ADUSUMILLI GOPALAKRISHNAIAH & SUGAR CANE GROWERS SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE, VUYYURU-521165, KRISHNA Dt., A.P. (AUTONOMOUS)

DEPARTMENT OF CHEMISTRY

2018-2019

BOARD OF STUDIES

Minutes of Meeting

11-04-2017

Minutes of the meeting of Board of studies in Chemistry for the Autonomous course of A.G. & S.G.Siddhartha Degree College of Arts & Science, Vuyyuru held at 10.30 A.M on 11-04-2018 in the Department of Chemistry.

Smt A.INDIRA Presiding

Members Present:

1) A. Indira (Smt.A.INDIRA)	Chairman	Head, Department of Chemistry A.G. & S.G.S.Degree College of Arts & Science, Vuyyuru - 521165.
2) B. V — — — (Prof.B.Venkateswara Rao)	University Nominee	Professor, Department of Chemistry, Andhra University, Vizag.
3) ..... (Dr.K.A.Rama Raju)	Academic Council Nominee	Associate Professor in Chemistry, Sir C.R.Reddy College, Eluru.
4) ..... (Dr.M.Sivanadh)	Academic Council Nominee	Associate Professor in Chemistry, A.N.R.College Gudivada.
5) J. Nageswara Rao (Sri.J.Nageswara Rao)	Member	Lecturer in Chemistry, A.G. & S.G.S.Degree College of Arts & Science, Vuyyuru - 521165.
6) K. Ramesh (Sri.K.Ramesh)	Member	Lecturer in Chemistry, A.G. & S.G.S.Degree College of Arts & Science, Vuyyuru - 521165.
7) B. Navaneeta (Smt.B.Navaneeta)	Member	Lecturer in Chemistry, A.G. & S.G.S.Degree College of Arts & Science, Vuyyuru - 521165.
8) M. Venkata Santhi (Smt.M.V.Santhi)	Member	Lecturer in Chemistry, A.G. & S.G.S.Degree College of Arts & Science, Vuyyuru - 521165.
9) G. Ramesh (Sri. G.Ramesh)	Member	Lecturer in Chemistry, A.G. & S.G.S.Degree College of Arts & Science, Vuyyuru - 521165.

Agenda for B.O.S Meeting

1 .To recommend the syllabus and model paper for I and II semesters of I Degree B.Sc., Chemistry for the Academic year 2018-2019.

2. To recommend the syllabus and model papers for III and IV semesters of II Degree B.Sc., Chemistry for the Academic year 2018-2019.

3. To recommend the syllabus and model papers for V and VI semesters of III Degree B.Sc. Chemistry for the Academic year 2018-19.

4.To recommend the Blue print of I,II,III,IV,V & VI semesters of B.Sc. Chemistry for the Academic year 2018-19.

5. To recommend the Guidelines to be followed by the question paper setters in Chemistry for I, II, III, IV, V & VI Semester – end exams.

6. To recommend the teaching and evaluation methods to be followed under Autonomous status.

7. Any suggestions regarding certificate course, seminars, workshops, Guest lecture to be organized.

8. Recommend the panel of paper setters and Examiners to the controller of Examinations of autonomous Courses of A.G. & S.G.S.Degree colleges of Arts & Science, Vuyyuru.

9. Any other matter.

A. Indira
(Smt.A.Indira)

Chairman.

RESOLUTIONS

1) It is resolved to continue the same **syllabus and modified model paper for I &II semesters of I B.Sc.** under Choice Based Credit System (CBCS) for the Academic year 2018-19 also.
2) It is resolved to implement the same syllabus **and model papers** under Choice Based Credit System (CBCS) for the Academic year 2018-19 for **III and IV semesters of II B.Sc.**
3) It is resolved to implement the same **syllabus and model papers** under Choice Based Credit System (CBCS) of 2017-18 for the Academic year 2018-19 for **V and VI semesters (**General elective-A and cluster Elective-C**) of III B.Sc.**
    - It Resolved to add the topic gas chromatography in Vth unit of semester VI of 601 GE-Analytical methods in chemistry.
4) It is resolved to follow the **Blue prints** of I, II, semesters of Degree B.Sc. for the Academic year 2018-19. It is resolved to continue the same **Blue prints** of III, IV, V and VI semesters of Degree B.Sc. for the Academic year 2018-19.
5) It is resolved to follow the same guidelines to be followed by the question paper setters for Chemistry I, II, semesters of Degree B.Sc. for the Academic Year 2018-19. III, IV, V and VI semesters of Degree B.Sc. for the Academic Year 2018-19.
6) It is resolved to continue the following teaching and evalution methods for Academic year 2018-19.

Teaching Methods:

Besides the conventional methods of teaching, we use modern technology i.e. using of LCD projector to display on U boards etc, for better understanding of concepts.

Evaluation of a student is done by the following procedure:

- **Internal Assessment Examinations:**
- Out of maximum 100 marks in each paper for IB.Sc , 30 marks shall be allocated for internal assessment .
- Out of these 30 marks, **20 marks are allocated for announced tests (i.e.IA-1 & IA-2).** Two announced tests will be conducted and average of these two tests shall be deemed as the marks obtained by the student, **5 marks** are allocated on the basis of candidate's **percentage of attendance and remaining 5 marks are allocated for the innovative component like assignment/quiz/seminars for IB.Sc.**
- There is **no passing minimum** for internal assessment for I.B.Sc.
- Out of maximum 100 marks in each paper for II&III, 25 marks shall be allocated for internal assessment.
- Out of these 25 marks, **15 marks are allocated for announced tests (i.e.IA-1 & IA-2).** Two announced tests will be conducted and average of these two tests shall be deemed as the marks obtained by the student, **5 marks** are allocated on the basis of candidate's **percentage of attendance and remaining 5 marks are allocated for the assignment for II, &III B.Sc.**
- **Semester – End Examination:**
- The maximum mark for IB.Sc Semester – End examination shall be 70 marks and duration of the examination shall be 3 hours. Even though the candidate is absent for two IA exams /obtain

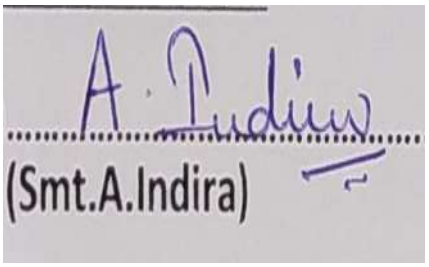
Zero marks the external marks are considered (if the candidate gets 40/70) and the result shall be declared as “PASS”.

