HINDI MAHAVIDYALAYA

(AUTONOMOUS)

BOARD OF STUDIES

CHEMISTRY DEPARTMENT

(2016-2017)

HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
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DEPARTMENT OF CHEMISTRY

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Head – Department of Chemistry
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University Nominee
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   St. Ann's Degree & P.G College
   Mehdipatnam, Hyderabad.

2. Dr. Kiranmai
   Head – Department of Chemistry
   Andhra Mahila Sabha Arts & Science College (Autonomous)
   Osmania University Campus, Hyderabad

Alumnis
3. Shri Vipin Kumar
   M.Sc. Organic Chemistry
4. Shri Vikesh Kumar Loan providing officer SBI Head office Mumbai.

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COMPOSITION OF THE BOARD OF STUDIES IN AN AUTONOMOUS COLLEGE

I. **Composition: Department of Chemistry**

1. Head of the department concerned (Chairman)
   Smt. Pooja Kaushal – Department of Chemistry

2. The entire faculty of each specialization.
   1. Smt. Pooja Kaushal

3 One expert to be nominated by the vice-chancellor from a panel if six recommended by the College Principal.

   1. Prof.M. Vithal, Chairman, BOS, Dept. of Chemistry

4. Two experts in the subject from outside the college to be nominated by the Academic Council.
   1. Dr. K. Radha, Head of Chemistry Department St Ann's Degree & P.G College, Hyd.
   2. Dr. Kiranmai Head of the Chemistry Department, Andhra Mahila Sabha Arts & Science College, Hyd.

5. One postgraduate meritorious alumnus to be nominated by the Principal. The chairman, Board of Studies, may with the approval of the Principal of the College.
   1. Shri. Vipin Kumar, M.Sc Chemistry
   2. Shri Vikesh Kumar loan providing officer in SBI Head office of Mumbai.

(a) Experts from outside the College whenever special courses of studies are to be formulated-To be nominated.

(b) Other members of staff of the same faculty.

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DEPARTMENT OF CHEMISTRY
BOARD OF STUDIES
Academic Year – 2016-17

Minutes of BOS Meeting

BOS meeting of the Department of Chemistry was held on 18.7.2016, Monday at 3.30 PM

The following members were present

Prof. M. Vithal	-	University Nominee
Smt. Pooja Kaushal	-	Chairperson
Dr. Kiranmai	-	Member
Dr. K. Radha	-	Member

2.1 Welcome address by the chair

The chair welcomed the University Nominee, Chairperson BOS, O.U Department of Chemistry and Members of B.O.S.

2.2 Details of choice based credit system.

Members were informed that TSCHE has referred that from the academic year 2016-17 autonomous institutions have to follow CBCS i.e. From the Academic Year 2016-17 Osmania University has instructed all the Degree colleges including Autonomous Degree colleges to follow CBCS under which after passing the exam student will get the Grade in the Final Result. 4 Credits are given for theory paper and 1 credit is given for practical in each semester.

2.3 Discussion and Distribution of Common Core Syllabus.

i. Members were informed by the chair that Department of Chemistry, Hindi Mahavidyalaya is following common core syllabus prescribed by Osmania University.

ii. We are following Osmania University same syllabus of each Semester as it is without any changes

Syllabus copy for both the semesters is enclosed.
Syllabus was approved by the Member of BOS.

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2.4 Marks allotted for Internal and end Semester exams.

1. Internal assessment is of 20 marks. (15M for Internal + 5 M for assignment).In each Semester two internal assessment of 15 Marks will be conducted and an average of both the internal assessments will be added in the marks of Theory exam.
2. Theory Question paper is of 80 marks.
3. Total allotted marks are 100.

The distribution of marks was approved by the Member of BOS.

2.5 Discussion on Pattern and Model Paper of Semester exam and Model Paper of Internal Exam

1. It was informed by the department that in each Semester Two Internal exams will be conducted for 15 marks and 5 marks will be allotted for assignment. Average of marks of these two internal exams will be taken.

2. Semester exam will be conducted as per the Almanac which will be provided by the exam branch. Internal exam duration will be 30Mts and Semester exam duration will be of 3 hrs.

