 2.2 DNA: Watson & Crick model , Semi Conservative Replication.
 2.3 RNA - Structure, types & functions of RNA.
 2.4 Chromosomes - Structure, types &functions, Giant Chromosomes (lamp
brush &
Polytene)

Unit – III   10 Hrs
3.1 Genetics-I:-Mendel's Laws of Inheritance, Incomplete dominance and co-
 dominance
3.2 Lethal alleles, Epistasis , Linkage and crossing over.

Unit – IV 15 Hrs
   4.1 Genetics – II:- Sex determination - Genic balance theory / Bridges theory,
       Barr bodies.
   4.2 Sex linked inheritance.
   4.3 Extra chromosomal inheritance (Kappa particles in Paramecium)
   4.4 Blood group inheritance.

Unit – V 10 Hrs
5.1.Evolution:- Origin of life,. Hardy -Weinberg Equilibrium, Lamarckism
,Darwinism,
Neo – Darwinism
5.2 Isolation, Speciation (Allopatric and Sympatric).

Unit – VI (*COMPETITIVE ZOOLOGY)*
6.1: Anatomy- Types of Anatomy- Classification of Anatomy
6.2: Application of Anatomy, Application of Gross Anatomy.
6.3: Physiology- Human Physiology- Endocrine system-Hormones- Mechanisms of Hormone
Action.
6.4: Nervous system- nerve Cells- Organization of Nervous System Structurally.
6.5: White Blood Cells.

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<u>SEMESTER - V</u>   (CBCS)

(Zoology paper-V)
Class: III B.Sc (B.Z.C)   w.e.f.- 2017-2018.
60 Hrs. (4hrs/week)   Max.Marks: 70
Title of the Paper :**Animal Biotechnology.**

Unit 1:Tools of Recombinant DNA technology - Enzymes and Vectors   15 Hrs.

1.1.Restriction modification systems : Types I, II and III- Nomenclature, Applications of

Type II restriction enzymes in genetic engineering ,DNA polymerases, transferase,

kinases and phosphatases,and DNA ligases

1.2 Cloning Vectors: : Properties of Cloning Vectors Plasmid vectors:pBR and pUC 18,

Bacteriophage and, Cosmids.Artificial Chromosome Vectors: BACs, YACs,

Unit 2: Techniques of Recombinant DNA technology   15 Hrs

2.1 Cloning: Procedure of gene cloning, Use of linkers and adaptors.Microinjection, electroporation, biolisticmethod (gene gun). PCR:-Basics of PCR,Principle and Procedure of PCR.

2.2 DNA Sequencing: Sanger's method of DNA sequencing- traditional and automated sequencing.

2.3 Southern, Northern and Western blotting. DNA finger printing,

UNIT 3 Animal Cell Technology   10 Hrs.

 3.1 Cell culture media: Natural and Synthetic, Types Cell cultures-: primary culture, secondary culture.Continuous cell lines , Established Cell lines (common examples such as MRC, HeLa,CHO, BHK,)

3.2 Cryopreservation of cultures, Hybridoma Technology:- Cell fusion, Production of Monoclonal antibodies (mAb), Applications of mAb

3.3.Stem cells: Types of stem cells- Embryonic and Adult Stem Cells, Diabetes and Parkinson's diseases.

Unit 4: Reproductive Technologies & Transgenic Animals   10 Hrs

4.1 Manipulation of reproduction in animals, Artificial Insemination, *In vitro* fertilization.

4.2 Super ovulation, Embryo transfer, Embryo cloning.

4.3 Transgenic Animals- Production of Transgenic Animals- sheep, fish.

Unit 5: Applied Biotechnology 10 Hrs.

5.1Industry: Fermentation- Different types of Fermentation. Submerged & Solid state, batch, Fed batch & Continuous (Short notes only)

5.2 Downstream processing - Filtration, centrifugation, chromatography, spray drying ,

5.3Fisheries :Polyploidy in fishes

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SEMESTER - V

(Zoology paper-VI)
Class: III B.Sc (B.Z.C)   w.e.f.-2017 -18
60 Hrs(6hrs/ week)   External : 70
Credits :3
Title of the Paper :**Animal Husbandry**.