- The maximum marks for II & III B.Sc Semester – End examination shall be 75 marks and duration of the examination shall be 3 hours.
- Semester – End examinations shall be conducted in theory papers at the end of every semester, while in practical papers, these examinations are conducted at the end of I, II, III, IV, V, VI semesters **for I, II &III B.Sc.**

7) Discussed and recommended for organizing **certificate course, seminars, Guest lecturers, workshops** to upgrade the knowledge of students, for the approval of the academic council.

1) Discussed and empowered the Head of the department of Chemistry to suggest the panel of paper setters and examiners to the controller of examinations.Department of Chemistry Adopted Value Added Course **“Basic Segments of Environmental Chemistry”.**

8) NIL.



Chairman

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

(Accredited at "A" Grade by NAAC, Bangalore) ACADEMIC YEAR-2018-19

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

INORGANIC CHEMISTRY

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

UNIT –I Weightage 10+10+5

p-block elements –I **15h**

Group-13: Synthesis and structure of diborane and higher boranes (B_4H_{10} and B_5H_9**),** boron-nitrogen compounds ($B_3N_3H_6$ and BN)
Group - 14: Preparation and applications of silanes and silicones.
Group - 15: Preparation and reactions of hydrazine, hydroxylamine.

UNIT-II Weightage 10+5

1. **p-block elements -II** **8h**

Group - 16: Classifications of oxides based on (i) Chemical behaviour and (ii) Oxygen content.
Group-17: Inter halogen compounds and pseudo halogens.

2. Organometallic Chemistry 10+5 **7h**

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

ORGANIC CHEMISTRY

UNIT-III Weightage 10+ 10 +5

Structural theory in Organic Chemistry **10 h**

Types of bond fission and organic reagents (Electrophilic, Nucleophilic, and free radical reagents including neutral molecules like H_2O,NH_3& $AlCl_3$).
Bond polarization : Factors influencing the polarization of covalent bonds, electro negativity - inductive effect. Application of inductive effect (a) Basicity of amines (b) Acidity of carboxylic acids (c) Stability of carbonium ions. Resonance or Mesomeric effect, application to (a) acidity of phenol, and (b) acidity of carboxylic acids. Hyper conjugation and its application to stability of carbonium ions, Free radicals and alkenes, carbanions, carbenes and nitrenes.
Types of Organic reactions : Addition - electrophilic, nucleophilic and free radical. Substitution - electrophilic, nucleophilic and free radical. Elimination- Examp

UNIT-IV Weightage 5+5

l. **Acyclic Hydrocarbons** **6 h**

Alkenes - Preparation of alkenes. Properties: Addition of hydrogen - heat of hydrogenation and stability of alkenes. Addition of halogen and its mechanism. Addition of HX, Markonikov's rule, addition of H_2O, HOX, H_2SO_4 with mechanism and addition of HBr in the presence of peroxide (anti - Markonikov's addition). Dienes - Types of dienes, reactions of conjugated dienes - 1,2 and 1,4 addition of HBr to 1,3 - butadiene and Diel's - Alder reaction.

Alkynes - Preparation by dehydrohalogenation of dihalides, dehalogenation of tetrahalides, Properties; Acidity of acetylenic hydrogen (formation of Metal acetylides). Preparation of higher acetylenes, Metal ammonia reductions, Physical properties. Chemical reactivity - electrophilic addition of X_2, HX, H_2O (Tautomerism), Oxidation with $KMnO_4$, OsO_4, reduction and Polymerisation reaction of acetylene.

2. **Alicyclic hydrocarbons (Cycloalkanes) Weightage 10** **4h**

Nomenclature, Preparation by Freunds method, Wislicenus method. Properties - reactivity of cyclopropane and cyclobutane by comparing with alkanes, Stability of cycloalkanes - Baeyer's strain theory, Sachse and Mohr predictions and Pitzer's strain theory. Conformational structures of cyclobutane, cyclopentane, cyclohexane.

UNIT-V Weightage 10+5

Benzene and its reactivity **10h**

Concept of resonance, resonance energy. Heat of hydrogenation, heat of combustion of Benzene, mention of C-C bond lengths and orbital picture of Benzene. Concept of aromaticity - aromaticity (definition), Huckel's rule - application to Benzenoid (Benzene, Naphthalene) and Non - Benzenoid compounds (cyclopropenyl cation, cyclopentadienyl anion and tropylium cation)

Reactions - General mechanism of electrophilic substitution, mechanism of nitration, Friedel Craft's alkylation and acylation. Orientation of aromatic substitution - Definition of 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)

List of Reference Books

1. Inorganic Chemistry by J.E.Huheey
2. Basic Inorganic Chemistry by Cotton and Wilkinson
3.A textbook of qualitative inorganic an

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

ACADEMIC YEAR-2018-19

SEMESTER - I	PAPER CODE : CHE-101C
PAPER TITLE : INORGANIC AND ORGANIC CHEMISTRY, PAPER-I	

Time: 3Hours **Maximum marks: 70** **Pass marks: 28**

SECTION-A

Answer any FOUR of the following. Each question carries 5 marks. 4X5=20

1.Write any two preparations and two properties of Hydrazine ?

2.Write a short note on Ferrocene ?

3.How are oxides classified on the basis of Chemical behaviour?

4. What is Mesomeric effect? Explain acidity of carboxylic acids ?

5.Write any two preparation methods of Alkenes?

6.Explain about Diel's-Alder reaction with one example?

7.Explain about reaction and mechanism of Nitration of benzene?

SECTION-B

Answer any FIVE questions. Each question carries 10 marks. 5X10=50

8.Explain about preparations,structure and properties of Borazole ?

9.What are silicones ? How they are classified? Write any two methods of preparation of silicones?

10.What are Inter Halogen Compounds? Write the structures of AX_3,AX_5?

11.What is Grignard reagent ? write any five synthetic applications?

12.Write about Hyper conjugation and Resonance effect with each one example?

13.Explain the following a. Carbenes b. Nitrenes

14.Write the conformational structures of Cyclobutane, Cyclopentane?

15.Define orientation effect? What are ortho ,meta,para directing groups?