3. Model Question paper for Semester I and Semester II was discussed. Theory paper for each Semester will have 2 sections.

i) Section A contains 8 short Questions. The student has to answer four questions. Each Question carries 5 Marks (4X5=20 Marks)

ii) Section B contains 4 Essay type Questions with internal choice. Each Question carries 15 Marks (4X15=60 Marks)

Pattern of Model Question Papers for Paper I and Paper II are enclosed.
Pattern of Model Question Paper was approved by Member of BOS.

2.6 Discussion on Practical Exam Model paper.

It was decided in BOS meeting that 50 Marks Practical Exam of 3 hrs will be held in each Semester and 1 credit will be given for Practical in each Semester.

The Practical model paper was approved by the Member of BOS.

2.7 Panel of Examiners

The panel of examiners was approved by the members.
List is enclosed

2.8 Any other matter.

Question paper pattern is subjected to change as prescribed by Osmania University in the later stages.

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2.9 **Vote of Thanks**

Meeting concluded with the Vote of Thanks by Smt. Pooja Kaushal.

Chairperson

University Nominee

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Members

Principal

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1.

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DEPARTMENT OF CHEMISTRY
AGENDA OF THE MEETING
MONDAY 18.7.2016

2.1 Welcome address by the chair.

2.2 Details of credit base choice system.

2.3 Discussion on Common Core Syllabus.

2.4 Marks allotted for Internal and end Semester exams.

2.5 Discussion on Semester Exam Model Paper & Internal exam Model paper

2.6 Discussion on Practical Exam Model Paper

2.7 Panel of Examiners

2.8 Any other matter

.9 Vote of Thanks

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HINDI MAHAVIDYALAYA, SAIDABAD, HYDERABAD
(AUTONOMOUS)
B.Sc. 1st Year Chemistry
Semester – I
Paper I

Code:	
Instruction	
Theory Classes	4 Hrs/Week
Practical Classes	2 Hrs/Week
Credit for Theory	4
Credit for Practical	1
Duration of Semester Examination	3 Hrs
Duration of Internal Examination	30 Min
Semester Examination Marks	80 Marks
Internal Examination Marks	20 Marks

Unit-I (Inorganic Chemistry) **15h(1 hr/week)**

S1-I-1. s-block elements: **2 h**

General Characteristics of groups I and II elements, Diagonal relationship between Li and Mg, Be and Al

S1-I-2. p-block elements 1: **7 h**

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), Lewis acid nature of BX_3

Group – 14: Carbides-Classification – ionic, covalent, interstitial – synthesis. Structures and reactivity. Industrial application. Silicones – Preapartion – a) direct silicon process b)use of Grignard reagent c) aromatic silylation. Classification – straight chain, cyclic and cross-linked.

Group-15:Nitrides–Classification – ionic, covalent and interstitial. Reactivity –hydrolysis.Preparation and reactions of hydrazine, hydroxyl amine, phosphazenes.

S1-I-3. General Principles of Inorganic qualitative analysis **6 h**

Anion analysis: Theory of sodium carbonate extract, classification and reactions of anions- CO_3^{2-}, Cl^-, Br^-, SO_4^{2-}, PO_4^{3-}, BO_3^{3-}, CH_3COO^-, NO_3^-.

Cation Analysis: Principles involved - Solubility product, common ion effect, general discussion for the separation and identification of group I individual cations (Hg_2^{2+}, Ag^+, Pb^+) with flow chart and chemical equations. Principle involved in separation of group II& IV cations.
General discussion for the separation and identification of group II (Hg^{2+}, Pb^{2+}, Bi^{3+},Cd^{2+}, Sb^{3+}), III (Al^{3+}, Fe^{3+}), IV (Mn^{2+}, Zn^{2+}) individual cations with flow chart and chemical equations.

Application of concept of hydrolysis in group V cation analysis. General discussion for the separation and identification of group V individual cations (Ba^{2+}, Sr^{2+}, Ca^{2+}) with flow chart and chemical equations. Theory of flame test. Identification of Group VI cations (Mg^{2+}, NH^{4+})

Unit - II (Organic Chemistry) **15h(1 hr/week)**

S1-O-1:Structural Theory in Organic Chemistry **6 h**

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-Mesomeric effect, application to (a) acidity of phenol. (b) acidity of carboxylic acids and basicity of anilines. Stability of carbo cations, carbanions and free radicals. Hyper conjugation and its application to stability of carbonium ions, Free radicals and alkenes.
Types of organic reactions: Addition reactions- electrophilic, nucleophilic and free radical. Substitution reactions – electrophilic, nucleophilic and free radical. Elimination and Rearrangement reactions– Examples.