UNIT – I :10 Hours
1.1 General introduction to poultry farming, Principles of poultry housing. Poultry houses.
1.2 Systems of poultry farming.
1.3 Management of chicks, growers, layers, and Broilers.
UNIT – II:
10 Hours
2.1. Poultry feed management – Principles of feeding. Nutrient requirements for different
stages of layers and broilers.
2.2. Methods of feeding- Whole grain feeding system, Grain and mash method, All mash
method, Pellet feeding.
2.3. Poultry diseases – viral, bacterial, fungal and parasitic (two each); symptoms, control
and management.
UNIT – III:
10 Hours
3.1 Selection, care and handling of hatching eggs, Egg testing.
3.2 Methods of hatching.
3.3 Brooding and rearing, Sexing of chicks.
UNIT- IV:
20 Hours
4.1 Breeds of Dairy Cattle and Buffaloes – Definition of breed; Classification of Indian
Cattle breeds, exotic breeds and Indian buffalo breeds.
4.2 Systems of inbreeding and crossbreeding.
4.3 Housing of dairy animals – Selection of site for dairy farm; systems of housing – loose,

housing system. Conventional dairy barn

UNIT - V:

10 Hours

5.1 Care and management of dairy animals - Care and management of calf, heifer, milk
animal, dry and pregnant animal, bulls and bullocks.

5.2 Cleaning and sanitation of programme. Records to be maintained in a dairy farm.

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(An Autonomous College in the Jurisdiction of Krishna University, Machilipatnam)
Accredited by NAAC with "A" GradeISO 9001:2015 Certified Institution

DEPARTMENT OF ZOOLOGY

2020-2021

MINUTES OF BOARD OF STUDIES

29-03-2021 (EVEN SEMESTER)

HIGHLIGHTED SYLLABUS OF B.Sc. BZC

Courses on Employability, Entrepreneurship and Skill-Development in the curriculum of all programs are highlighted as mentioned: Employability in yellow Color, Skill-Development in Sky blue colour and Entrepreneurship in Green colour

Employability

Skill-Development

Entrepreneurship

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ZOOLOGY
SEMESTER -II

Class: I B.Scw.e.f. - 2020 - 21
No. of Hours per week: 4
Title of the Paper: -**Animal Diversity – Biology of Chordates**Code: ZOO -201 C
Credits: 3   Max.Marks: 70

UNIT – I15hrs
1.1 General characters and classification of Chordata up toclasses
1.2   Protochordata- Salient features of Cephalochordata, Affinities ofCephalochordata.
1.3   Salient features ofUrochordata
1.4   Structure and life history of*Herdmania*
1.5 Retrogressive metamorphosis –Process and Significance

UNIT – II   15hrs
2.1   Cyclostomata, General characters, Comparison of *Petromyzon* and*Myxine*
2.2   Pisces: General characters ofFishes
2.3 Scoliodon: External features, Digestive system, Respiratory system, Structure and function of
Heart, Structure and functions of theBrain.
2.4   Migration inFishes
2.5   Types ofScales
2.6   Dipnoi

UNIT – III   10 hrs
3.1General characters ofAmphibia
3.2Classification of Amphibious to orders withexamples.
3.3 *Ranahexadactyla*: External features, Digestive system, Respiratory system, Structure and function of Heart,structure and functions of theBrain
3.4Reptilia: General characters of Reptilian, Classification of Reptiliaupto orders with examples
3.5Calotes: External features, Digestive system, Respiratory system, Structure and function of Heart, structure and function ofBrain
3.6Identification of Poisonous snakes and Skull inreptiles
UNIT – IV   12 hrs
4.1Aves General characters ofAves
4.2 Columbalivia: External features, Digestive system, Respiratory system, Structure and Function of Heart, structure and function ofBrain
4.3   Migration inBirds
4.4 Flight adaptation inbirds
UNIT – V   8 hrs
5.1 General characters ofMammalia

5.2   Classification of Mammalia upto sub - classes withexamples
5.3   Comparision of Prototherians, Metatherians andEutherians
5.4Dentition inmammals

UNIT – VI – COMPETITIVE ZOOLOGY
6.1. Basic Food Substances.
6.2. Glossary Biology
6.3 Zoology Evolution Facts.

