

CHEMISTRY SEM.- VI FLP-I

Sec. A: Attempt all 10 questions. Each question carries a mark weight of 2.

1. Give two important aspects of magnesium metal. 2. Give three functions of calcium. What is Cytochrome C

4. What are carbon metallic compounds? Give two methods of preparing carbon metallic compounds. 5. What are Phosphorus Compounds

6. What are heterocyclic compounds? 7. Write two methods of preparation of pyrrole. 8. What is spectroscopy

9. What is Raman spectroscopy. 10. Define Crompton effect

Choose any 4 questions, choosing 1 question from each unit. Each question carries 15 marks.

UNIT-I

1. Write a note on the following: a. What is the sodium potassium pump? Explain its importance. b. Explain the importance of calcium and magnesium in the biological system. c. Explain cytochrome C and its functions. d. What are the elements useful in our lives? Name the elements that are essential in small and large quantities

Or

What do you understand by phosphazene? Describe its structure and explain its synthesis process. State its chemical properties.

UNIT-II

1a. Describe the mechanism of two methods of synthesis of quinoline.

How will you obtain the following from quinoline: 1,3. Bromoquinoline, 2,2. Chloroquinoline, 3,3. hydroxyquinoline

Or

Write a short note on the following

1. Bissler Napier Loss's Synthesis, 2. Modeling Synthesis, 3. Scarf Synthesis

UNIT-III

1. Discuss the theory of Raman spectroscopy.

Or

2. Explain what is a simple dynamic harmonic helix?

UNIT-IV

1. Explain the Krypton effect. Explain the experimental verification of this effect.

Or

2 a. What is photoelectric effect? Explain with diagram.

b. Differentiate between MCT and VBT.



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CHEMISTRY SEM.- VI FLP-II

Sec. A: Attempt all 10 questions. Each question carries a mark weight of 2.

1. What are carbon metallic compounds? Explain two methods of preparing carbon metallic compounds. 2. What are phosphagenes? Define them. 3. What are heterocyclic compounds? 4. Write two methods of preparing pyrrole. 5. What are Stock line and final Stock line? 6. What is Raman shift? 7. What are opposite bonding orbitals? 8. What is the heat capacity of a solid? 9. Explain Hamiltonian reaction factor. 10. Prepare gluconic acid from glucose.

Choose any 4 questions, choosing 1 question from each unit. Each question carries 15 marks.

UNIT-1.1 Describe the importance of alkali metals in biological systems.

Or

2 a What is JJ salt and explain its structure

B. Discuss homogeneous catalytic hydrogenation of ethane by Wilkinson catalyst.

UNIT-II

Write a short note on the following

1 Bisler Napier Loss's synthesis, 2 Modelling synthesis, 3 Scarf synthesis Or 2 a

Write

the IUPAC name of pyrrole and write two methods of preparation

Give two methods for the synthesis of pyridine.

UNIT-III

1. Generate the energy of a diatomic molecule rigid rotator. Write the law describing the specific rotational spectra. Separate the intervals and periods between the lines of the property spectra.

Or

1 Write a short note on the following:

a Effect of isotopes on rotational spectra

b woman spectrum

UNIT-IV

1 a Explain what is Planck's law of radiation

b Write a note on the principle of uncertainty of Heisenberg.

Or

2. Explain in detail the main concepts of quantum engineering.

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2. Explain in detail the main concepts of the following

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CHEMISTRY SEM.-VI HLP-I

Sec. A: Choose all 10 questions. Each question carries a mark weight of 2.

1. State two functions of haemoglobin. 2. Which metal is found in haemoglobin? 3. State the functions of alkali metals.

4. What are the essential elements? 5. Give the structure of furan. 6. Explain the Birch reaction.

7 What is Chechi-Babin reaction? 8 What is Riser reaction? 9 Explain Pictet-Spengler reaction.

Explain the Franklander reaction.

Sec. c Choose any 2 questions, choosing 1 question from each unit. Each question has 20 marks.

UNIT-I

a) Describe the importance of alkali metals in biological systems.

b) Compare hemoglobin and myoglobin

or

2 Explain the structure of the following:

1. Methyl lithium

2. Trimethyl tin dinitrate

3 What are carbon metallic compounds?

UNIT-II

1 Write a note on the glycosidic bond in milk sugar.

or

2 a Explain erythrothio isomers

b. Discuss the structure of glucose by reaction

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CHEMISTRY SEM.- VI HLP-II

Sec. A Choose any 5 questions. Each question carries a mark weight of 2.

1. Give two uses of spectroscopy.

What is the selection rule?

Define electronic transition.

4 Give two differences between Raman spectroscopy and IR spectroscopy.

5 What is isotope effect

What is photoelectric effect

6 Write only two postulates of quantum engineering.

What is Planck's law of radiation?

8 Define eigenfunctions and eigenvalues

Explain Compton displacement.

10 What is hybridization?

Sec. C Choose any 2 questions, choosing 1 question from each unit. The mark weight of each question is

UNIT-III

1 Explain the simple harmonic oscillator model for the vibrational spectrum of a diatomic molecule.

2. Explain in detail the energy levels and absorption of different types of molecular orbitals and the transitions occurring in them.