S1-O-2: Acyclic Hydrocarbons **6 h**

Alkanes– Methods of preparation: Corey-House reaction, Wurtz reaction, from Grignard reagent, Kolbe synthesis. Chemical reactivity - inert nature, free radical substitution, Halogenation example-reactivity, selectivity and orientation.
Alkenes-Preparation of alkenes (with mechanism) (a) by dehydration of alcohols (b) dehydrohalogenation of alkyl halides (c) by dehalogenation of 1,2 dihalides, Zaitsev's rule. Properties: Addition of Hydrogen – heat of hydrogenation and stability of alkenes. trans-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). Oxidation(cis – additions)-hydroxylation by $KMnO_4$, OsO_4, trans addition- peracids (via epoxidation), hydroboration, ozonolysis – location of double bond. Dienes-Types of dienes, reactions of conjugated dienes – 1,2 and 1,4 addition of HBr to 1,3 – butadiene and Diels – Alder reaction.

Alkynes– Preparation by dehydrohalogenation of vicinal dihalides, dehalogenation of tetrahalides. Physical Properties: Acidity of terminal alkynes (formation of metal acetylides) preparation of higher alkynes, Chemical reactivity – electrophilic addition of X_2, HX, H_2O (tautomerism), Oxidation

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(formation of enediol, 1, 2 diones and carboxylic acids) and reduction (Metal-ammonia reduction, catalytic hydrogenation).

S1-O-3: Alicyclic Hydrocarbons 3 h

Nomenclature, preparation by Freunds method, Dickmann, heating dicarboxylic metal salts. Properties – reactivity of cyclo propane and cyclo butane by comparing with alkanes. Stability of cycloalkanes – Baeyer strain theory, Sachse and Mohr predictions and Pitzer strain theory. Conformational structure of cyclopentane, cyclohexane.

Unit-III (Physical Chemistry) **15 h (1 hr/week)**

S1-P-1: Atomic structure and elementary quantum mechanics **6 h**

Black body radiation, heat capacities of solids, Rayleigh Jeans law, Planck's radiation law, photoelectric effect, Limitations of classical mechanics, Compton effect, De Broglie's hypothesis, Heisenberg's uncertainty principle, Schrodinger's wave equation and its importance. Physical interpretation of the wave function, significance of ψ and ψ^2 a particle in a box, energy levels, wave functions and probability densities. Schrodinger wave equation for H-atom. Separation of variables, radial and angular functions (only equation), hydrogen like wave functions, quantum numbers and their importance.

S1-P-2:Gaseous State **5 h**

Deviation of real gases from ideal behavior. van der Waals equation of state. Critical phenomenon. PV isotherms of real gases, continuity of state. Andrew's isotherms of CO_2. The van der Waal's equation and critical state. Derivation of relationship between critical constants and van der Waal's constants. The law of corresponding states, reduced equation of states. Joule Thomson effect and inversion temperature of a gas. Liquifaction of gases: i) Linde's method based on Joule Thomson effect ii) Claude's method based on adiabatic expansion of a gas.

S1-P-3: Liquid State **4 h**

Intermolecular forces, structure of liquids (qualitative description). Structural differences between solids, liquids and gases. Surface tension and its determination using stalagmometer. Viscosity of a liquid and determination of coefficient of viscosity using Ostwald viscometer. Effect of temperature on surface tension and coefficient of viscosity of a liquid (qualitative treatment only). Liquid crystals, the mesomorphic state: Classification of liquid crystals in to Smectic and Nematic, differences between liquid crystal and solid / liquid. Application of liquid crystals as LCD devices.

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Unit – IV (General Chemistry) **15 h (1 hr/week)**

S1-G-1 Chemical Bonding **11 h**

Ionic solids- lattice and solvation energy, solubility of ionic solids, Fajan's rule, polarity and polarizability of ions, covalent nature of ionic bond, covalent bond - Common hybridization and shapes of molecules.

