

KRISHNA UNIVERSITY, MACHILIPATNAM – 521003

M.Sc., Chemistry

Semester: I

General Chemistry 20 OCH/ACH/PHC 101 Month & Year of exam

(with effect from admitted batch 2020-21)

**[QUESTION PAPER PATTERN FOR SEMESTER END (EXTERNAL)
EXAMINATION]**

Time: 3 Hours

70

Max. Marks:

**Answer ALL questions
(Marks)**

(10x2 = 20

1. Write a short note on control charts?
2. Explain the terms in standard deviation?
3. Explain Soxhlet extraction?
4. Write the procedure for drying with toluene?
5. Explain R_f value in TLC.
6. Write the classification of chromatographic methods.
7. What is normal phase and reverse phase chromatography?
8. Write the basic principles of GC and HPLC.
9. What are primary and secondary standards?
10. Give the different indicators used in complexometric titrations.

**Answer Five Questions Choosing One Question from Each Unit. All Questions Carry
Equal Marks.**

(5x10 = 50

Marks)

11. Explain about the minimization of errors in analytical experiments

OR

Give a brief note on significant figures and computation rules, regression analysis, linear least square analysis.

12. Write the principle and applications of fractional distillation and steam distillation.

OR

Write about the selection of solvents in solvent extraction technique, mention the applications of solvent extraction techniques.

13. Write the development and visualization methods of TLC plates.

OR

Write the principle of column chromatography mentions its advantages and disadvantages.

14. Explain the construction and working of flame ionization detector (FID).

OR

Write the principle, columns and detectors used in HPLC.

15. Write the principle and applications of precipitation titrations.

OR

Write the principle of redox titrations how do you identify end point in redox titrations

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M.Sc., Chemistry

Semester: I

Organic Chemistry-1 20 OCH/ACH/PHC 102 Month & Year of exam

(with effect from admitted batch 2020-21)

[QUESTION PAPER PATTERN FOR SEMESTER END (EXTERNAL)

EXAMINATION]

Time: 3 Hours

Max. Marks: 70

Answer ALL questions

(10x2 = 20 Marks)

1. Define localized and delocalized covalent bonds with examples.
2. Write about hyper conjugation.
3. Write any two methods of preparation of carbocations.
4. Write two examples on reactivity of benzene.
5. Define neighboring group mechanism with examples.
6. Explain anchemeric assistance.
7. Write any two methods of preparation of epoxides.
8. Explain one reaction.
9. Explain hofmann rule with an example.
10. Give any two examples of dehydrogenation.

Answer Five Questions Choosing One Question from Each Unit. All Questions Carry Equal Marks.

(5x10 = 50 Marks)

11. Discuss the following; A). Tropylium cation.
B). Cyclopentadienyl anion.

OR

Explain in detail about homoaromatic and pseudo aromaticity.

12. Discuss the stability and reactivity of carbenes and nitrenes.

OR

Write an account on generation and reactivity of free radicals and ylides.

13. Discuss SN1 and SN2 reactions with mechanism.

OR

Mention the following ; vonrichter rearrangement.

SommetHauser rearrangement.

14. Write in detail of the symmetry and anti hydroxylation.

OR

Discuss nucleophilic and free radical addition reactions.

15. Discuss E1 and E2 reactions with mechanism.

OR

Explain sym elimination and anti elimination.

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M.Sc., Chemistry

Semester: I

Inorganic Chemistry-1 20 OCH/ACH/PHC 103 Month & Year of exam

(with effect from admitted batch 2020-21)

**[QUESTION PAPER PATTERN FOR SEMESTER END (EXTERNAL)
EXAMINATION]**

Time: 3 Hours

Max. Marks: 70

**Answer ALL questions
(Marks)**

(10x2 = 20)

1. Write the Significance of wave function.
2. Define the terms Eigen values and Eigen function.
3. Discuss Clathrate compounds with examples.
4. Write a note on Dioxygen complexes.
5. Describe Bent's rule with example.
6. Write about Walsh diagram.
7. Define Jahn-Teller effect.
8. Write the difference between π -donor and π -acceptor ligands.
9. Write a note on Hard and soft acids and bases.
10. Write a short note on Irving-William's series.

**Answer Five Questions Choosing One Question from Each Unit. All Questions Carry
Equal Marks.**

(5x10 = 50 Marks)

11. Derive the three dimensional box for Schrodinger equation.

OR

State the variation theorem and apply the variation method to the Hydrogen atom.

12. Discuss the spectral and Magnetic properties of Lanthanides and Actinides.

OR

Discuss about the preparation, structure and bonding in Nitrosyl complexes.

13. Explain VSEPR theory with examples.

OR

Explain the postulates of Molecular orbital theory and draw the molecular orbitals for BeH_2 molecule.

14. Explain the crystal field theory in octahedral complexes.

OR

Discuss the Jahn-Teller effect with examples.

15. Explain the following a) Job's method (b) Bjerrum's method

OR

Write a note on preparation and structures of Isopoly and Heteropoly acids.

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M.Sc., Chemistry

Semester: I

Physical chemistry-1 20 OCH/ACH/PHC 104 **Month & Year of exam**
(with effect from admitted batch 2020-21)

**[QUESTION PAPER PATTERN FOR SEMESTER END (EXTERNAL)
EXAMINATION]**

Time: 3 Hours

Max. Marks: 70

Answer ALL questions

(10x2 = 20 Marks)

1. Define first and second law of thermodynamics.
2. Write the significance of Gibbs-Helmholtz's equation.
3. Discuss the classification of surface active reagent.
4. Write short notes on Micro emulsion.
5. Discuss about Liquid Junction Potential.
6. Derive the expression for equilibrium constant from EMF data.
7. Discuss about the Collision theory.
8. Write brief note on primary and secondary salt effects.
9. Write about the classification of molecules.
10. Explain the terms Overtones and Hotbands.

**Answer Five Questions Choosing One Question from Each Unit. All Questions Carry
Equal Marks. (5x10 = 50 Marks)**

11. A) Derive Classics-Clapeyron equation
B) Derive Raoult's law.

OR

Derive Maxwell partial relations.

12. Derive Gibbs-Adsorption equation.

OR

Write a short note on ; A) ESCA B) Reverse micelles

13. A) Derive Nernst equation.
B) Explain the concentration cells with transference.

OR

Derive Debye Huckel-Onsager equation.

14. Derive the Rate expression for opposing and consecutive reactions.

OR

Derive a rate law expression of hydrogen and bromine reaction.

15. Explain the effect of isotopic substitution on microwave spectra of diatomic molecules.

OR

Derive the expressions for PQR branches.