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SEMESTER - IV

w.e.f. - 2020 - 21

Class: II B.Sc (B.Z.C)**Paper Code :** ZOO -401C

Credits: 4   **Max.Marks:** 70

60 hrs. (4 hrs / week)

Title of the Paper: Embryology, Physiology and Ecology.

UNIT-I

1.1Developmental biology and embryology

1.1.1 Gametogenesis (Spermatogenesis, Oogenesis in mammals)

1.1.2 Fertilization

1.1.3 Types of eggs

1.1.4 Types of cleavage

1.2Formation and function of fetal membrane in chick embryo

1.3 Development, types of placenta in mammals

 UNIT-II

2.1 Physiology-I

2.1.1 Elementary study of process of digestion

2.1.2 Absorption of digested food

2.1.3 Structure of mammalian Lung& mechanism of respiration, transport of oxygen and carbon dioxide

2.1.4 circulation-structure and function of heart and cardiac cycle

2.1.5 excretion-structure if nephron, urine formation, counters current mechanism

 UNIT-III

3.1 Physiology-II

3.1.1.Structure& functional properties of Nerve Cell; Production & propagation of nerve Impulse. Synaptic transmission.

3.1.2. Muscle contraction – ultra structure of muscle fiber, molecular and chemical basis of muscle
contraction

  3.2.3. Endocrine glands – structure, secretions and the functions (of hormones) of pituitary gland,

    thyroid,parathyroid, adrenal gland and pancreas

3.1.4. Hormonal control of reproduction in mammals

Unit IV

4.1 Ecology-I

     4.1.1Important abiotic factors of ecosystem – temperature, light, water, oxygen and CO_2

4.1.2 Nutrient cycles- Nitrogen, Carbon and Phosphorous

4.1.3 Components of ecosystem (example: lake), food chains and food web, energy flow in ecosystem.

UNIT-V

5.1 Ecology-II

5.1.1   Community interactions- mutualism, commensalism, parasitism, competition, predation.

5.1.2   Ecological succession

5.2   Zoogeography

5.2.1 Study of physical faunal peculiarities of Oriental, Australian and Ethiopian regions.

UNIT – VI – COMPETITIVE ZOOLOGY

6.1 Zoology Cell Cycles.

6.2 Zoology Time Scale Archaeopterys.

6.3 Zoology Time Scale Mammals

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ZOOLOGY –ELECTIVE PAPER: VII-(A)   SEMESTER - VI
Class: III B.Sc (BZC)   w.e.f – 2017-2018
 60 hrs.   Paper code: ZOO -601 GE
 Credits: 3   External: 70
 Title of the paper: Immunology

Unit I:
1.1 Overview of Immune system
1.1.1 Introduction to basic concepts in Immunology.
1.1.2 Innate and adaptive immunity
1.2 Cells and organs of Immune system
1.2.1 Cells of immune system
1.2.2 Organs of immune system
Unit II:
2.1 Antigens
2.1.1 Basic properties of antigens
2.1.2 B and T cell epitopes, haptens and adjuvants
2.1.3 Factors influencing immunogenicity
Unit - III :
3.1 Antibodies
3.1.1 Struture of an antibody
3.1.2 Classes and functions of antibodies
3.1.3 Antigen and antibody interactions.
3.1.4 Monoclonal antibodies and their production.
Unit - IV
4.1 Working of an Immune system
4.1.1 Structure and functions of major histocompatibility complexes
4.1.2 Exogenous and Endogenous pathways of antigen presentation and processing
4.1.3 Basic properties and functions of mediator molecules. (cytokines,
interferonsand complement proteins).
4.1.4 Mechanisms of humoral and cell mediated immunities
Unit - IV
5.1 Immune system in health and disease
5.1.1 Classification and brief descriptionof various types of hyper sensitivities
5.1.2 Introduction to concepts of autoimmunity and immunodeficiency
5.2 Vaccines
5.2.1 General introduction to vaccines
5.2.2 Types of vaccines

