D–8506

Sub. Code
34411

DISTANCE EDUCATION

M.Sc. (Chemistry) DEGREE EXAMINATION, MAY 2025.

First Semester

INORGANIC CHEMISTRY — I

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Why the second ionization energy is higher than the first?

2. Comment on O_2 molecule is paramagnetic despite having an even number of electrons?

3. What are the conjugate bases of the Bronsted acids of HF, H_2SO_4 and HCO_3^-?

4. Tap water conducts electricity whereas distilled water does not. Why?

5. What is a Lewis acid? Give examples?

6. What is Silicate?

7. Write the example for aluminosilicate.

8. What are lsopoly acids?

9. What is mean by close packing in solids?

10. How does a metal deficiency defect influence the color of certain metal oxide?

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Discuss about the periodic trends in atomic and ionic radii across period and group with suitable examples.

Or

(b) Derive the Born-Haber cycle for the formation of KCl and explain each step involved?

12. (a) Explain Bronsted-Lowry Theory of Acid and Base.

Or

(b) Differentiate the Hard bases and Soft Bases.

13. (a) Discuss about structure of three types of silicate with suitable examples.

Or

(b) Describe in detail about various types of Isopolyacids and its synthesis.

14. (a) Describe the formation of conduction and valence bands in solids according to band theory.

Or

(b) Explain the structure of nickel arsenite.

15. (a) Compare the Schottky and Frenkel defects.

Or

(b) Explain the concept of F-centers in ionic crystals.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Draw the MO energy level diagram of O_2 and HCl molecules. Discuss them in details.

17. Derive the Born-Lande equation for the lattice energy of an ionic compound.

18. What is buffer solution? How is it classified? Explain them with suitable examples.

19. Describe the following Molecular sieves, Zeolites and Clay minerals.

20. Explain the electronic properties of metals, semiconductors, and insulators.

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D–8507	Sub. Code
	34412

DISTANCE EDUCATION

M.Sc. (Chemistry) DEGREE EXAMINATION, MAY 2025.

First Semester

ORGANIC CHEMISTRY – I

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

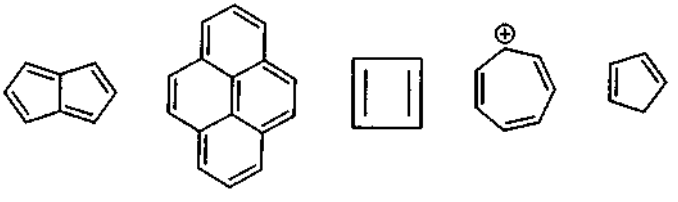
PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Write the structural formulae for the following compounds
   (a) Quinoline
   (b) DABCO
   (c) 1, 10-Phenanthroline
   (d) 2-aminopyrimidine.

2. Explain Huckel's Rule for Aromaticity with suitable examples.

3. Denote the following compound (aromatic/ non-aromatic/anti-aromatic)



4. What is mean by racemization? Give one example.

5. Write the conformations of propane and its stability.

6. Give one methods for the generation of carbocation.

7. What is stability of carbocation?

8. What is molecular rearrangement? Give one example.

9. What is haloform reaction?

10. Write benzyne mechanism.

PART B — (5 × 5 = 25 marks)

Answer ALL the questions, choosing either (a) or (b).

11. (a) Explain the aromaticity of Azulene and ferrocene.

Or

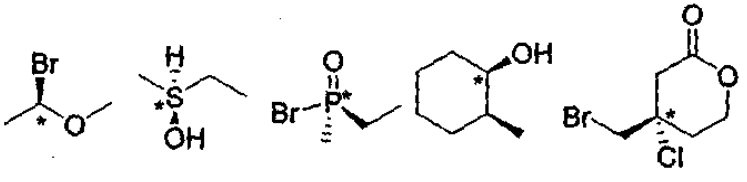
(b) Explain how inductive effect affects the strength of acids and bases.

12. (a) Write short notes on Atropisomerism with suitable examples.

Or

(b) Define chirality. Explain about planar and helical chirality in detail.

13. (a) Assign R/S configuration to the following compounds.



Or

(b) Differences between enantiomers and diastereomers.

14. (a) Write the mechanism for pinacol-pinacolone arrangement.

Or

(b) Discuss the mechanism of Steven rearrangement.

15. (a) Discuss about Vilsmeier-Haack reaction.

Or

(b) Give a detailed description of Von-Richter reaction.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Write short note sp, sp^2 and sp^3 hybridization.

17. (a) Write Cahn-Ingold-prelog rule for denoting R/S configuration of chiral compounds.