The Guidelines to be followed by the question paper setters in chemistry for the I-Semester - end exams ACADEMIC YEAR-2018-19

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

Weightage for the question paper

syllabus	Section-A (Short answer questions)	Section-B (essay questions)
Unit-1 (25 Marks)	1	1 + 1
Unit-2 (30 Marks)	1+1	1 + 1
Unit-3 (25 Marks)	1	1 + 1
Unit-4 (20Marks)	1 + 1	1
Unit-5 (15Marks)	1	1

- **Each Short answer question carries 5 marks in Section –A**
- **Each Essay question carries 10 marks in Section –B**
- **The Question papers setters are requested to cover all the topics in the syllabus stipulated as per the weightage given by us.**

A.G.&S.G.SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE (AUTONOMOUS), VUYYURU
(Accredited at A Grade by NAAC, Bangalore) ACADEMIC YEAR-2018-19

Simple Salt Analysis	PAPER CODE : CHE-101P

Simple Salt Analysis

(At the end of Semester-I) **30 hrs (2h / w)** **Credits: 2**

Analysis of simple salt containing one anion and cation from the following

Anions: **Carbonate, sulphate, chloride, bromide, acetate, nitrate, 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**

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

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

Simple Salt Analysis	**COURSE CODE : CHE-101 P**

SCHEME OF VALUATION

INTERNAL MARKS

- **Record =10 M**

EXTERNAL MARKS (40)

- **Viva questions = 10 M**

PRACTICAL EXAMINATION (30M)

- **Identification of anion …….. 6M**
- **Confirmation test for anion …….. 6 M**
- **Group separation table with correct group …… 10 M**
- **Confirmation test for cation …….. 5M**
- **Report …….. 3 M**

TOTAL: 30 M

A.G. & S.G.SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE (AUTONOMOUS), VUYYURU.
(Accredited at "A" Grade by NAAC, Bangalore) ACADEMIC YEAR-2018-19

SEMESTER - II	PAPER CODE :CHE-201C
PAPER TITLE : PHYSICAL AND GENERAL CHEMISTRY, PAPER- II	

PHYSICAL CHEMISTRY

UNIT-I **Total Periods - 60 (4hrs/week)** **Credits-3**

Solid state

Marks weightage (10+5+5) **l0h**

Symmetry in crystals. Law of constancy of interfacial angles. The law of rationality of indices. The law of symmetry. Definition of lattice point, space lattice, unit cell. Bravis lattices and crystal systems. X-ray diffraction and crystal structure. Bragg's law. Defects in crystals. Stoichiometric and non-stoichiometric defects.

UNIT-II

1. Gaseous state

Marks weightage (10+5) **6h**

Compression factors, deviation of real gases from ideal behavior. Vander Waal's equation of state. P-V Isotherms of real gases, Andrew's isotherms of carbon dioxide, continuity of state. Critical phenomena. The Vander Waal's equation and the critical state. Law of corresponding states. Relationship between critical constants and Vander Waal's constants. Joule Thomson effect.

2.Liquid state

Marks weightage (10) **4 h**

Structural differences between solids, liquids and gases. Liquid crystals, the mesomorphic state. Classification of liquid crystals into Smectic and Nematic. Differences between liquid crystal and solid/liquid. Application of liquid crystals as LCD devices.

UNIT-III

Solutions

Marks weightage (10+10+5) **l0h**

Liquid-liquid - ideal solutions, Raoult's law. Ideally dilute solutions, Henry's law. Non-ideal solutions. Vapour pressure - composition and vapour pressure- temperature curves. Azeotropes-HCl-H_2O, ethanol-water systems and fractional distillation. Partially miscible liquids-phenol-water, trimethylamine-water, nicotine-water systems. Effect of impurity on consulate temperature. Immiscible liquids and steam distillation. Nernst distribution law. Calculation of the partition coefficient. Applications of distribution law.

GENERAL CHEMISTRY

UNIT-IV

l. Surface chemistry **Marks weightage (10)** **8h**

Definition of colloids. Solids in liquids(sols), preparation, purification, properties - kinetic, optical, electrical. Stability of colloids, Hardy-Schulze law, protective colloid. Liquids in liquids (emulsions) preparation, properties, uses. Liquids in solids (gels) preparation,uses.

Adsorption: Physical adsorption, chemisorption. Freundlisch, Langmuir adsorption isotherms. Applications of adsorption

2. Chemical Bonding **Marks weightage (10+5)** **7h**

Valence bond theory, hybridization, VB theory as applied toClF_3**,** Ni$(CO)_4$**,** Molecular orbital theory - LCAO method, construction of M.O. diagrams for homonuclear and hetero-nuclear diatomic molecules (N_2, O_2, CO and NO).

UNIT-V

Stereochemistry of carbon compounds **Marks weightage (10+5+5)** **15h**

Molecular representations- Wedge, Fischer, Newman and Saw-Horse formulae. Optical isomerism: Optical activity- wave nature of light, plane polarised 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.

List of Reference Books

1. Principles of physical chemistry by Prutton and Marron
2. Solid State Chemistry and its applications by Anthony R. West
3. Text book of physical chemistry by K L Kapoor
4. Text book of physical chemistry by S Glasstone
5. Stereochemistry of Organic compounds by E L Eliel
6. Advanced Organic Chemistry by F A Carey and R J Sundberg
7. Stereochemistry by P.S.Kalsi
8. Stereochemistry of Organic compounds by D. Nasipuri
9. Advanced physical chemistry by Bahl and Tuli
10. Advanced Inorganic Chemistry Vol-I by Satyaprakash, Tuli, Basu and Madan

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

ACADEMIC YEAR-2018-19

SEMESTER – II	COURSE CODE : CHE-201C
PAPER TITLE : PHYSICAL AND GENERAL CHEMISTRY, PAPER - II	

Time: 3Hours **Maximum marks: 70** **Pass marks: 28**

SECTION-A

Answer any FOUR of the following. Each question carries 5 marks. 4X5=20

1.Define and explain space lattice and unit cell.?

2.Define law of symmetry? Explain about centre of symmetry?

3.Define critical constants?

4.Define Henry's law and their limitations?

5.Define and explain Bond order?

6.Explain about symmetry elements?

7.Explain about Specific rotation?

SECTION-B

Answer any FIVE questions. Each question carries 10 marks. 5X10=50

8.Derive Bragg's equation?

9.Derive Vanderwaal's equation of real gases.?

10.Write the differences between Solids and Liquids?

11.Define Nernst distribution law and their limitations. Explain two applications of distribution law/

12.Explain about Fractional distillation and steam distillation

13.Explain Langmuir adsorption isotherms.

14.Explain the shape of $Ni(CO)_4$ based on valence bond theory

15.Explain about optical isomerism of Tartaric acid?

The Guidelines to be followed by the question paper setters in chemistry for the II-Semester - end exams ACADEMIC YEAR-2018-19

SEMESTER – II	PAPER CODE : CHE-201C
PAPER TITLE : PHYSICAL AND GENERAL CHEMISTRY, PAPER - II	

Weightage for the question paper

syllabus	Section-A (Short answer questions)	Section-B (essay questions)
Unit-1 (20 Marks)	1 + 1	1
Unit-2 (25 Marks)	1	1 + 1
Unit-3 (25Marks)	1	1 + 1
Unit-4 (25 Marks)	1	1 + 1
Unit-5 (20 Marks)	1+1	1

- **Each Short answer question carries 5 marks in Section –A**
- **Each Essay question carries 10 marks in Section –B**
- **The Question papers setters are requested to cover all the topics in the syllabus stipulated as per the weightage given by us.**

A.G. & S.G.SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE (AUTONOMOUS), VUYYURU.
(Accredited at "A" Grade by NAAC, Bangalore)

PRACTICAL SYLLABUS ACADEMIC YEAR-2018-19

Analysis of Salt mixture	**PAPER CODE : CHE-201P**

30 hrs (2 h / w) Credits: 2

Qualitative inorganic analysis:

Analysis of mixture salt containing two anions and two cations (From two different groups) from the following:

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

Cations: Lead, copper, iron, aluminum, zinc, manganese, calcium, strontium, barium, Potassium and ammonium.