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UNIT –I
1.1 Introduction / Basics of Aquaculture:- Definition, Significance and History of Aquaculture
1.2 Present status of Aquaculture – Global and National scenario
1.3 Major cultivable species for aquaculture: freshwater, brackish water and marine.
1.4 Criteria for the selection of species for culture

Unit – II
2.1 Types of Aquaculture: - Freshwater, Brackishwater and Marine
2.2 Concept of Monoculture, Polyculture, Composite culture, Monosex culture and integrated fish farming
2.3 Culture systems: - Ponds, Raceways, Cages, Pens, Rafts and water recirculating systems
  2.4 Culture practices:- Traditional, extensive, modified extensive, semi-intensive and intensive cultures of Fish and shrimp.

Unit – III
3.1 Design and construction of aqua farms :- Criteria for the selection of site for freshwater and brackish Water pond farms**,** Design and construction of fish and shrimp farms

3.2 Seed resources: - Natural seed resources and Procurement of seed for stocking: Carp and shrimp
3.3 Nutrition and feeds: - Nutritional requirements of a cultivable fish and shellfish
3.4 Natural food and Artificial feeds and their importance in fish and shrimp culture

Unit – IV
4.1 Management of carp culture ponds:- Culture of Indian major carps: Pre-stocking management –   Dewatering, drying, Predators, weeds and algal blooms and their control, Liming andFertilization;
Stocking management – Stocking density and stocking; Post-stockingManagement – Feeding, water Quality, growth and health care; and harvesting of ponds
4.2 Culture of giant freshwater prawn, *Macrobrachiumrosenbergii*
Unit – V
5.1 Culture of shrimp (*Penaeus monodon* or *Litopenaeus vannamei*)
5.2 Culture of pearl oysters
5.3 Culture of seaweeds- species cultured, culture techniques, important by-products, prospects
5.4 Culture of ornamental fishes – Setting up and maintenance of aquarium; and breeding.

SEMESTER - VIw.e.f. - 2017 - 18

Class: III B.Sc (B.Z.C)   (Cluster Elective Paper: VIII-B-2)
60 Hrs. (4hrs/Week)   Paper Code : ZOO-603CE
Credits : 3   External : 75

Title of the Paper: Aquaculture Management.

Objectives of the course: To instruct students on aquaculture managerial skills.

Course out comes:

- ❖ Students get know about breeding technology of fishes, Hatching and hatching methodology.
- ❖ Students learn to analyse the quality of water and soil.
- ❖ They are trained on feed storage, Feeding strategies: Feeding devices, feeding schedules and ration size.
- ❖   They gain knowledge on diseases of fish and shrimp and the strategies involved in marketing.
- ❖   They study economics and Marketing , **Fisheries Extension and** important of fish genetics.