(b) Explain various types of structural isomerism with examples.

18. (a) Discuss Hammond's postulate. (5)

(b) Write Favorskii rearrangement with mechanism. (5)

19. (a) Explain the factors affecting S_N1 and S_N2 reaction. (5)

(b) List the factors that affect aromatic substitution. (5)

20. Explain nitration and sulfonation of benzene.

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D–8508

Sub. Code
34413

DISTANCE EDUCATION

M.Sc. (Chemistry) DEGREE EXAMINATION, MAY 2025.

First Semester

PHYSICAL CHEMISTRY – I

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Write the mathematical form of II law of thermodynamics.

2. Define activity

3. State the significance of transport number.

4. What is overvoltage?

5. State the importance of work function in photo electric effect.

6. Write the operator expression for Hamiltonian operator.

7. State Planck's law of black body radiation.

8. What is kinetic isotopic effect?

9. What are parallel reactions?

10. State the principle of microscopic reversibility.

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Discuss the concept of thermodynamic equation of state.

Or

(b) Derive Gibbs – Duhem equation

12. (a) Discuss about the exceptions of III law of thermodynamics.

Or

(b) Derive the Nernst equation for electrode potential.

13. (a) Explain the concepts of Debye-Huckel limiting law

Or

(b) Discuss the construction and working of silver-silver chloride electrode.

14. (a) Explain the concept of wave particle duality.

Or

(b) State the postulates of quantum mechanics.

15. (a) Explain the Hinshelwood theory for reaction rate.

Or

(b) Explain how the fast reaction kinetics are determined by continuous flow approach.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. (a) Establish the following Maxwell's relationship $\left(\frac{\partial T}{\partial V}\right)_S = -\left(\frac{\partial P}{\partial S}\right)_V$. (5)

(b) Derive Gibbs-Helmholtz equation. (5)

17. (a) Discuss in detail about the Debye-Huckel theory of interionic attraction. (5)

(b) Explain the working of galvanic cell. (5)

18. (a) Discuss the inadequacy of classical mechanics. (5)

(b) Derive the energy expression for a particle present in a one dimensional box. (5)

19. (a) Construct the mathematical expression for angular momentum operator. (5)

(b) Explain the dependence of equilibrium constant on temperature and pressure. (5)

20. (a) Write a note on explosive reaction. (5)

(b) Discuss the kinetics of opposing reactions. (5)

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D–8509

Sub. Code
34421

DISTANCE EDUCATION

M.Sc.(Chemistry) DEGREE EXAMINATION, MAY 2025.

Second Semester

INORGANIC CHEMISTRY — II

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Give the IUPAC name for the following coordination compounds. (a) $K_2[PtCl_6]$ (b) – $[Co(en)_2CH_2O](NO_3)_2$.

2. What is spectrochemical series? Give its importance.

3. Calculate the CFSE for low spin d^6 complex.

4. What is meant by spallation reaction?

5. Explain meson field theory.

6. Write any two biological applications of C-14 dating method.

7. State threshold energy.

8. What are the composition present in the nucleus?

9. What is meant by actinide contraction?

10. What are the common oxidation states of lanthanides and actinides?

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Write short notes on geometrical and optical isomerism for octahedral complexes.

Or

(b) Compare valence bond theory and crystal filed theory.

12. (a) Discuss the various factors affecting the nuclear stability.

Or

(b) State and explain Jahn - Teller distortion.

13. (a) Discuss the various actors which affect the 10Dq.

Or

(b) What are dia, para, ferri and antiferri magnetism? Discuss with suitable example.

14. (a) Discuss briefly about the principle of isotopic dilution analysis.

Or

(b) Discuss detail about properties of alpha, beta and gamma ray.

15. (a) How are lanthanides separated by ion-exchange and solvent extraction methods?

Or

(b) What is nuclear fusion? Explain with suitable example.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. What is crystal field theory? How does it differ from the valence bond theory? Calculate the crystal field stabilization energy in terms of Dq for $[Fe(CN)_6]^{4-}$ and $[FeCl_6]^3$ ions.

17. Explain the MOT of Octahetral and square planar complexes.

18. Explain the principle and working of cyclotron and synchrotron.

19. Describe the following (a) Nuclear shell model (b) Position of lanthanide in the periodic table.

20. Discuss the following (a) spectral and magnetic properties of lanthanide and actinides (b) oxidation state of lanthanide and actinides.

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D–8510

Sub. Code
34422

DISTANCE EDUCATION

M.Sc. (Chemistry) DEGREE EXAMINATION, MAY 2025.

