KRISHNA UNIVERSITY, MACHILIPATNAM – 521003
M.Sc., Chemistry
Semester: II
Organic Spectroscopy 20 OCH/ACH/PHC 201 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.Write a note on Absorption shifts.
2. Define the terms Chromophore and Auxochrome.
3.Discuss about stretching and bending vibrations.
4. Write a note on Finger print region and its Importance.
5. Define shielding and deshielding effects in NMR.
6. Difine chemical shift and it's measurement.
7. Write note on Krammer's degeneracy.
8. Factors effecting g value.
9. Define Nitrogen rule.
10. Write a note on Metastable ion.

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

11.Explain the electronic transition in UV Spectra.

OR

Write a short note on
(a) Solvent effect.
(b) Geometrical isomerism.
(c) Acid and base effect.

12. Explain factors effecting Vibrational frequency.

OR

Differentiate between the compounds using IR data.
(a) Benzaldehyde and Methyl benzoate.
(b) Aniline and Nitro benzene.

13. Write a note on factors influencing chemical shift with suitable examples.

OR

Explain factors influencing Coupling constant.

14. Hyperfine splitting of Methyl and Ethyl radical in ESR.

OR

Explain Hyperfine splitting of Proton and Deuterium radical in ESR.

15. Explain the following terms.

(a) Base peak.
(b) Molecular ion peak.
(c) Isotopic peak.
(d) Mc-Lafferty rearrangement.

OR

Differentiate between the following compounds by Mass data.

(i) Styrene and Cinnamic acid.
(ii) 1,3-butadiene and 2- butyne.

KRISHNA UNIVERSITY, MACHILIPATNAM – 521003

M.Sc., Chemistry

Semester: II

Organic Chemistry-II 20 OCH/ACH/PHC 202 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. Explain Aldol reaction.
2. Explain Dakin reaction.
3. How do you protect the carboxylic acid group.
4. Write any two methods for the protection and De-protection of hydroxyl group.
5. Define Chirality with two examples.
6. Write a short note on Optical activity.
7. Give any two principle of Green chemistry.
8. Write about Advantages of microwave organic synthesis.
9. Write the Medicinal application of Nanotubes.
10. Draw the structure of single and multi walled carbon Nanotubes.

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

11. Explain the following reactions with mechanism.
    (a) Reformatsky
    (b) Benzoin Condensation.
    (c) Mannich reaction.

OR

Discuss the following reaction with mechanism.
(i) Vilsmeyer-Haack reaction.
(ii) Shapiro reaction.
(iii) Simon-Smith reaction.
(iv) Reimer-Tiemann reaction.

12. Discuss the Protection of Amino group and Carbonyl group.

OR

Discuss about Chemo and Regio Selective Protection and De-Protection.

13. Write a note on D-L and R-S Nomenclature with example.

OR

Explain the Conformational analysis of Cyclohexane molecule.

14.Explain in detail about solvent free reaction.

OR

Explain the Green synthesis of the following.

(a) Ibuprofen.

(b) Fischer-Indole synthesis.

15. Write in detail about the properties of Nano-Materials.

OR

Write about the synthesis of Carbon Nano tubes in Detail.

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M.Sc., Chemistry

Semester: II

Inorganic Chemistry-II 20 OCH/ACH/PHC 203 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. Write the Classification of LNCs and HNCs.
2. Write a note on electron counting rules.
3. Give the structure and bonding of dibenzene chromium.
4. Write a short note Catalytic hydrogenation,.
5. Write a short note on Anation reaction.
6. Give the trans effect series.
7. What are microstates give one example.
8. Write a short note on selection rules.
9. Write the function and importance of Vitamin B_{12}.
10. Write about factors affecting paramagnatism.

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

11. Explain the structure and bonding in phosphorous-oxygen cages.

OR

Write the preparation, structure and bonding in dinuclear cluster $[Re_2Cl_8]^{2-}$

12. Write the synthesis, structure and bonding of ferrocene.

OR

Discuss about oxidative addition reductive elimination.

13. Explain outer sphere and inner sphere mechanism with example.

OR

Give a brief note on.

(a) Acid hydrolysis

(b) Factors affecting the substitution reactions in octahedral complexes

14. Derive the term symbols for d^2 and d^6 configuration and give Hunds rules to predict ground states.

OR

Draw the correlation diagrams and explain Orgel diagram for d^5 configuration

15. Write in detail about the Storage and transport of dioxygen by Hemoglobin.

OR

Give a brief note on spin-orbit coupling and magnetic moments.

KRISHNA UNIVERSITY, MACHILIPATNAM – 521003

M.Sc., Chemistry

Semester: II

Physical Chemistry - II 20 OCH/ACH/PHC 204 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 Nernst heat theorem.
2. Write a short note on Thermodynamic probability and Most probable distribution.
3. Discuss about the factors influencing Glass transition temperature.
4. Write a note on Mutual Exclution Principle.
5. Define Decomposition and Over potentional.
6. Discuss about Advantages of Potentiometric titration.
7. Define Michelis-Menten's kinetics.
8. Discuss about Photo-sensitisation.
9. Write a short note on symmetric operation.
10. Define point group and write about Schonifile symbols.

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

11. Derive Fermi-Dirac statistics.

OR

(a) Derive Sackur-Tetrode synthesis.
(b) Write the significance of Bose -Einstein statistics.

12. (a) Explain Ziegler-Natta Polymerization.
(b) Differentiate between Suspension polymerization and Emulsion polymerization.

OR

Discuss the Classical and Quantum theories of Raman Effect.

13. Discuss about the theory of glass membrane electrode.

OR

Derive Butler- Volmer equation.

14. Derive the Rate expression for Acid catalysis.

OR

(a)Derive Stern-Volmer Equation.
(b)Discuss about Chemiluminescence.

15. Explain the great Orthogonality theorem and its importance.

OR

Explain the Application of group theory in IR and Raman spectroscopy.

KRISHNA UNIVERSITY, MACHILIPATNAM – 521003

M.Sc., Chemistry

Semester: II

Chemistry in Daily Life 20 OEOCH/ACH/PHC 207 (Open Elective) 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. Write few laboratory safety precautions.
2. Write the meaning of corrosive and toxic.
3. Give Ambient air quality standards.
4. What is Greenhouse effect.
5. Write the biological significance of Na and K.
6. Write the structure of hemoglobin.
7. Give biological function of harmones.
8. Write about mechanism of action of Adrenaline.
9. Draw the structure of Acetaminophen.
10. Draw the structure of Omeprazole.

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

11. Discuss the safety symbols and meanings of the following.
(a) Carcinogenic (b) Lachrymatory (c) Flammable

OR

Describe the following terms in detail.
a. Radioactive. b. Narcotic. c. Oxidizing. d. Explosive.

12. Discuss about toxicity of Pb and Hg.

OR

Write the determination of DO and COD

13. Give a brief note on Structure and functions of Chlorophyll.

OR

What are essential elements and write the biological significance of Co, Ni, Cu and Zn.

14.Write the mechanism of action of prostacyclin.

OR

Write the mechanism of action of Insulin.

15. Write in detail the mode of action of Acyclovir .

OR

Discuss the following drug molecules and their physiological role.
a. Metformin b. Albuterol