1. **Analysis of salt mixture-I**
2. **Analysis of salt mixture -II**
3. **Analysis of salt mixture-III**
4. **Analysis of salt mixture -IV**
5. **Analysis of salt mixture -V**
6. **Analysis of salt mixture-VI**

A.G. & S.G.SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE (AUTONOMOUS), VUYYURU
(Accredited at "A" Grade by NAAC, Bangalore) ACADEMIC YEAR-2018-19

Analysis of Salt mixture	**PAPER CODE : CHE-201P**

SCHEME OF VALUATION

INTERNAL MARKS

- Record =10 M

EXTERNAL MARKS (40 marks)

- Viva……..10M

- PRACTICAL EXAMINATION -30M
  - Identification of anion …… 6 M
  - Confirmation test for anion …….. 6M
  - Group separation table with correct group …… 10 M
  - Confirmation test for cation …….. 6 M
  - Report …….. 2 M

TOTAL=50 M

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

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

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

INORGANIC CHEMISTRY

60 hrs (4 h / w) Credits - 3

UNIT – I

1. Chemistry of d-block elements (Marks-Weightage – 10 + 5) (6 hrs)

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. Theories of bonding in metals: (Marks-Weightage – 10) (6 hrs)

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

3.Metal carbonyls and related compounds: (Marks-Weightage – 5) (4 hrs)

EAN rule, classification of metal carbonyls, structures and shapes of metal carbonyls of V, Cr, Mn, Fe, Co and Ni.

4. Chemistry of f-block elements: (Marks-Weightage – 10 + 5) (6 hrs)

Chemistry of lanthanides - electronic structure, oxidation states, lanthanide contraction, consequences of lanthanide contraction, magnetic properties. Chemistry of actinides - electronic configuration, oxidation states, actinide contraction, comparison of lanthanides and actinides.

ORGANIC CHEMISTRY

UNIT – III

1. Halogen compounds (Marks-Weightage – 10) (7 hrs)

Nomenclature and classification of alkyl (into primary, secondary, tertiary), aryl, aryl alkyl, allyl, vinyl, benzyl halides.

Nucleophilic aliphatic substitution reaction- classification into SN^1 and SN^2 – reaction mechanism with examples – Ethyl chloride, t-butyl chloride and optically active alkyl halide 2-bromobutane.

2. Hydroxy compounds (Marks-Weightage – 10+5 + 5) (7 hrs)

Nomenclature and classification of hydroxy compounds.

Alcohols: Preparation with hydroboration reaction, Grignard synthesis of alcohols.

Phenols: Preparation i) from diazonium salt, ii) from aryl sulphonates, iii) from cumene.

Physical properties- Hydrogen bonding (intermolecular and intramolecular).
Effect of hydrogen bonding on boiling point and solubility in water.
Identification of alcohols by oxidation with $KMnO_4$, Ceric ammonium nitrate, lucas reagent and phenols by reaction with $FeCl_3$.

Chemical properties:
a) Dehydration of alcohols.
b) Oxidation of alcohols by CrO_3, $KMnO_4$.
c) Special reaction of phePhenols: Bromination, Kolbe-Schmidt reaction, Riemer-Tiemann reaction, Fries rearrangement, azocoupling, Pinacol-Pinacolone rearrangement.

UNIT-IV

Carbonyl compounds **(Marks-Weightage – 10 + 5)** **(10 hrs)**

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)

UNIT-V

1. Carboxylic acids and derivatives **(Marks-Weightage – 10 + 5)** **(8 hrs)**

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 (Marks-Weightage – 10 + 5) (6 hrs)
Acetoacetic esters: keto-enol tautomerism, preparation by Claisen condensation, Acid hydrolysis 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.

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. A Text Book of Organic Chemistry by Bahl and Arun bahl
4. A Text Book of Organic chemistry by I L Finar Vol I
5. Telugu Academy Textbook of Chemistry Vol- II (English medium)
6. Unified chemistry Vol- II by O.P.Agarwal
7. Unified chemistry Vol- II by K.Ramarao and Y. R. Sharma (KalyaniPublishers)

List of Reference Books

1. Organic chemistry by Bruice
2. Organic chemistry by Clayden
3. Advanced Inorganic chemistry by Gurudeep Raj
4. Basic Inorganic Chemistry by Cotton and Wilkinson
5. Concise Inorganic Chemistry by J.D.Lee
6. Pradeep's chemistry vol- I & II

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

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

SEMESTER – III	**PAPER CODE : CHE-301C**
PAPER TITLE : INORGANIC AND ORGANIC CHEMISTRY, PAPER-III	

Time: 3Hours **Maximum marks: 75** **Pass marks: 30**

SECTION-A

Answer any FIVE of the following. Each question carries 5 marks. 5X5=25

1.

2.

3.

4.

5.

6.

7.

8.

SECTION-B

Answer any FIVE questions. Each question carries 10 marks. 5X10=50

9.

10.

11.

12.

13.

14.

15.

16.

The Guidelines to be followed by the question paper setters in chemistry for the III- Semester - end exams

SEMESTER – III	**PAPER CODE : CHE-301C**
PAPER TITLE : INORGANIC AND ORGANIC CHEMISTRY, PAPER-III	

Weightage for the question paper

syllabus	Section-A (Short answer questions)	Section-B (essay questions)
Unit-1 (25 Marks)	1	1 + 1
Unit-2 (20 Marks)	1 + 1	1
Unit-3 (30 Marks)	1 + 1	1+1
Unit-4 (15 Marks)	1	1
Unit-5 (30 Marks)	1 +1	1 + 1

- **Each Short answer question carries 5 marks in Section –A**
- **Each Essay question carries 10 marks in Section –B**
- **The Question papers setters are requested to cover all the topics in the syllabus stipulated as per the weightage given by us.**

A.G. & S.G.SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE (AUTONOMOUS), VUYYURU
(Accredited at "A" Grade by NAAC, Bangalore)

Titrimetric analysis & Reactions of organic compounds	**PAPER CODE : CHE-301 P**

PRACTICAL SYLLABUS

(At the end of Semester-III) **30 hrs. (2h / w), Credits-2**

I. Titrimetric analysis:

1. Determination of Fe (II) using $KMnO_4$ with oxalic acid as primary standard.
2. Determination of Cu (II) using $Na_2S_2O_3$ with $K_2Cr_2O_7$ as primary standard.