Molecular orbital theory: Shapes and sign convention of atomic orbitals. Modes of overlapping. Concept of σ and π bonds. Criteria for orbital overlap. LCAO concept.Types of molecular orbitals- bonding, antibonding and non bonding. MOED of homonuclear diatomics - H_2, N_2, O_2,O_2^-, O_2^{2-}, F_2 (unhybridized diagrams only) and heteronuclear diatomics CO, CN^-, NO, NO^+ and HF. Bond order, stability and magnetic properties.

S1-G-2 Evaluation of analytical data **4 h**

Significant figures, accuracy and precision. Errors-classification of errors-determinate and indeterminate errors, absolute and relative errors, propagation of errors in mathematical operations – addition, substraction, division and multiplication (with respect to determinate errors)..

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References:

Unit- I

1. Principles of Inorganic Chemistry by Puri, Sharma and Kalia Vishal Publications 1996.
2. Concise Inorganic Chemistry by J.D. Lee 3rd edn.
3. Basic Inorganic Chemistry by F.A.Cotton, G.Wilkinson and Paul.L. Gaus 3rd edn Wiley Publishers 2001. Chem.
4. Vogel's Qualitative Inorganic Analysis by Svehla
5. Inorganic Chemistry Principles of structure and reactivity by James E.Huhey, E.A. Keiter and R.L. Keiter 4th edn.
6. Chemistry of the elements by N.N.Greenwood and A. Earnshaw Pergamon Press 1989.
7. Inorganic Chemistry by Shriver and Atkins 3rd edn Oxford Press 1999.
8. Qualitative analysis by Welcher and Hahn.
9. Textbook of Inorganic Chemistry by R Gopalan
10. College Practical chemistry by V K Ahluwalia, Sunitha Dhingra and Adarsh Gulati

Unit- II

1. Text book of organic chemistry by Morrison and Boyd.
2. Text book of organic chemistry by Graham Solomons.
3. Text book of organic chemistry by Bruice Yuranis Powla.
4. Text book of organic chemistry by Soni.
5. General Organic chemistry by Sachin Kumar Ghosh.
6. Text book of organic chemistry by C N pillai

Unit III

1. Principles of physical chemistry by Prutton and Marron.
2. Text Book of Physical Chemistry by Soni and Dharmahara..
3. Text Book of Physical Chemistry by Puri and Sharma.
4. Text Book of Physical Chemistry by K. L. Kapoor.
5. Physical Chemistry through problems by S.K. Dogra.
6. Text Book of Physical Chemistry by R.P. Verma.
7. Elements of Physical Chemistry byLewis Glasstone.

Unit IV

1. Principles of Inorganic Chemistry by Puri, Sharma and Kalia Vishal Publications 1996.
2. Concise Inorganic Chemistry by J.D. Lee 3rd edn.
3. Basic Inorganic Chemistry by F.A.Cotton, G.Wilkinson and Paul.L. Gaus 3rd edn Wiley Publishers 2001. Chem
4. Analytical chemistry by G. L. David Krupadanam, D. Vijaya Prasad, K.Varaprasada Rao, K.L.N. Reddy and C. Sudhakar

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HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
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B.Sc. 1st Year Chemistry
Semester – II
Paper-II

Code:	
Instruction	
Theory Classes	**4 Hrs/Week**
Practical Classes	**2 Hrs/Week**
Credit for Theory	**4**
Credit for Practical	**1**
Duration of Semester Examination	**3 Hrs**
Duration of Internal Examination	**30 Min**
Semester Examination Marks	**80 Marks**
Internal Examination Marks	**20 Marks**

Unit-I (Inorganic Chemistry) **15 h (1 hr/week)**

S2-I-1 p-block Elements -II **7 h**

Oxides: Types of oxides (a) Normal- acidic, basic amphoteric and neutral (b) Mixed(c) sub oxide d) peroxide e) superoxide. Structure of oxides of C, N, P, S and Cl - reactivity, thermal stability, hydrolysis.