Second Semester

ORGANIC CHEMISTRY – II

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. State Saytzeff rule.

2. What are elimination reactions?

3. Give an example for conformational diastereomers.

4. What are cis addition reactions?

5. Mention the importance of Gomberg reaction.

6. What are diradicals?

7. State the importance of Perkin reaction.

8. Give an example for Diels-Alder reaction.

9. State the Grotthuss - Draper law.

10. Define quantum yield.

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Discuss the mechanism of E_1 elimination reaction.

Or

(b) State and explain the Bredt's rule.

12. (a) Discuss the significance of hydroboration reaction.

Or

(b) Write a note on Benzoin condensation.

13. (a) Discuss the salient features of Schimdt reaction.

Or

(b) Give an account on C-H insertion reactions of carbenes.

14. (a) Discuss the application of Grignard reagent.

Or

(b) Explain the Curtius rearrangement reaction.

15. (a) Discuss the mechanism of Norrish Type I reaction.

Or

(b) Write a note on 1,3 dipolar addition.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. (a) Discuss the mechanism of free radical addition reaction. (5)

(b) Explain the general features of pyrolytic cis elimination reaction. (5)

17. Explain in detail about Michael's addition reaction.

18. (a) Discuss in detail about Wolff rearrangement. (5)

(b) Explain the mechanism of free radical polymerization reaction. (5)

19. Draw and explain the photo excitation process using Jablonshi diagram.

20. (a) Discuss the conformation of *n*-butane. (7)

(b) Give any one application of lithium dimethyl cuprate. (3)

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D–8511	Sub. Code
	34423

DISTANCE EDUCATION

M.Sc.(Chemistry) DEGREE EXAMINATION, MAY 2025.

Second Semester

PHYSICAL CHEMISTRY II

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Define the surface adsorption process.

2. What is the Langmuir-Hinshelwood mechanism?

3. What are the types of surfactants and give each one example?

4. What are called bio-polymers?

5. What is mean by intersystem crossing?

6. What is mean by photosensitization?

7. Define the quantum yield.

8. What is called fire retardant?

9. Give any two examples of dendrimer.

10. Explain the artificial photosynthesis.

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Explain the type of BET isotherms with example.

Or

(b) What are called detergents? Explain their synthesis process.

12. (a) Write the difference between fluorescence and phosphorescence.

Or

(b) What is called chemicluminescence? Explain with example.

13. (a) What is meant by flash photolysis? Explain its importance.

Or

(b) Write about the process called radiolysis of water.

14. (a) Explain the classification of polymers.

Or

(b) What is mean by degree of polymerization and explain.

15. (a) Write about the biodegradable polymers.

Or

(b) Write about the principles of dye sensitized solar cell.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Write about the Freudlich and Langmuir type of isotherms with example. (10)

17. Explain :

    (a) Gibbs adsorption isotherm (3)

    (b) Contact angle measurement (3)

    (c) Explain the hydrogen-halogen reaction. (4)

18. Write about the functionality of monomers and its significance. (10)

19. Write about the mechanism of free radical polymerization. (10)

20. (a) Explain the conducting polymers with example. (5)

    (b) Explain the medicinal and industrial use of colloids. (5)

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D–8512

Sub. Code
34431

DISTANCE EDUCATION

M.Sc.(Chemistry) DEGREE EXAMINATION, MAY 2025.

Third Semester

ADVANCED INORGANIC CHEMISTRY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Define Chelate effect.

2. Explain anation reaction with an example.

3. Differentiate labile and inert complexes.

4. Write any two examples for inorganic cages.

5. Differentiate the complementary and non-complementary reaction.

6. Write the synthetic method of metal carbonyl halides.

7. Give two examples for reductive elimination reaction.

8. List out the any two function of Hemoglobin.

9. What are the uses of cytochromes?

10. What are macro cyclic ligands?

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) How can you determine stability constants by polarographic method?

Or

(b) Differentiate stepwise and overall formation constants.

12. (a) Differentiate isomerisation and racemisation with suitable example.

Or

(b) Describe displacement reaction with suitable examples.

13. (a) Derive the term symbol for d^2 configuration.

Or

(b) What are fluxional molecule? Explain in detail.

14. (a) Describe about synthesis, structure and reactions of metahl carbonysl.

Or

(b) Write short note on isolobal analogy.

15. (a) Explain the therapeutic application of cisplatin.

Or

(b) Summarize the mechanism of sodium ion pump.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Describe in detail about innersphere and outersphere reactions with mechanism.