II. Organic Functional Group Reactions

Reactions of the following functional groups present in organic compounds
(At least four) Alcohols, Phenols, Aldehydes, Ketones, Carboxylic acids and Amides

SCHEME OF VALUATION

1. INTERNAL MARKS-Record-10M
2. EXTERNAL MARKS-40
   - Titrimetric analysis-30M
   - Viva questions = 10 M

TOTAL = 50 M

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

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

SEMESTER – IV	SUBJECT: CHEMISTRY	PAPER CODE: CHE-401C
PAPER TITLE :	SPECTROSCOPY & PHYSICAL CHEMISTRY, PAPER-IV	

60 hrs(4h/w) Credits-3

SPECTROSCOPY

UNIT- I **(10+5)marks** **6h**

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

Electronic spectroscopy: (10+5)marks 8h

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

Infra red spectroscopy (10)marks 8h

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.

Proton magnetic resonance spectroscopy (1H-NMR) (10+5)marks 8h

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

Dilute solutions (10+5) marks 10h

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 and depression of freezing point. Derivation of relation between molecular weight and elevation in boiling point and depression in freezing point. Experimental methods –Cottrell's and Beckmann's method.
Osmosis,osmotic pressure, experimental determination. Theory of dilute solutions. Determination of molecular weight of non-volatile solute from osmotic pressure. Abnormal Colligative properties- Van't Hoff factor.

UNIT-IV

Electrochemistry-I (10+5+5) marks 10h

Specific conductance, equivalent conductance. Variation of equivalent conductance with dilution. Migration of ions, Kohlrausch's law. 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. Application of conductivity measurements- conductometric titrations.

UNIT-V

1.Electrochemistry- II (10+5)marks 4h

Single electrode potential, sign convention, Reversible and irreversible cells Nernst Equation- Reference electrode, Standard Hydrogen electrode, calomel electrode, Indicator electrode, metal – metal ion electrode, Inert electrode, Determination of EMF of cell, Applications of EMF measurements - Potentiometric titrations.

2. Phase rule (10+5) marks 6h

Concept of phase, components, degree of freedom. Derivation of Gibbs phase rule. Phase equilibrium of one component - water system. Phase equilibrium of two- component system, solid-liquid equilibrium. Simple eutectic diagram of Pb-Ag system, desilverisation of lead. Freezing mixtures.

List of Text Books

1.Advanced physical chemistry by Guru deep Raj
2.Introduction to Electrochemistry by S. Glasstone
3.Elementary organic spectroscopy by Y.R. Sharma
4. Spectroscopy by P.S.Kelsi
5.Unified chemistry Vol- II by O.P.Agarwal
6. Unified chemistry Vol- II by K.Ramarao and Y. R. Sharma (Kalyani Publishers)

List of Reference Books

1. Spectroscopy by William Kemp
2. Spectroscopy by Pavia
3. Organic Spectroscopy by J. R. Dyer
4. Modern Electrochemistry by J.O. M. Bockris and A.K.N.Reddy

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

SEMESTER – IV	PAPER CODE : CHE-401C
PAPER TITLE : SPECTROSCOPY AND PHYSICAL CHEMISTRY, PAPER-IV	

Time: 3Hours **Maximum marks: 75** **Pass marks: 30**

SECTION-A

Answer any FIVE of the following. Each question carries 5 marks. 5X5=25

1.

2.

3.

4.

5.

6.

7.

8.

SECTION-B

Answer any FIVE questions. Each question carries 10 marks. 5X10=50

9.

10.

11.

12.

13.

14.

15.

16

The Guidelines to be followed by the question paper setters in chemistry for the IV-Semester - end exams

SEMESTER – IV	**SUBJECT: CHEMISTRY**	**PAPER CODE: CHE-401C**
PAPER TITLE :	**SPECTROSCOPY & PHYSICAL CHEMISTRY, PAPER-IV**	

Weightage for the question paper

syllabus	Section-A (Short answer questions)	Section-B (essay questions)
Unit-1 (40 Marks)	1 + 1	1 + 1
Unit-2 (15 Marks)	1	1 + 1
Unit-3 (15 Marks)	1	1
Unit-4 (20 Marks)	1 + 1	1
Unit-5 (30 Marks)	1 +1	1 + 1

- **Each Short answer question carries 5 marks in Section –A**
- **Each Essay question carries 10 marks in Section –B**
- **The Question papers setters are requested to cover all the topics in the syllabus stipulated as per the weightage given by us.**

A.G.&S.G.SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE (AUTONOMOUS), VUYYURU
(Accredited at "A" Grade by NAAC, Bangalore)

PRACTICAL SYLLABUS

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

30 hrs (2h /w) Credits-2

Physical Chemistry

1. Critical Solution Temperature of Phenol – water system
2. Determination of concentration of NaCl by CST method.
3. Determination of concentration of HCl conductometrically using standard NaOH solution.
4. Determination of concentration of acetic acid conductometrically using standard NaOH Solution.

IR Spectral Analysis

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

SCHEME OF VALUATION

1. Internal marks
   - Record = 10
2. External marks- 40
   - Practical-25
   - Viva = 10
   - IR Spectral analysis = 5 (Project work)

Total marks =50

A.G. & S.G.SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE (AUTONOMOUS), VUYYURU.
(Accredited at "A" Grade by NAAC, Bangalore)

SEMESTER – V	SUBJECT: CHEMISTRY	COURSE CODE: CHE-501C
PAPER TITLE : INORGANIC,ORGANIC & PHYSICAL CHEMISTRY, Paper –V		

60 hrs(4h/w) Credits-3

INORGANIC CHEMISTRY

UNIT – I

Coordination Chemistry: (10+10+5) **12h**

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: (10+5) **5h**

Types of magnetic behavior, spin-only formula, calculation of magnetic moments, experimental determination of magnetic susceptibility-Gouymethod.

2. Stability of metal complexes: (10+5) **6h**

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- III

Nitro hydrocarbons: **(10+5)** **5h**

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: (10+10+5) 16h

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 (10+5+5+5) 16h

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.