Oxy acids: Structure and acidic nature of oxyacids of B, C, N, P, S and Cl.Redox properties of oxyacids of Nitrogen: HNO_2 (reaction with $FeSO_4$, $KMnO_4$, $K_2Cr_2O_7$), HNO_3 (reaction with H_2S, Cu), HNO_4 (reaction with KBr, Aniline), $H_2N_2O_2$ (reaction with $KMnO_4$). Redox properties of oxyacids of Potasium: H_3PO_2 (reaction with $HgCl_2$), H_3PO_3 (reaction with $AgNO_3$, $CuSO_4$).

Redox properties of oxyacids of Sulphur: H_2SO_3 (reaction with $KMnO_4$, $K_2Cr_2O_7$), H_2SO_4 (reaction with Zn, Fe, Cu), $H_2S_2O_3$ (reaction with Cu, Au), H_2SO_5 (reaction with KI, $FeSO_4$), $H_2S_2O_8$ (reaction with $FeSO_4$, KI)

Interhalogens- classification- general preparation- structures of AB, AB_3, AB_5 and AB_7 type and reactivity. Poly halides- definition and structure of ICl_2^-, ICl_4^- and I_3^-

Comparison of Pseudohalogens with halogens.

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S2-I-2 Chemistry of Zero group elements **2 h**

General preparation, structure, bonding and reactivity of Xenon compounds – Oxides, Halides and Oxy-halides. Clatherate compounds and Anomalous behavior of He (II)

S2-I-3Chemistry of d-block elements **6 h**

Characteristics of d-block elements with special reference to electronic configuration variable valence, ability to form complexes, magnetic properties &catalytic properties. Stability of various oxidation states and SRP Comparative treatment of second and third transition series with their 3d analogues. Study of Ti, Cr and Cu traids. Titanium triad – electronic configuration and reactivity of +3 and +4 states – oxides and halides. Chromium triad – reactivity of +3 and +6 states. Copper triad – reactivity of +1, +2 and +3 states.

Unit - II(Organic chemistry) **15 h (1 hr/week)**

S2-O-1:Aromatic Hydrocarbons **7h**

Concept of aromaticity –definition, Huckel's rule – application to Benzenoids and Non – Benzenoids (cyclopropenyl cation, cyclopentadienyl anion and tropylium cation).

Preapartions: From acetylene, phenols, benzene carboxylic acids and sulphonic acids

Reactions - General mechanism of electrophilic substitution, mechanism of nitration, sulphonation,and halogenation, Friedel Craft's alkylation(polyalkylation) and acylation. Orientation of aromatic substitution - Definition of ortho, para, and meta directing groups. Ring activating and deactivating groups with examples. Orientation – (i) activating groups: Amino, methoxy and alkyl groups. (ii) Deactivating groups - carboxy, nitro, nitrile, carbonyl and sulphonic acid& halo groups.

S2-O-2:Arenes and Polynuclear Aromatic Hydrocarbons **3 h**

Preparation of alkyl benzenes by Friedel Craft's alkylation, Friedel Craft's acylation followed by reduction, Wurtz-Fittig reaction. Chemical reactivity: Ring substitution reactions,side chain substitution reactions and oxidation.

Polynuclear hydrocarbons – Structure of naphthalene and anthracene (Molecular Orbital diagram and resonance energy) Reactivity towards electrophilic substitution. Nitration and sulphonation as examples.

S2-O-3: Halogen compounds **5 hrs**

Nomenclature and classification: alkyl (primary, secondary, tertiary), aryl, aralkyl, allyl, vinyl, benzyl. Chemical reactivity - reduction, formation of RMgX, Nucleophilic substitution reactions – classification into S_N^1 and S_N^2. Mechanism and energy profile diagrams of S_N^1 and S_N^2 reactions. Stereochemistry of S_N^2 (Walden Inversion) 2-bromobutane, S_N^1 (Racemisation) 1-bromo-1-phenylpropane explanation of both by taking the example of optically active alkyl halide. Structure and reactivity – Ease hydrolysis - comparison of alkyl, vinyl, allyl, aryl, and benzyl halides.

