

Paper No.	Code	Nomenclature	Contact hours (L+P)	Credits	Max. Marks
Paper-XXXVIII	CHI(H)-401 ✓	Inorganic Special-IV	4+0 = 04	04	70+30
Paper-XXXIX	CHP(H)-401 ✓	Physical Special-IV	4+0 = 04	04	70+30
Paper-XL	CHO(H)-401 ✓	Organic Special-IV	4+0 = 04	04	70+30
Paper-XLI	CHI(H)-402 ✓	Inorganic Special-V	4+0 = 04	04	70+30
Paper-XLII	CHP(H)-402 ✓	Physical Special-V	4+0 = 04	04	70+30
Paper-XLIII	CHO(H)-402 ✓	Organic Special-V	4+0 = 04	04	70+30
Paper-XLIV	CHI(H)-403 ✓	Inorganic Special-VI	4+0 = 04	04	70+30
Paper-XLV	CHP(H)-403 ✓	Physical Special-VI	4+0 = 04	04	70+30
Paper-XLVI	CHO(H)-403 ✓	Organic Special-VI	4+0 = 04	04	70+30
Paper-XLVII	CHIM(S)-405 ✓	Instrumental methods in Chemistry	4+0 = 04	04	70+30
Paper-XLVIII	CHIC(S)-406 ✓	Industrial Chemistry	4+0 = 04	04	70+30
Paper-XLIX	CHP(E)-404 ✓	Physical Chemistry General -II	4+0 = 04	04	70+30
Paper-L	CHI(E)-404 ✓	Inorganic Chemistry General -II	4+0 = 04	04	70+30
Paper-LI	CHO(E)-404 ✓	Organic Chemistry General -II	4+0 = 04	04	70+30
Paper-LII	CHI(H)-407	Inorganic Special Practical-I	0+09 = 09	04	50
Paper-LIII	CHP(H)-407	Physical Special Practical-I	0+09 = 09	04	50
Paper-LIV	CHO(H)-407	Organic Special Practical-I	0+09 = 09	04	50
Paper-LV	CHI(H)-408	Inorganic Special Practical-II	0+09 = 09	04	50
Paper-XLIV	CHP(H)-408	Physical Special Practical-II	0+09 = 09	04	50
Paper-XLV	CHO(H)-408	Organic Special Practical-II	0+09 = 09	04	50

Note:

- CH (H) & CH(S), represents Hard core & Soft core papers respectively in Chemistry.
- Hard core papers are mandatory for M.Sc. 4th Semester students.
- Candidate has to opt three Hard core & one Soft core papers from the same series i.e. "401" or "402" or "403" and "405"
- Maximum marks of M.Sc. 4th Semester will be 600 (Theory 500; Practical 100)
- Each theory paper will include 30% marks as internal assessment as per University rules.
- Each practical examination will be of 06 hours and will be conducted in two sessions (Morning & Evening) of 03 hours each.
- Practical marks will include 20% marks for Viva-Voce and 20% for record files.
- The payment to the internal as well as external examiners will be made on the basis of sessions.
- Credits : 28, Hard core = 20, Soft core = 04, Elective = 04

Pa. B. S. B. K.

21.9.17

73

29.9.17

M. Sc. (4th Sem.)

Paper-XXXVIII

CHI(H)-401

Inorganic Special-IV

Max Marks : 70

Note: The examiner will set nine questions and the candidates will be required to attempt five questions in all. Out of nine questions one question will be compulsory containing eight short answer type questions covering the entire syllabus. Further examiner will set two questions from each section and the candidates will be required to attempt one question from each section. All questions will carry equal marks.

UNIT - I

Supramolecular Chemistry

Concepts and Language, Molecular recognition, Molecular receptor for different types of molecules including anionic substrates, Design and synthesis of co-receptors molecules and multiple recognition. Supramolecular reactivity and catalysis.

Transport process and carrier design, Switching devices. Some examples of self assembly in supramolecular chemistry.

UNIT-II

Advanced Inorganic Materials-I

Multiphase materials: Ferrous alloys, Fe-C phase transformation in ferrous alloys: Stainless steel, Non-ferrous alloys, their application and properties.

Glasses, Glassy state, Glass formers and modifiers, Applications. Ceramics: Structure, properties and clay products.

UNIT - III

Advanced Inorganic Materials-II

Refractories: Characterizations, properties and their applications. Microscopic composites: Dispersion strengthened and Particle reinforced, Fibre reinforced composites. Nanocrystalline phase: Preparation procedures, special properties, applications.

Thin films and Langmuir-Blodgett films: Preparation and growth techniques, Evaporation/Sputtering, Chemical processes, MOCVD, Sol-gel etc. Photolithography: Properties and applications.

UNIT - IV

Polymeric materials: Molecular shape, Structure and configuration, Crystallinity, Stress-Strain behaviour, Thermal behaviour, Polymer type and their application, Conducting and Ferro-electric polymers.

Suggested Readings

- Solid State Physics*, N. W. Ashcroft, N. D. Mermin, Saunders College
Handbook of Liquid Crystals, Kelkar and Hatz., Chemie Verlag
Material science and Engineering, An Introduction, W. D. Callister, Wiley
Principle of solid states, H. V. Keer, Wiley Eastern
Photochemistry, A. W. Adamson, P. D. Fleischauer, Wiley

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M. Sc. (4th Sem.)
Paper-XLV
CHP(H)-403
Physical Special-VI

Max Marks : 70

Note: The examiner will set nine questions and the candidates will be required to attempt five questions in all. Out of nine questions one question will be compulsory containing eight short answer type questions covering the entire syllabus. Further examiner will set two questions from each section and the candidates will be required to attempt one question from each section. All questions will carry equal marks.

UNIT – I

Commercial Polymers

Polyethylene, Polyvinyl chloride, Polyamides, Polyesters, Phenolic resins, Epoxy resins and Silicone polymers. Functional polymers: Fire retarding polymers and electrically conducting polymers.

UNIT-II

Thermodynamics of Biopolymer Solutions

Thermodynamics of biopolymer solutions: Entropy of mixing & liquid state model along with limitation, Free volume theory, Heat and free energy of mixing. Osmotic pressure membrane equilibrium, Muscular contraction and energy generation in mechanochemical system.

UNIT – III

Biopolymers and their Molecular Weights

Evaluation of size, shape, molecular weight and extent of hydration of biopolymers by various experimental techniques. Sedimentation equilibrium, Hydrodynamic methods, Diffusion, Sedimentation velocity, Viscosity, Electrophoresis and rotational motions.

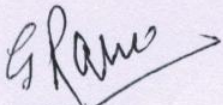
UNIT – IV

Diffraction Methods

Light scattering, Low angle X-ray scattering, X-ray diffraction and photo correlation spectroscopy. Optical Rotatory Dichroism (ORD) and Circular Dichroism (CD).

Suggested Readings

Textbook of Polymer Science, F. W. Billmeyer Jr. Wiley
Polymer Science, V. R. Gowariker, N. V. Viswanathan, J. Sreedhar, Wiley-Eastern
Functional Monomers and Polymers, K. Takemoto, Y. Inaki, R. M. Ottanbrite
Contemporary Polymer chemistry, H. R. Alcock, F. W. Lamb, Prentice Hall
Physics and Chemistry of Polymers, J. M. G. Cowie, Blackie Academic and Professional
Bioorganic Chemistry: A Chemical Approach to Enzyme Action, H. Dugas, C. Penny, Springer-Verlag
Macromolecules: Structure and Function, F. Wold, Prentice Hall


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