List of Reference Books

1. Concise coordination chemistry by Gopalan and Ramalingam
2. Coordination Chemistry by Basalo and Johnson
3. Organic Chemistry by G.Mare loudan, Purdue Univ
4. Advanced Physical Chemistry by
5.Text book of physical chemistry by S Glasstone
6.Concise Inorganic Chemistry by J.D.Lee
7. Advanced Inorganic Chemistry Vol-I by Satyaprakash, Tuli, Basu and Madan
8. A Text Book of Organic Chemistry by Bahl and Arun bahl
9.A Text Book of Organic chemistry by I L Finar Vol I
10.Advanced physical chemistry by Gurudeep Raj

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

SEMESTER – V PAPER-V	PAPER CODE : CHE-501C
PAPER TITLE : INORGANIC,ORGANIC & PHYSICAL CHEMISTRY	

Time: 3Hours **Maximum marks: 75** **Pass marks: 30**

SECTION-A

Answer any FIVE of the following. Each question carries 5 marks. 5X5=25

1.

2.

3.

4.

5.

6.

7.

8.

SECTION-B

Answer any FIVE questions. Each question carries 10 marks. 5X10=50

9.

10.

11.

12.

13.

14.

15.

16.

The Guidelines to be followed by the question paper setters in chemistry for the V- Semester - end exams

SEMESTER – V	SUBJECT: CHEMISTRY	COURSE CODE: CHE-501C
PAPER TITLE : INORGANIC,ORGANIC & PHYSICAL CHEMISTRY, Paper –V		

Weightage for the question paper

syllabus	Section-A (Short answer questions)	Section-B (essay questions)
Unit-1 (25 Marks)	1	1 + 1
Unit-2 (30 Marks)	1 + 1	1+1
Unit-3 (15 Marks)	1	1
Unit-4 (25 Marks)	1	1 + 1
Unit-5 (25 Marks)	1 +1+1	1

- **Each Short answer question carries 5 marks in Section –A**
- **Each Essay question carries 10 marks in Section –B**
- **The Question papers setters are requested to cover all the topics in the syllabus stipulated as per the weightage given by us.**

A.G. & S.G.SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE (AUTONOMOUS), VUYYURU.
(Accredited at "A" Grade by NAAC, Bangalore)

PRACTICAL SYLLABUS

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.

SCHEME OF VALUATION

1. INTERNAL MARKS- Record-10M
2. EXTERNAL MAKS-40
   - Analysis of an organic compound and preparation of suitable derivative-30M
   - Viva questions = 10 M

TOTAL = 50 M

A.G. & S.G.SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE (AUTONOMOUS),VUYYURU.
(Accredited at "A" Grade by NAAC, Bangalore)

SEMESTER – V	Paper – VI	SUBJECT: CHEMISTRY	PAPER CODE: CHE-502C
PAPER TITLE : INORGANIC,ORGANIC & PHYSICAL CHEMISTRY			

60 hrs (4h/w) Credits-3

INORGANIC CHEMISTRY

UNIT-I

1. Reactivity of metal complexes: (10+5) **5h**

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: (10) **5h**

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 (10+5) **8h**

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 (10+5+5+5) **12h**

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 (10+10+5) **12h**

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 (10+5) **9h**

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 (10+5) **9h**

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)

List of Reference Books

1. Concise coordination chemistry by Gopalan and Ramalingam
2. Coordination Chemistry by Basalo and Johnson
3. Organic Chemistry by G.Mare loudan, Purdue Univ
4. Advanced Physical Chemistry by Atkins
5. Text book of physical chemistry by S Glasstone
7. Instrumentation and Techniques by Chatwal and Anand
8. Essentials of nano chemistry by pradeep
9. A Textbook of Physical Chemistry by Puri and Sharma
10. Advanced physical chemistry by Gurudeep Raj.

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

SEMESTER – V PAPER-VI	PAPER CODE : CHE-502C
PAPER TITLE : INORGANIC,ORGANIC & PHYSICAL CHEMISTRY	

Time: 3Hours **Maximum marks: 75** **Pass marks: 30**

SECTION-A

Answer any FIVE of the following. Each question carries 5 marks. 5X5=25

1.

2.

3.

4.

5.

6.

7.

8.

SECTION-B

Answer any FIVE questions. Each question carries 10 marks. 5X10=50

9.

10.

11.

12.

13.

14.

15.

16.

The Guidelines to be followed by the question paper setters in chemistry for the V- Semester - end exams

SEMESTER – V	SUBJECT: CHEMISTRY	PAPER CODE: CHE-502C
PAPER TITLE : INORGANIC,ORGANIC & PHYSICAL CHEMISTRY, Paper – VI		

Weightage for the question paper

syllabus	Section-A (Short answer questions)	Section-B (essay questions)
Unit-1 (25 Marks)	1	1 + 1
Unit-2 (15 Marks)	1	1
Unit-3 (25 Marks)	1 + 1+1	1
Unit-4 (25 Marks)	1	1 + 1
Unit-5 (30 Marks)	1 +1	1 + 1

- **Each Short answer question carries 5 marks in Section –A**
- **Each Essay question carries 10 marks in Section –B**
- **The Question papers setters are requested to cover all the topics in the syllabus stipulated as per the weightage given by us.**

A.G. & S.G.SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE (AUTONOMOUS), VUYYURU.
(Accredited at "A" Grade by NAAC, Bangalore)

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.

SCHEME OF VALUATION

1. INTERNAL MARKS- Record-10M
2. EXTERNAL MAKS-40
    - Practical-30
    - Viva-10

TOTAL = 50 M

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

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

SEMESTER – VI	**SUBJECT: CHEMISTRY**	**PAPER CODE:CHE-601GE**
PAPER TITLE : ANALYTICAL METHODS IN CHEMISTRY, Paper – VII		

60hrs (4h / w) Credits-3

UNIT-I

Quantitative analysis: (10+10+5+5) **15h**

a) Importance in various fields of science, steps involved in chemical analysis**.** Principles 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: (10+5) **8h**

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(10+10+5) **15h**

SOLVENT EXTRACTION : Introduction,principle,techniques,factors affecting solvent extraction, Batch extraction, continuous extraction and counter current extraction. Synergism. Application - Determination of Iron (III), organic mixture analysis.

ION EXCHANGE: Introduction, action of ion exchange resins, separation of inorganic mixtures, applications,

UNIT – IV **12h**

Chromatography(10+5+5)

Classification of chromatography methods, principles of differential migration adsorption phenomenon, Nature of adsorbents, solvent systems, R_f values, factors effecting R_f values.

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

UNIT -V (10+10+5+5) **10h**

Thin layer Chromatography (TLC): Advantages. Principles, factors effecting R_f values. 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 principles and applications.