17. Illustrate about energy level Tanabe-Sugano diagram for d^2 system.

18. What are boranes and carboranes? Explain its bonding and structures briefly.

19. (a) Discuss the preparation and structure of the following metal carbonyls. (i) $Fe_2(CO)_9$ (ii) $Cr(CO)_6$.

    (b) Discuss the structure and properties of non-heme iron proteins.

20. (a) Formulate the structure and function of Zinc based enzyme carboxy peptidase - A.

    (b) Determine the structure and properties of chlorophyll.

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D–8513

Sub. Code
34432

DISTANCE EDUCATION

M.Sc.(Chemistry) DEGREE EXAMINATION, MAY 2025.

Third Semester

ADVANCED ORGANIC CHEMISTRY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Give any two synthetic applications of peracids.

2. Explain pinacol formation with one example.

3. What is retero synthesis?

4. What is asymmetric synthesis? Give one example.

5. Write the structure of Indole.

6. Write the solid phase peptide synthesis.

7. What is purine and pyrimidine?

8. Define the concept of biosynthesis.

9. Write the structure of vitamin A.

10. Write any two importance of alkaloids.

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Write the structure and reactions of TEMPO.

Or

(b) Write a short note on homogeneous and heterogeneous catayst with suitable examples.

12. (a) Explain the two group C-X disconnection.

Or

(b) Write a structure and synthesis of indole.

13. (a) Elucidate the configuration and conformation of maltose.

Or

(b) Write a short note on enzyme and co-enzyme.

14. (a) Explain the biosynthesis of alkaloids.

Or

(b) Explain the chemistry and physiological action of Riboflavin.

15. (a) Explain the two group C-C disconnection.

Or

(b) Discuss in detail about the end group analysis.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Write the reaction and mechanism of woodword and Prevost modification.

17. What is enantioselectivity? How it will achieved in Corey - Bakshi - Shibato reduction?

18. Explain the primary, secondary and tertiary structure of proteins with their diagrammatic illustrations.

19. Structural elucidation and give any one synthesis of Progesterone.

20. Brief explanation about the structure and synthesis of Zingiberene.

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D–8514

Sub. Code
34433

DISTANCE EDUCATION

M.Sc.(Chemistry) DEGREE EXAMINATION, MAY 2025.

Third Semester

SPECTROSCOPY – APPLICATIONS IN ORGANIC AND INORGANIC CHEMISTRY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Define Hook's law.

2. What do you mean by solvent effects in the electronic transitions?

3. What are overtones?

4. What are the advantages of tetramethyl silane as internal standard in NMR?

5. How does deuterium exchange work in NMR?

6. What is McLafferty rearrangement in mass spectrometry?

7. State and explain nitrogen rule in mass spectra.

8. Explain the term circular birefringence.

9. Write the principle of differential thermal analysis.

10. List out the application of nephelometry.

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) What are the factors which affect position and intensity of absorption bands?

Or

(b) Comment on Woodward - Fieser rules.

12. (a) Describe about basic principles of stretching vibrations and bending vibrations.

Or

(b) Explain the following (i) Spin-spin coupling (ii) Nuclear overhauser effect.

13. (a) Illustrate the instrumentation about ^{13}C NMR spectroscopy.

Or

(b) Discuss the following with suitable examples (i) isotopic ions (ii) meta stable ions.

14. (a) Discuss about α – haloketone rule.

Or

(b) List out the differences between ORD and CD.

15. (a) What are the principles and applications of DTA and TG?

Or

(b) Explain the instrumentation and applications of flame photometry.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Describe the various quantitative and qualitative applications of UV-Vis spectra.

17. Explain the term chemical shift. Describe the factors affecting the chemical shift value.

18. Explain the following terms : (a) Bathochromic shift (b) Combination bands; (c) Cotton effect.

19. Write the principle, instrumentation and applications of ESR spectroscopy.

20. (a) Discuss the principle, instrumentation and applications of Differential scanning calorimetry.

    (b) Write a short note on thermometric titrations.

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D–8515

Sub. Code
34441

DISTANCE EDUCATION

M.Sc.(Chemistry) DEGREE EXAMINATION, MAY 2025.

Fourth Semester

ANALYTICAL CHEMISTRY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Define errors in chemical analysis.

2. How many significant figures are present in the following? (a) 0.0025; (ii) 126,00 (iii) 2.0034.

3. What is meant by controlled potential coulometry?

4. How does a dropping mercury electrode work?

5. Differentiate systematic and random error.

6. What is electrophoeresis?

7. What are the steps involved in fractional crystallization?

8. What is the principle of potentiometric titration?

9. Name the different types of detector used in GC.

10. What is the principle of reverse phase HPLC?

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Write briefly about correlation coefficient.

