PG-A-1485 MCHE–21X

M.Sc. DEGREE EXAMINATION - JULY 2022

Chemistry

(CY 2020 & AY 2020 Batches Onwards)

Second Year

ORGANIC CHEMISTRY – II

Time : 3 hours Maximum marks : 70

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions out of Eight Questions in 300 words.

All questions carry equal marks.

1. Briefly explain about Wagner-Meerwein and Pinacol-Pinacolone rearrangements.

2. Write any two synthesis of each of the following compounds: oxazoles, imidazoles, thiazoles, pyrimidines and purines.

3. Explain the conversion of cholesterol into antrosterone.

4. Discuss about Paterno-Buchi reaction.

5. Write a note on Nuclear Overhauser effect.

6. How the IR spectroscopy differentiates intra and inter molecular hydrogen bonding.

7. Write notes on Barton reaction.

8. Sketch the biosynthesis of camphor.

PART B — (3 × 15 = 45 marks)

Answer any THREE questions out of Five Questions in 1000 words.

All questions carry equal marks.

9. Write briefly about Woodward and Hoffmann rules for electrocyclic reactions.

10. Discuss the synthesis and reactivity of oxiranes, pyridine, pyrazines, quinoline and indole.

11. Sketch Corey's synthesis of longifolene.

12. Explain about Photosensitization, Norrish Type I and II reactions.

13. What are the types of electronic transitions? Explain the proton NMR spectra of ethanol.

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PG–A-1486 MCHE–22X

M.Sc. DEGREE EXAMINATION — JULY 2022.

Chemistry

Second Year

[From CY 2020 to AY 2020 Batches onwards]

INORGANIC CHEMISTRY – II

Time : 3 hours Maximum marks : 70

PART A — ($5 \times 5 = 25$ marks)

Answer any FIVE questions out of Eight Questions in 300 words.

All questions carry equal marks

1. Justify that "Aromaticity of ferrocene is more even than that of benzene"

2. State and explain Koopman's theorem. What are the limitations of Keopman's theorem?

3. Give a brief account of stellar energy.

4. What are called labile and inert complexes? Explain with examples.

5. Explain why strong oxidizing agents do not exist in liquid NH_3 solvent?

6. Explain the mechanism of oxo process.

7. Explain the principle of photoelectron spectroscopy (PES)

8. Draw and explain the structure of antifluorite

PART B — $(3 \times 15 = 45$ marks)

Answer any THREE questions out of Five Questions in 1000 words.

All questions carry equal marks.

9. (a) Discuss in details the mechanism of Wacker process for the oxidation of olefins to aldehydes and ketones.

(b) Illustrate the oxidative addition and reductive elimination reactions of organometallics with examples.

(10+5 Marks)

10. (a) Describe the Gouy method for the determination of magnetic moment of complexes.

(b) Is $Ni(CO)_4$ paramagnetic or diamagnetic? Justify your answer. (10+5 Marks)

11. Discuss in details the liquid drop model for nuclear structure. Brief out clearly the significance of the liquid drop model.

12. What are trans effect and trans-directly series? Explain the trans effect in synthesis of square planar complexes.

13. Explain HSAB principle. Discuss in detail about its applications.

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PG-A-1487 MCHE-23X

P.G DEGREE EXAMINATION — JULY 2022.

Chemistry

(From CY – 2020 onwards)

Second Year

PHYSICAL CHEMISTRY – II

Time : 3 hours Maximum marks : 70

PART A — ($5 \times 5 = 25$ marks)

Answer any FIVE questions out of Eight questions in 300 words.

All questions carry equal marks.

1. Explain molecular partition functions for an Idealmonoatomic gas.

2. Describe flash photolysis technique in detail.

3. Explain Langmuir-Hinshelwood mechanism

4. Define symmetry operation and explain any three symmetry operations in detail.

5. Explain Frank-Condon Principle.

6. Write Great Orthogonality theorem in detail.

7. Write Short notes on Photosensitization.

8. Explain entropy production in irreversible process.

PART B — $(3 \times 15 = 45$ marks)

Answer any THREE questions out of Five questions in 1000 words.

All questions carry equal marks.

9. Derive Maxwell-Boltzmann Statistics equation.

10. Describe Michaelis- Menten mechanism of enzyme catalysis.

11. Explain Langmuir adsorption isotherm.

12. Construct character table for C_2V point group.

13. Explain Jablonski diagram.

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