List of Reference Books

1. Analytical Chemistry by Skoog and Miller
2. A textbook of qualitative inorganic analysis by A.I. Vogel
3. Nanochemistry by Geoffrey Ozin and Andre Arsenault
4. Stereochemistry by D. Nasipuri
5. Organic Chemistry by Clayden

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

SEMESTER – VI	**PAPER CODE : CHE-601GE**
PAPER TITLE : ANALYTICAL METHODS IN CHEMISTRY, **PAPER-VII**	

Time: 3Hours **Maximum marks: 75** **Pass marks: 30**

SECTION-A

Answer any FIVE of the following. Each question carries 5 marks. 5X5=25

1. What are co-precipitation and post-precipitation?

2. Write a short note on coagulation and peptization ?

3. What are significant figures ? Explain their importance?

4.Write the applications of solvent extraction

5.

6.

7.

8.

SECTION-B

Answer any FIVE questions. Each question carries 10 marks. 5X10=50

9.

10.

11.

12.

13.

14.

15.

16.

The Guidelines to be followed by the question paper setters in chemistry for the VI- Semester - end exams

SEMESTER – VI	**PAPER CODE : CHE-601GE**
PAPER TITLE : ANALYTICAL METHODS IN CHEMISTRY, PAPER-VII	

Weightage for the question paper

syllabus	Section-A (Short answer questions)	Section-B (essay questions)
Unit-1 (30 Marks)	1+1	1 + 1
Unit-2 (15 Marks)	1	1
Unit-3 (25 Marks)	1	1+1
Unit-4 (20 Marks)	1+1	1
Unit-5 (30 Marks)	1 +1	1 + 1

- **Each Short answer question carries 5 marks in Section –A**
- **Each Essay question carries 10 marks in Section –B**
- **The Question papers setters are requested to cover all the topics in the syllabus stipulated as per the weightage given by us.**

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

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

PRACTICAL SYLLABUS

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

Marks:50 30hrs (2 h /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.

SCHEME OF VALUATION

1. INTERNAL MARKS- Record-10M
2. EXTERNAL MAKS-40
    - Titrimetric analysis -30
    - Viva-10

TOTAL = 50 M

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

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

SEMESTER – VI	SUBJECT: CHEMISTRY	PAPER CODE:CHE-602CE
PAPER TITLE : ORGANIC SPECTROSCOPIC TECHNIQUES,	Cluster Elective Paper – VIII	

60hrs (4h / w) Credits-3

UNIT-I
NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY (10+10+5+5) 15h

Nuclear spin, Principles of NMR-Classical and Quantum Mechanical methods, Larmour Frequency. Instrumentation. Saturation, Relaxation spin-spin & spin lattice relaxation. Chemical shifts, Shielding and Deshielding mechanism-Factors influencing Chemical shift.

UNIT – II (10+5) 8h

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, AX2 and AB type with one example.

UNIT-III (10+10+5+5) 14h
Electron Spin Resonance Spectroscopy
Basic Principles, Theory of ESR, Comparison of NMR & ESR. Instrumentaion, 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) $H^{\bullet}$- 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 (10+10+5+5) **15h**

Electronic spectra of diatomic molecules. The Born-oppenheimer approximation.
Vibrational 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 (10+5) **8h**

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.

REFERENCE BOOKS:

1. Electron Spin Resonance Elementary Theory and Practical Applications- John E. Wertz and James R. Bolton, Chapman and Hall, 1986.
2. Spectroscopic Identification of organic compounds – Silverstein, Basseler and Morril.
3. Organic Spectroscopy- William Kemp.
4. Fundamentals of Molecular Spectroscopy- C.N.Banwell and E.A. Mc cash 4thEdition, Tata Mc GrawHillPublishing Co., Ltd. 1994.
5. Physical Methods in Inorganic Chemistry – R.S.Drago, Saunders Publications.
6. Application of MÖssbauer Spectroscopy – Green Mood.
7. NMR, NQR, EPR and MÖssbauer Spectroscopy in inorganic chemistry – R.VParish, Ellis, Harwood.
8. Instrumental Methods of Chemical Analysis- H.Kaur, Pragathi Prakashan, 2003.
9. Instrumental Methods of Analysis, 7th Edition – Willard, Merrit, Dean, Settle,CBS Publications, 1986.
10. Molecular Structure and Spectroscopy – G. Aruldhas, Prentice Hall of IndiaPvt.Ltd, New Delhi, 2001.

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

SEMESTER – VI PAPER-VIII	PAPER CODE : CHE-602CE
PAPER TITLE : ORGANIC SPECTROSCOPIC TECHNIQUES	

Time: 3Hours **Maximum marks: 75** **Pass marks: 30**

SECTION-A

Answer any FIVE of the following. Each question carries 5 marks. 5X5=25

1. Write about Nuclear spin?

2. What is Larmour frequency?

3. Write any two types of coupling costant?

4. Write about Kramer degeneracy?

5. What is isotropic and anisotropic costants?

6. Explain Woodward-Fieser rules?

7. Write a short note on Auxochrome?

8. Define and derive Beer-Lambert's law.

SECTION-B

Answer any FIVE questions. Each question carries 10 marks. 5X10=50

9. Explain the instrumentation of the NMR?

10. Explain Spin-Spin relaxation and spin lattice relaxation.

11. Write the types of PMR spectrums of AX,AX2 & AB?

12. Explain the instrumentation of the ESR.

13. Explain the ESR splitting of a) Deuterium radical b)$[Cu(H_2O)_6]^{+2}$ ion

14. Explain the electronic spectra of di atomic molecule.

15. Write note on Vibrational coarse structure.

16. Explain the simultaneous determination of Chromium and Manganese in a mixture.

The Guidelines to be followed by the question paper setters in chemistry for the VI-Semester - end exams

PAPER TITLE: ORGANIC SPECTROSCOPIC TECHNIQUES, PAPER CODE: CHE-602CE

Paper – VIII **Maximum marks : 75** **Duration : 3 Hours**

Weightage for the question paper

syllabus	Section-A (Short answer questions)	Section-B (essay questions)
Unit-1 (Marks)	1+1	1+1
Unit-2 (Marks)	1	1
Unit-3 (Marks)	1+1	1+1
Unit-4 (Marks)	1+1	1+1
Unit-5 (Marks)	1	1

- **Each Short answer question carries 5 marks in Section –A**
- **Each Essay question carries 10 marks in Section –B**
- **The Question papers setters are requested to cover all the topics in the syllabus stipulated as per the weightage given by us.**

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

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

(An Autonomous college in the jurisdiction of Krishna University)

SEMESTER – VI	**SUBJECT: CHEMISTRY**	**PAPER CODE:CHE-603CE**
PAPER TITLE : ADVANCED ORGANIC REACTIONS,	**Cluster Elective Paper – IX**	

UNIT – I **60hrs (4h / w) Credits-3**

ORGANIC PHOTOCHEMISTRY (10+10+5) 10hrs

Organic photochemistry : Molecular orbitals, carbonyl chromophore–triplet states, Jablonski diagram, inter–system crossing. Energy transfer.

