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PART – A

Answer any five questions. Each question carries 4 marks.　　　　(5 x 4 = 20M)

1. Discuss about different types of absorption shifts.
2. Write short notes on chromophores and auxochromes.
3. How do you distinguish between cis-2-butene and trans-2-butene using IR spectroscopy?
4. Write a short note on the fingerprint region.
5. Explain the principle of NMR spectroscopy.
6. Write a short note on the shielding and deshielding of magnetic nuclei.
7. What are lanthanide shift reagents. Give its importance.
8. What are the advantages of the FT-NMR technique?
9. Explain Mc Lafferty rearrangement with an example.
10. Explain molecular ion peak and metastable peak.

PART – B

Answer the following questions　　　　(5 x 8 = 40M)

11. a. Write about the following a) Types of electronic transitions in molecules　b) Solvent effect in UV spectroscopy

(Or)

b. Explain Woodward-Fieser rules to calculate the wavelength of maximum absorption of conjugated dienes and polyenes.

12. a. How do you distinguish the following using IR spectroscopy?
(a) Intermolecular and intramolecular hydrogen bonding (b) Keto-enol tautomerism.

(Or)

b. Discuss different fundamental modes of vibrations.

13. a. Define chemical shift. Explain the factors affecting the chemical shift.

(Or)

b. Explain the following (i) Spin-spin interactions (ii) Coupling constant and factors affecting it.

14. a. Write short notes on (i) Nuclear magnetic double resonance (ii) Nuclear Overhauser Effect (NOE)

(Or)

b. Explain the complex ^{1}H-NMR spectra of ABX and AMX systems with suitable examples.

15. a. Write about the following ionization techniques in mass spectrometry:
(i) Fast atom bombardment (ii) Chemical ionization

(Or)

b. Write notes on the following:
(i) Nitrogen rule (ii) Mass fragmentation pattern in aldehydes and carboxylic acids.

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(POCH 202)
M.Sc. (Organic Chemistry) P.G Examinations- 1 3 DEC 2022
SEMESTER-II
ORGANIC CHEMISTRY-II   2117416 0230

TIME: 3 Hrs   Max Marks:60

PART-A

I. Answer any 5 questions out of the 10 short answer questions   5X4=20 M

1. Write the Aldol condensation reaction with suitable mechanism.
2. Write the Chichibabin reaction with suitable mechanism.
3. Explain DL nomenclature with suitable examples.
4. Explain the concept of geometrical isomerism.
5. Explain the conformational analysis of n-butane..
6. Write the conformational analysis of di substituted cyclo hexanes.
7. Write a note on microwave assisted organic synthesis.
8. Discuss the mechanism of Fischer-Indole synthesis.
9. Discuss catalyst free growth and catalyst activated growth.
10. Discuss the structure of single and multi walled carbon nano tubes

PART-B

II.   Answer the following questions   5×8=40 M

11a) .Explain the birch and wolff -kishner reduction with suitable mechanism.
          (OR)
b) Write the mechanism of Simonn Smith and McMurray reactions.

12a) .Explain about Chann,Ingold and Prelog (CIP) Sequencing rules.
          (OR)
b) .Explain the concept of Atrope isomerism.

13a) .Discuss the factors influencing the stability of conformationas.
          (OR)
b) . Explain the conformational analysis of carbon hetero atom having C-O and C-N bond.

14a) .Discuss the 12 principles of green chemistry..
          (OR)
b) .Write a note on following.
      i. green catalysis   ii. Solvent free reactions

15a) .Discuss the properties of carbon nano tubes.
          (OR)
b) .write a brief note on catalyst activated growth with suitable examples.