Unit – I
1.1Breeding and Hatchery Management:-Bundh Breeding and Induced breeding of carp by Hypophysation; and Use of synthetic hormones.
1.2Types of fish hatcheries; Hatchery management of Indian major carps
1.3 Breeding and Hatchery management of *Penaeus monodon*/ *Litopenaeus vannamei*
1.4 Breeding and Hatchery management of giant freshwater prawn.
Unit – II
2.1 Water quality Management:-Water quality and soil characteristics suitable for fish and shrimp culture
2..2 Identification of oxygen depletion problems and control mechanisms in culture ponds
2..3 Liming materials, Organic manures and Inorganic fertilizers commonly used and Their implications in fish
ponds
Unit – III
3.1 Feed Management :- Live Foods and their role in shrimp larval nutrition.
3.2 Supplementary feeds: Principal foods in artificial diets; Types of feeds; Feed additives and Preservatives; role of probiotics. Feed formulation and manufacturing; Feed storage
3.3 Feeding strategies: Feeding devices, feeding schedules and ration size; Feed evaluation- feed conversion efficiencies and ratios
Unit – IV
4.1 Disease Management :- Principles of disease diagnosis and health management;
4.2 Prophylaxis, Hygiene and Therapy of fish diseases
4.3 Specific and non-specific defense systems in fish; Fish immunization and Vaccination
4.4Etiology, Symptoms, prophylaxis and therapy of common fish diseases in fish ponds
4.5Etiology, Symptoms, prophylaxis and therapy of common shrimp diseases in shrimp ponds
Unit – V
5.1 Economics and Marketing :-Principles of aquaculture economics –   variable costs, cost-

benefit analysis **,**Fish marketing methods in India; Basic concepts in demand and price analysis.
5.2 Fisheries Extension :Fisheries Training and Education in India; Role of extension in community
development.
5.3 Fish Genetics Genetic improvement of fish stocks – Hybridization of fish.
Gynogenesis,Androgenesis, Polyploidy, Transgenic fish, Cryopreservation of gametes,

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<u>SEMESTER - VI</u>   (CBCS)

Class: III B.Sc (B.Z.C)   (Cluster Elective Paper: VIII-B-3)   **w.e.f. -** 2017- 2018
Hrs(4hrs/Week)   Paper Code: ZOO-604CE
Credits: 3   External: 70
 Title of the Paper: **Postharvest Technology**.

Objective of the course: To prepare students to become future aqua culturists.
Course outcomes:
   ❖ Students are given techniques to handle fresh fish, storage, preservation andtransport.
   ❖ They learn to extract maximum from fish and produce fish productions.
   ❖ They can earn while they learn.
   ❖ They are taught rules and regulations pertaining to quality control.
   ❖ Students get know aboutQuality Assurance, Management and Certification

Unit – I
    1.1Handling and Principles of fish Preservation: - Handling of fresh fish, storage and transport of fresh fish, post mortem changes (Rigor mortis and spoilage), spoilage in marine fish and freshwater fish.
 1.2 Principles of preservation– cleaning, lowering of temperature, rising of temperature, use of salt,
use of fish preservatives, exposure to low radiation .
Unit – II
2.1 Methods of fish Preservation :-Traditional methods - sun drying, salt curing, pickling and smoking.
2.1.2 Advanced methods – chilling or icing, refrigerated sea water, freezing, canning, Irradiation and
      Accelerated Freeze drying (AFD).
Unit – III
   3.1 Processing and preservation of fish and fish by-products:-Fish products – fish minced meat, fish mealfish oil, fish liquid (ensilage), fish protein concentrate, fish chowder, fish cake, fish sauce, fish salads, fish Powder, petfood from trash fish, fish manure.
3.2 Fish by-products – fish glue, ising glass, chitosan, pearl essence, shark fins, fish leather and fish maws.

3.3 Seaweed Products: -Preparation of agar, algin and carrageen. Use of seaweeds as food for humanconsumption.

Unit – IV

    1.1.**Sanitation and Quality control :-** Sanitation in processing plants - Environmental hygiene and Personalhygieneinprocessing plants.

    1.2.Quality Control of fish and fishery products – pre-processing control, control during processing and controlafter processing.

4.3. Regulatory affairs in industries

Unit – V

5.1 Quality Assurance, Management and Certification   :-Seafood Quality Assurance and Systems:

GoodManufacturing Practices (GMPs); Good Laboratory Practices (GLPs); Standard Operating Procedures (SOPs)ConceptofHazard Analysis and Critical Control Points (HACCP) in seafood safety.

5.2 National and International standards – ISO 9000: 2000 Series of Quality Assurance System.

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