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 cyclicdiones,
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 dienes, 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+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.
8. Organic synthesis by Michael B. Smith.
9. Organic Chemistry Claydon and others 2005.
10. Name Reactions by Jie Jack Li
11. Reagents in Organic synthesis by B.P. Mundy and others.
12. Tandem Organic Reactions by Tse–Lok Ho.

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

SEMESTER – VI PAPER-IX	PAPER CODE : CHE-603CE
PAPER TITLE : ADVANCED ORGANIC REACTIONS	

Time: 3Hours **Maximum marks: 75** **Pass marks: 30**

SECTION-A

Answer any FIVE of the following. Each question carries 5 marks. 5X5=25

1. Write about Chromophore triplet state?

2. Write about Barton reaction?

3. Explain how to protect the Carbonyl group?

4. Explain how to protect the Diols?

5. Explain about Umpolung?

6. Explain PTC with mechanism?

7. Explain Suziki coupling?

8. Define with one example for Mc Murrey reaction and Stille coupling?

SECTION-B

Answer any FIVE questions. Each question carries 10 marks. 5X10=50

9. Explain about Jablonski diagram in organic photo chemistry?

10. Explain mechanism of photo reduction with examples?

11. Explain Norrissch type –I cleavage with mechanism?

12. Explain Norrissch type –II cleavage with mechanism?

13. Explain how to protect Alcohols?

14. Explain how to protect Carboxylic acids?

15. What is Mannich reaction? Explain with mechanism and Mannich bases?

16. Write the mechanism of Baylis-Hillman reaction and RCM Olefination?

The Guidelines to be followed by the question paper setters in chemistry for the VI- Semester - end exams

PAPER TITLE: ADVANCED ORGANIC REACTIONS, PAPER CODE: CHE-603CE

Paper – IX Semester – VI Maximum marks : 75 Duration : 3 Hours

Weightage for the question paper

syllabus	Section-A (Short answer questions)	Section-B (essay questions)
Unit-1 (Marks)	1	1+1
Unit-2 (Marks)	1	1+1
Unit-3 (Marks)	1+1	1+1
Unit-4 (Marks)	1+1	1
Unit-5 (Marks)	1+1	1

- **Each Short answer question carries 5 marks in Section –A**
- **Each Essay question carries 10 marks in Section –B**
- **The Question papers setters are requested to cover all the topics in the syllabus stipulated as per the weightage given by us.**

A.G. & S.G.SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE (AUTONOMOUS), VUYYURU.
(Accredited at "A" Grade by NAAC, Bangalore)

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**

a. 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)

b. Psycho therapeutic Drugs: **(10+5)**

1.Anti pyretics(Paracetamol) 2.Hypnotics, 3.Tranquilizers(Diazepam) 4.Levodopa

UNIT-IV

Pharmacodynamic Drugs: (10+5+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
6.Medicinal Chemistry by Kadametal P-I & P.II
7.European Pharmacopoeia

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

SEMESTER – VI PAPER-X	PAPER CODE : CHE-604CE
PAPER TITLE : PHARMACEUTICAL AND MEDICINAL CHEMISTRY	

Time: 3Hours **Maximum marks: 75** **Pass marks: 30**

SECTION-A

Answer any FIVE of the following. Each question carries 5 marks. 5X5=25

1. What are Metabolites and anti metabolites? Explain with example.

2. Write a note on Pharmacology and Pharmacophore.

3. Explain the classification of drugs on the basis of structure.

4. Describe the synthesis and therapeutic activities of Sulphamethoxazole.

5. Write the synthesis,therapeutic activity and side effects of paracetamol.

6. Write a note on Antianginals.

7. Write a note on Frusemide.

8. Explain about immunity.

SECTION-B

Answer any FIVE questions. Each question carries 10 marks. 5X10=50

9. What are Pharma cokinetics ? Describe Absorption,Distribution,Metabolism and Excretion(ADME)of drug.

10. Explain the classification of drugs based on therapeutic activity with examples.

11. Describe the nomenclature systems of drugs.

12. What are antibiotics ? Give examples. Explain the isolation method of pencillin by submerged culture method.

13. .Write the synthesis,therapeutic activity and side effects of Chloroquine.

14. Discuss the synthesis and therapeutic activity of Levodopa.

15. Explain in detail about antiasthma drugs.

16. What is AIDS?How it causes ? Write the drugs available for the treatment of AIDS with their structure?

The Guidelines to be followed by the question paper setters in chemistry for the VI- Semester - end exams

PAPER TITLE: PHARMACEUTICAL AND MEDICINAL CHEMISTRY, PAPER CODE: CHE-604CE

Paper – VIII-C-3 **Semester – VI** **Maximum marks : 75** **Duration : 3 Hours**

Weightage for the question paper

syllabus	Section-A (Short answer questions)	Section-B (essay questions)
Unit-1 (Marks)	1+1	1
Unit-2 (Marks)	1	1+1
Unit-3 (Marks)	1+1	1+1+1
Unit-4 (Marks)	1+1	1
Unit-5 (Marks)	1	1

- **Each Short answer question carries 5 marks in Section –A**
- **Each Essay question carries 10 marks in Section –B**
- **The Question papers setters are requested to cover all the topics in the syllabus stipulated as per the weightage given by us.**

A.G. & S.G.SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE (AUTONOMOUS), VUYYURU.
(Accredited at "A" Grade by NAAC, Bangalore)

Practical syllabus

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

30 hrs (2 h / W)

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

SCHEME OF VALUATION

1. INTERNAL MARKS- Record-10M
2. EXTERNAL MAKS-40
    - Titrimetric analysis -30
    - Viva-10

TOTAL = 50 M

A.G. & S.G.SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE (AUTONOMOUS), VUYYURU.
(Accredited at "A" Grade by NAAC, Bangalore)

Practical syllabus

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

30 hrs (2h / W)

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

SCHEME OF VALUATION

1. INTERNAL MARKS- Record-10M
2. EXTERNAL MAKS-40
    - Practical -30
    - Viva-10

TOTAL = 50 M

A.G. & S.G.SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE (AUTONOMOUS), VUYYURU.
(Accredited at "A" Grade by NAAC, Bangalore)

Department of Chemistry

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

The students have chosen chemistry as cluster elective. Three projects have been selected and distributed the same among the students.

S.no	Name of the Project	No. of students allotted
1.	Instrumentation	
2.	Laboratory Reagents	
3.	Effects of Drugs	

SCHEME OF VALUATION

1. EXTERNAL- 25M- given by the Examiner (Viva)

2. INTERNAL = 25 M
   - Written viva-10 M
   - Submission of the project book-15M

TOTAL = 50 M