

Regd.No: _____

M.Sc (Organic Chemistry) (POCH 101)
SEMESTER-I
GENERAL CHEMISTRY-I

TIME: 3 Hrs

Max Marks: 60

PART-A

1. Answer any 5 questions out of the 10 short answer questions 5x4=20 Marks

1. Write a note on Primary and Secondary standards.
2. Explain EDTA titrations
3. Explain T-test and F-test
4. Define Accuracy and precision
5. Write a note on drying agents Benzene and Ethanol
6. Write a note on Filtration and Centrifugation
7. Write a note on advantages and disadvantages of Column chromatography
8. Write applications of Paper chromatography
9. Explain basic principles of Gas chromatography
10. Explain reverse phase HPLC

PART-B

Answer the following Questions

5x8=40

1. (a) Explain the classification reactions in titrimetry?

(OR)

- b) Write a note Mohr's method and Volhard's method?

2. (a) Define an error? Explain the classification of errors with suitable examples?

(OR)

P.T.O

b). Write a note on Gaussian distribution curve?

13a). Discuss the basic principle and working of steam distillation

(OR)

b). Write a note on Soxhlet extraction?

14a). Explain Paper chromatography?

(OR)

b). Explain the applications of TLC?

15a). Explain the basic principles and instrumentation of HPLC?

(OR)

b). Explain Gas Chromatography in detail?

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M.Sc (Organic Chemistry) P.G Examinations-July 2022
SEMESTER-I
PHYSICAL CHEMISTRY-I

TIME: 3Hrs

MaxMarks:60

PART-A

I. Answer any five questions out of the 10 short answer questions

5 X 4 = 20

Marks

1. Define second law of thermodynamics and explain entropy changes in irreversible process?
2. Derive the gibbs-helmholtz equation?
3. Derive Young-Laplace equation?
4. Write a note on reversemicelles?
5. Write about Debye Huckle limiting law?
6. How do you determine the activity coefficients from EMF data?
7. Write about linear free energy relationships?
8. Derive the rate law for thermal decomposition of acetaldehyde?
9. Write about different types degrees of freedom and their energies of the molecule
10. Zero point energy is available in vibrational energy levels not in rotational energy levels - explain

PART-B

Answer the following Questions

5 X 8 = 40 Marks

- 11 a) Define the partial molar volume and determine the partial molar quantities?

(OR)

- b) Derive Van't Hoff's equation and write about van't Hoff reaction isotherm?

- 12 a) Derive BET equation?

(OR)

- b) Write about critical micelle concentration (CMC) and write the factors affecting CMC?

- 13 a) What is concentration cells? And calculate the EMF of concentration cells with and without transference?

(OR)

- b) Write a note on Debye Huckle Onsager Equation, its verification and its limitations?

- 14 a) Explain Lindemann theory of uni molecular reaction rate

(OR)



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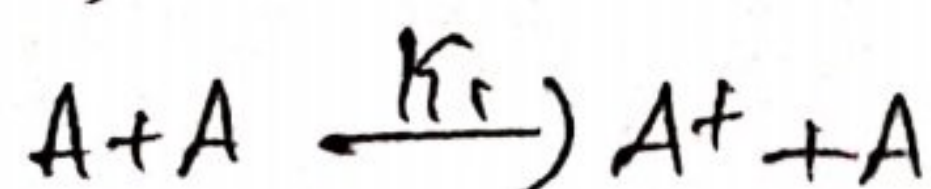
b). Explain primary and secondary salt effects

~~15a)~~ Describe the rotational spectra of a diatomic molecule as rigid rotor
(OR)

b). Explain the vibrational spectra of harmonic oscillator

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(POCH 103)
M.Sc (Organic Chemistry) P.G Examinations-July 2022
SEMESTER-I
INORGANIC CHEMISTRY-I

TIME: 3Hrs

MaxMarks: _____

PART A

1. Answer any 5 questions out of the 10 short answer questions 5x4=20 Marks
1. Write a short note on importance of wave function in quantum mechanics
 2. write the importance of perturbation theory.
 3. Discuss the structure and bonding of any two inter halogen compounds.
 4. Discuss the structure and bonding of borazole.
 5. Explain $P \pi - d \pi$ bonding with suitable examples.
 6. Write MO energy level diagram for a hetero diatomic molecule.
 7. write about the spectrochemical series.
 8. write the splitting of d-orbital's in trigonal bipyramidal geometry
 9. Explain step wise and overall stability constants.
 10. Explain Irving William series.

PART-B

Answer the following Questions

5x8=40

1) a) Derive the Schrödinger equation.

(OR)

b) Explain Variation theorem and its applications to H-atom.



TIME: 3 Hrs

2022)
Inorganic Chemistry) P.G Examinations-
SEMESTER-II
ORGANIC CHEMISTRY

12 a). Write an essay on spectral and magnetic properties of Lanthanides.

(OR)

b) Discuss the structure and bonding of metal nitrosyl complexes.

13 a). What is Walsh diagram? Write Walsh diagram for H_2O molecule.

(OR)

b) Write about Bent's rule and energetics of hybridization.

14 a). Write an essay on Jahn-Teller theorem.

(OR)

b) What is CFSE? Calculate the CFSE for octahedral complexes with suitable example.

15 a). Explain spectrophotometric method for the determination of formation constant.

(OR)

b) Write an essay on Hard and Soft Acid Base theory.

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