Or

(b) What is quotients test? How does rejection of a result based on it?

12. (a) Describe the principle and instrumentation of cyclic voltammetry.

Or

(b) Give an account of ion-selective electrodes.

13. (a) Explained the principle and procedure to conduct paper chromatography experiment.

Or

(b) Discuss the principle and instrumentation of HPLC.

14. (a) Define electrodialysis. What are the controlling factors?

Or

(b) Theory and application of ion exchange chromatography.

15. (a) How do you find the least squares regression line on a graph?

Or

(b) What is the principle and mechanism involved in electrogravimetry?

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. How is standard deviation calculated for a set of data? Explain its importance.

17. Discuss the principle and applications of and instrumentation of polarography.

18. Discuss the principle and applications of GC-MS.

19. (a) Sketch the various aspect of Gel permission chromatography.

    (b) What are the four steps of involved in electrophoresis?

20. Account the following :

    (a) Solvent extraction with example

    (b) Thin layer chromatography

    (c) Chronopotentiamoetry.

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D–8516

Sub. Code
34442

DISTANCE EDUCATION

M.Sc.(Chemistry) DEGREE EXAMINATION, MAY 2025.

Fourth Semester

APPLIED CHEMISTRY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. What is mean by Ozone hole?

2. What is mean by a supercapacitor?

3. What are general forms of corrosion?

4. Give the account of current efficiency of a bath.

5. What is mean by composite coating?

6. Define electroless plating.

7. Define electrochemical energy conversion.

8. What are microscopic methods of nanomaterial characterization?

9. Explain the online course NPTEL.

10. What is mean by chemistry database?

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) What is called land pollution and explain their ill effects?

Or

(b) Write about the secondary methods of wastewater treatment.

12. (a) Give an account of electrochemical method of corrosion rate measurement.

Or

(b) Write about the mechanism of corrosion inhibitors.

13. (a) Give an account of surface preparation for electroplating.

Or

(b) Write about the working principle of hydrogen/oxygen fuel cell.

14. (a) Give an account of composite coating and their principles.

Or

(b) Write about the colouring of anodizing aluminium.

15. (a) Write about the CVD method of nanomaterial preparation.

Or

(b) Write about the AFM and SEM methods of nanomaterial characterization.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Write about the principles of electrochemical energy conversion with examples.

17. Write about the hazardous materials and their ill effects.

18. Write about the general classification of corrosion control methods.

19. Write about the alloy plating of Brass and Brush plating.

20. (a) Explain the chemical vapor deposition method for nanomaterial preparation. (5)

    (b) Explain the TEM method of nanomaterial characterization. (5)

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D–8517

Sub. Code
34443

DISTANCE EDUCATION

M.Sc.(Chemistry) DEGREE EXAMINATION, MAY 2025.

Fourth Semester

ADVANCED PHYSICAL CHEMISTRY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. What is negative absolute temperature?

2. Define vibrational partition function.

3. Define heat capacity.

4. Write the Schrodinger equation for one dimensional harmonic oscillator system.

5. State the need to work with approximation methods.

6. What is symmetry operation?

7. Define sub group.

8. Give two examples for molecules present in C_2V point group.

9. Write the factors which influences the rate of the reaction in solution kinetics.

10. State the effect of temperature on enzyme catalyzed reactions.

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Explain the concepts of Onsagar reciprocal relationship.

Or

(b) Derive the expression for Fermi-Dirac distribution law.

12. (a) Discuss the importance of Slater determinant.

Or

(b) State and explain the variation theorem.

13. (a) Explain the various rules for forming a group.

Or

(b) Formulate the matrix representation for inverse operation.

14. (a) Explain how the electronic transitions of HCHO are determined by group theory.

Or

(b) Discuss about the primary salt effect.

15. (a) Explain the importance of Hammett equation.

Or

(b) Explain the significance of Michaelis - Menton equation.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. (a) Establish the relation between equilibrium constant and partition function? (7)

(b) State Debye's T^3 law. (3)

17. Determine the wave functions of hydrogen atom by solving schrodinger wave equation.

18. (a) Discuss the construction of C_3V character table. (7)

(b) Write the application of group theory. (3)

19. (a) Explain the importance of Taft equation. (5)

(b) Discuss the Bronsted relations for acid-base catalysis. (5)

20. Discuss about the various factors which influences salt effect in solution.

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