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Unit – III (Physical Chemistry)

S2-P-1:Solutions **15 h (1 hr/week)**

5 h

Liquid - liquid mixtures, ideal liquid mixtures, Raoult's and Henry's laws. Non ideal systems. Azeotropes HCl-H_2O and C_2H_5OH - H_2O systems. Fractional distillation,. Partially miscible liquids- Phenol – Water, Trimethyl amine – Water and Nicotine – Water systems. Lower upper consolute temperatures. Effect of impurity on consolute temperature.Immiscible liquids andsteam distillation. Nernst distribution law. Calculation of the partition coefficient. Applications of distribution law with solvent extraction.

S2-P-2: Dilute Solutions & Colligative Properties

5 h

Dilute Solutions, Colligative Properties, Raoult's law, relative lowering of vapour pressure, molecular weight determination. Osmosis - laws of osmotic pressure, its measurement, determination of molecular weight from osmotic pressure. 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 for determining various colligative properties. Abnormal molar mass, Van't hoff factor, degree of dissociation and assocoation of solutes.

S2-P-3: Solid state Chemistry

5 h

Laws of Crystallography – (i) Law of Constancy of interfacial angles (ii) Law of Symmetry, Symmetry elements in crystals (iii) Law of rationality of indices. Definition of space lattice, unit cell. Bravais Lattices and Seven Crystal systems (a brief review). X-ray diffraction by crystals; Derivation of Bragg's equation, Determination of structure of NaCl, KCl & CsCl (Bragg's method and Powder method).

Unit – IV (General Chemistry) **15 h (1 hr/week)**

S2-G-1: Theory of Quantitative Analysis **5 hours**

Volumetric Analysis: Introduction, standard solutions, indicators, end point, titration curves, Types of titrations: i)neutralization titration- principle, theory of acid base indicators, titration curves and selection of indicators- strong acid - strong base, strong acid –weak base, weak acid- strong base and weak acid –weak base.

Gravimetric analysis- Introduction, nucleation, precipitation, growth of precipitate, filtration and washing, drying and incineration of precipitate, coprecipitation and post precipitation. Determination of Ni^{2+}.

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S3-G-2: Theories of bonding in metals: 5 h

Valence bond theory, Explanation of metallic properties and its limitations, Free electron theory, thermal and electrical conductivity of metals, limitations, Band theory, formation of bands, explanation of conductors, semiconductors n-type and p-type, extrinsic & intrinsic semiconductors, and insulators.

S2-G-3: Material Science 5 h

Classification of materials- classification as metals, ceramics, organic polymers, composites, biological materials etc. The property of super conductivity of materials. Super conducting materials- elements, alloys and compounds. Properties of super conductors- zero resistivity, Meisener effect and thermal properties. Composites-meaning of composites, advanced composites, classification –particle rein forced fiber reinforced and structural composites general characters of composite materials-Particle-reinforced composites – large particle and dispersion- strengthened composite. Fiber reinforced composites (continuous and discontinuous fiber composites).

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References

Unit I

1. Principles of Inorganic Chemistry by Puri, Sharma and Kalia Vishal Publications 1996.
2. Concise Inorganic Chemistry by J.D. Lee 3rd edn.
3. Basic Inorganic Chemistry by F.A.Cotton, G.Wilkinson and Paul.L. Gaus 3rd edn
4. Wiley Publishers 2001. Chem
5. Chemistry of the elements by N.N.Greenwood and A. Earnshaw Pergamon Press 1989.
6. Inorganic Chemistry by Shriver and Atkins 3rd edn Oxford Press 1999.
7. Inorganic Chemistry Principles of structure and reactivity by James E.Huhey, E.A. Keiter and R.L. Keiter 4th edn.
8. Qualitative analysis by Welcher and Hahn.
9. Textbook of Inorganic Chemistry by R Gopalan
10. College Practical chemistry by V K Ahluwalia, Sunitha Dhingra and Adarsh Gulati

Unit- II

1. Text book of organic chemistry by Morrison and Boyd.
2. Text book of organic chemistry by Graham Solomons.
3. Text book of organic chemistry by Bruice Yuranis Powla.
4. Text book of organic chemistry by Soni.
5. General Organic chemistry by Sachin Kumar Ghosh.
6. Text book of organic chemistry by C N pillai

Unit III.