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(POCH 203)
M.Sc (Chemistry) P.G Examinations-Dec 2022
SEMESTER-II
INORGANIC CHEMISTRY-II

TIME: 3 Hrs

Max Marks:60

PART-A

I. Answer any 5 questions out of the 10 short answer questions   5X4=20 M

1. Write the structure and bonding in phosphorous-oxygen cages

2. What are Wade's and Lauher's rules? How are they helpful in counting electrons in metal clusters?

3. Explain Hydroformylation.

4. Define hapticity and write the classification of organometallic compounds.

5. Explain about acid hydrolysis.

6. Write the mechanism of inner sphere reactions.

7. Explain Slater Condon parameters.

8. Discuss Hund's rule to predict ground terms and ground states.

9. Write a short note on myoglobin.

10. Explain about the importance of Chlorophyll

PART-B

II.   Answer the following questions   5X8=40 M

(1a)   .Discuss the preparation, structure, bonding and magnetic property of $[Re_2Cl_8]^{2-}$

(OR)

b)   .Explain LNCs and HNCs classification of Carboranes with examples

(2a)   .Explain the reactions of organometallic compounds.

(OR)

b)   .Explain structure and bonding in Olefin complexes.

(3a)   .Explain Trans effect on substitution reactions in square planar complexes.

(OR)

b)   .Explain complementary and non-complementary reactions.

(4a)   .Explain correlation diagrams and Orgel diagrams.

(OR)

b)   .Draw and explain Tanabe- Sugano diagram for d^5 configuration.

(5a)   What is paramagnetism? What are the factors affecting paramagnetism.

(OR)

b).   .Write the structure and functions of vitamin B_{12}.

21174160230   Regd.No:_____

(POCH 204)
M.Sc (Chemistry) P.G Examinations- 15 DEC 2022
SEMESTER-II
PHYSICSAL CHEMISTRY-II

TIME: 3 Hrs _____   Max Marks:60

PART-A

I.   **Answer any 5 questions out of the 10 short answer questions   5X4=20 M**

1. Explain 3rd law of thermodynamics in determining the absolute entropy of solids.

2. Explain the electronic partition function.

3. Write a note on factors affecting glass transition temperature.

4. Explain the Bragg's law and applications.

5. Write a note on Calomel electrode.

6. Write note on Tafel plots.

7. Explain Michaelis-Meneten kinetics.

8. Explain the photosensitizer.

9. Discuss abelian and non-abelian group.

10. Define and explain the symmetry elements and operations.

PART-B

II.   Answer the following questions   5X8=40 M

11a) . Explain Fermi-Dirac statistics.

(OR)

b) . Explain the translational and rotational partition functions.

12a) .Explain Ziegler Natta polymerization.

(OR)

b) . Explain the classical theory of Raman effect.

13a) Explain various types of potentiometric titrations.

(OR)

b) . Derive Butler Volmer equation for one electron transfer.

14a) . Write the kinetics of Hydrogen and Oxygen reaction.

(OR)

b) . Derive Stern Volmer equation.

15a) . Discuss character tables and construction of character tables.

(OR)

b) . Explain Great Orthogonality Theorem and its importance.

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(POMCS 205/207)

M.Sc (Computer Science) P.G Examinations- 10 DEC 2022

SEMESTER-II

BASIC SKILLS IN INFORMATION TECHNOLOGY

TIME: 3 Hrs

Max Marks:60

SECTION - A

Answer any FIVE questions   5 x 4 = 20M

1. Explain characteristics of computers.
2. Write about key features of algorithms.
3. How to insert header/footer in MS Word?
4. Discuss about table auto format.
5. Write about inserting rows/columns in MS Excel.
6. Explain sorting in MS Excel.
7. Describe adding clip art/pictures in MS Power Point.
8. Write about inserting audio/video objects in MS Power Point.
9. List the rules to name an identifier in C.
10. Write a C program to check a number is prime number or not.

SECTION - B

Answer ALL questions   5 x 8 = 40M

11. a) Describe generations of programming languages.

OR

b) Explain various I/O devices with neat diagrams.

12. a) Discuss various features of MS Word.

OR

b) What is mail merge? Explain the steps for mail merge.

13. a) Demonstrate various parts of MS Excel Window.

OR

b) What is a chart in MS Excel? Explain various types of charts.

14. a) Explain features of MS Power Point.

OR

b) Illustrate slide transition and custom animation.

15. a) Demonstrate the structure of C program with an example.

OR

b) What is operator? Explain various types of operators in C.

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