UNIT-IV

1 What do you understand by linear combination of atomic orbitals? Generate a recipe for the wave function of molecular orbitals of hydrogen molecule ion and calculate its energy.

2 Briefly explain the valence bond model and molecular orbital model for H₂ molecule and compare them.

compare

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CHEMISTRY SEM.- VI QLP-I

Sec. A Choose any 2 questions. Each question carries a mark weight of 2.

1. What are phosphagens? Define them.

What do you understand by inorganic polymer?

What do you understand by organic polymer?

4. What is a sandwich compound?

5 Carbon metallic compounds are formed only by transition metals, why

6. Name two functions of haemoglobin.

Which metal is found in haemoglobin?

8. State the functions of alkali metals.

What are the 9 essential elements?

Why are alkyl lithium compounds called super Girnar reagents?

11. Carbonyls: Metals of copper and zinc group do not form carbonyls because

Sec. C Choose any 1 question. Each question carries 15 marks.

UNIT-I

1 a) What do you understand by carbon metallic compound? How many types are there? State their class and how many parts are they divided into?

b. Explain the structure of the following

1. Methyl lithium

2. Trimethyl tin dinitrate

2 What are carbon-metallic compounds? Explain the nature of bonding in metallic carbonyls.

3. What is Ziegler Natta catalyst? Describe it.

4 a) Describe the importance of alkali metals in biological systems.

b. Compare hemoglobin and myoglobin

c. Describe the structure of chlorophyll and differentiate between chlorophyll a and b.

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CHEMISTRY SEM.- VI QLP-II

Sec. A Choose any 2 questions. Each question carries a mark weight of 2.

1 What is a carbohydrate 2 Give the structure of fructose

3 Give the structure of glucose. 4 What is invertase sugar?

5 What are sugars and non-sugars? 6 What are oligosaccharides?

7 Give the structure of maltose. 8 Give the structure of lactose.

9. Give two differences between sucrose and maltose.

What is deoxyribose?

11 What are erythro isomers?

12 Define anomer

13 Describe the aromatic properties of furane.

14 Prepare gluconic acid from glucose

Sec. C Choose any 1 question. Each question carries 15 marks.

UNIT-II

1 a In pyridine, electrophilic substitution is more at the 3 position than at the 2 and 4 positions, why
b. Explain Fischer Idor synthesis.
How will you synthesize the following?

1 pyridine to 2,6 diaminopyridine

2 Furane to Phthalic Anhydride

3 What happens when quanoline is reacted with
1NaNH₂, 2 LiAlH₄ 3 CH₃COOH

4 Write short notes on the following:
1. Kiliani synthesis 2. Lobry de van Akenstein rearrangement reaction

5 How will you change the following?
a Fructose to glucose b Aldohexose to aldopetose

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CHEMISTRY. SEM.- VI QLP-III

Sec. A Choose any 2 questions. Each question carries a mark weight of 2.

1 What is a Raman spectrum? 2 What is a rotation spectrum?

Write the rules describing specific rotational spectra.

What is bone open-haired notation?

What is the infrared spectrum?

6 What is called vertical transition?

7 Define the friend condom principle

Draw the energy level diagram of a simple harmonic oscillator.

What is 9 stock line and last stock line?

10 What is Raman displacement?

11. Give two uses of spectroscopy.

What is the 12 selection rule?

Define electronic transition.

Sec. C Choose any 1 question. Each question carries 15 marks.

UNIT-III

1 Explain the Bonn Open Heimann approximation equation in detail?

2 a Differentiate between Raman spectroscopy and IR spectroscopy

 b Explain the isotope effect.

3 Write short notes on the following:

 a Effect of isotopes on rotational spectra

 b infrared spectrum

 Explain the Frank Condon theory in detail.

5 Generate the energy of a rigid rotator of a diatomic molecule. Write the law describing the specific rotational spectra. Separate the intervals and periods between the lines of the property spectra.

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CHEMISTRY SEM.- VI QLP-IV

Sec. A Choose any 2 questions. Each question carries a mark weight of 2.

1. What is Planck's radiation law?
2. Define eigenfunctions and eigenvalues.
3. Define blackbody radiation.
4. What is hybridization?
5. State two differences between MOT and VBT.
6. Write two points of LCAO principle.

Draw diagrams of 7s-s and P-P overlaps.

8 What are bonding orbitals.

9 What are opposite bonding orbitals.

10 What is the heat capacity of a solid?

11 State the Hamiltonian heat factor.

*Choose any 1 question. Each question carries 15 marks.

UNIT-IV

1 a Derive the de Broglie equation. Prove how this equation explains the dual nature of causal and wave reactions. Explain

b Explain black body radiation.

2 a Explain Eigen functions and Eigen values

b Write the Schrödinger equation and explain the physical significance of the sine squared in sine.

3 What is hybridization? Calculate the mixing coefficients of sp and sp² hybridized orbitals and obtain the wave function for it.4 Calculate the mixing coefficients for a sp² hybridized orbital and obtain its wave function.

b. Differentiate between bonded and reverse bonded chambers.

Explain the difference between C MOT and VBT.

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