1. Principles of physical chemistry by Prutton and Marron.
2. Text Book of Physical Chemistry by Soni and Dharmahara..
3. Text Book of Physical Chemistry by Puri and Sharma.
4. Text Book of Physical Chemistry by K. L. Kapoor.
5. Physical Chemistry through problems by S.K. Dogra.
6. Text Book of Physical Chemistry by R.P. Verma.
7. Elements of Physical Chemistry byLewis Glasstone.

Unit IV

1. Principles of Inorganic Chemistry by Puri, Sharma and Kalia Vishal Publications 1996.
2. Concise Inorganic Chemistry by J.D. Lee 3rd edn.
3. Basic Inorganic Chemistry by F.A.Cotton, G.Wilkinson and Paul.L. Gaus 3rd edn Wiley Publishers 2001. Chem
4. Analytical chemistry by G. L. David Krupadanam, D. Vijaya Prasad, K. Varaprasada Rao, K.L.N. Reddy and C. Sudhakar

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B.Sc. 1st Year Chemistry
Semester – I
Practical Paper - I

Code:	
Instruction	**3 Hrs / Week**
Duration of Exam	**3 Hrs**
Marks for Exam	**50 Marks**
Laboratory Course	**45 Hrs**

Qualitative Analysis

I. Preparations:

1.Tetrammine copper (II) sulphate,
2.Potash alum $KAl(SO4)_2.\ 12H_2O$,
3. Bis (dimethylglyoximato) nickel(II)

II. Analysis of two anions (one simple and one interfering)

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B.Sc. 1st Year Chemistry
Semester – II
Practical Paper- II

Code:	
Instruction	**3 Hrs / Week**
Duration of Exam	**3 Hrs**
Marks for Exam	**50 Marks**
Laboratory Course	**45 Hrs**

Paper II - Qualitative Analysis - II

I Semi micro analysis of mixtures

Analysis of two anions and two cations in the given mixture.

Anions: CO_3^{2-}, SO_3^{2-}, $.S^{2-}$ Cl^-, Br^-, I^- CH_3COO^-, NO_3^- PO_4^{3-}, BO_3^{3-}, SO_4^{2-}

Cations: Ag^+, Pb^{2+}, Hg^+, Hg^{2+}

Pb^{2+}, Bi^{3+}, Cd^{2+}, Cu^{2+}, $As^{3+/5+}$, $Sb^{3+/5+}$, $Sn^{2+/4+}$

Al^{3+}, Cr^{3+}, Fe^{3+}

Zn^{2+}, Ni^{2+}, Co^{2+}, Mn^{2+}

Ca^{2+}, Sr^{2+}, Ba^{2+}

Mg^{2+}, NH_4^+

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B.Sc Ist Year Chemistry
Semester – I & II
Theory Question Paper Pattern

Time: 3 hrs

Max. Marks: 80

SECTION A

I Write any Four of the following (Short Questions) 4 X5 = 20 Marks

1. A Question from Unit I
2. A Question from Unit I
3. A Question from Unit II
4. A Question from Unit II
5. A Question from Unit III
6. A Question from Unit III
7. A Question from Unit IV
8. A Question from Unit IV

SECTION B

II Essay Questions. Answer all the Questions 4 X 15= 60 Marks

9 (a) A Question from Unit I
(OR)
(b) A Question from Unit I

10. (a). A Question from Unit II
(OR)
(b). A Question from Unit II

11 (a) A Question from Unit III
(OR)
(b) A Question from Unit III

12 (a) A Question from Unit IV
(OR)
(b) A Question from Unit IV

Note : Question Paper Pattern is subjected to change as prescribed by Osmania Universtiy in the later stages

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(AUTONOMOUS)
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Semester – I & II

Practical Model Question Paper

Time: 3Hrs **Total Marks: 50**

I	Write the procedure of given inorganic compounds	6 M
II	Analyse the given mixture using Semi-micro qualitative technique systematically and report two anions (one simple and one interfering) present in given salt mixture	24 M
III	Record	10 M
IV	Vivavoce	10 M

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Chemistry Department

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2	Dr. Kiranmai Head – Department of Chemistry Andhra Mahila Sabha Arts & Science College Osmania University Campus	
3	Mrs. Shanti Sudha Andhra Mahila Sabha Arts & Science College Osmania University Campus	
4	K. Radhika St. Ann's Degree College Mehdipatnam, Hyderabad	
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