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(FOR THE CANDIDATES ADMITTED DURING THE ACADEMIC YEAR 2022-23 ONLY)

SUBJECT CODE 22PCY205

REG.NO.

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI

END-OF-SEMESTER EXAMINATIONS : MAY – 2023

M.Sc.-Chemistry **MAXIMUM MARKS: 50**

II SEMESTER **TIME : 3 HOURS**

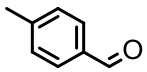
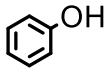
ORGANIC CHEMISTRY – II : ORGANIC REACTIONS AND STEREOCHEMISTRY

SECTION – A (10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.

MULTIPLE CHOICE QUESTIONS (K1)

1. Which of the following product is obtained from chromyl chloride?

a.  b.  c.  d. All

2. Find the first step of the mechanism involved in Norrish type I reaction

a. Cleavage of alpha carbon b. abstraction of photon c. electron transfer d. All

3. Which of the following transition is photochemically allowed and thermally forbidden process.

a. 4nπ electrons b. 4n+2π electrons c. π electrons d. None

4. Choose the stability of conformers by increasing order

a. anti> Gauche>eclipsed>fully eclipsed b. Gauche>eclipsed>fully eclipsed>anti

c. eclipsed>fully eclipsed>) anti> Gauche d. All

5. Select the following chemical used for Mayer's reagent

a. Potassium mercuric iodide b. potassium bismuth iodide c. chloroplatinic d. none

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES (K2)

6. What is Jones oxidation?
7. Write Stark-Einstein law
8. Show any two characteristics of cope rearrangement.
9. List the potential energy for eclipsed form of ethane
10. Why is reserpine known as diester?

SECTION – B (5 X 3 = 15 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K3)

11. a) Discuss the following oxidation and reduction reagents i) Selenium dioxide ii) $NaBH_4$

(OR)

b) Explain the preparation, mechanism and application of the Wolf Kishner reduction.

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12. a) Elaborate the mechanism for olefin dimerization..

(OR)

b) Derive Beer-Lambert law. Derive and explain the Beerhamber Law.

13. a) Describe Synthesis of 1,3,5-triene systems.

(OR)

b) Analyze the 1, 3& 1,5 sigmatropic rearrangements by FMO method.

14. a) Illustrate the optical isomerism of ansa compounds and cyclophanes.

(OR)

b) Explain Cram's rule and Prelog's rule.

15. a) Examine the structural elucidation of morphine.

(OR)

b) Show the method of preparation of quinine.

SECTION – C (5 X 5 = 25 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K4 (Or) K5)

16. a) llustrate the mechanism, preparation, and application of chromyl chloride and Dess-Martin reagent.

(OR)

b) Explain in detail the $LiAlH_4$ reduction mechanism used for the following compounds.

i) aldehydes ii) ketones iii) carboxylic acids iii) amides iv) esters v) nitriles.

17. a) Discuss in detail the Jablonski diagram.

(OR)

b) Photobromination of cinnamic acid was carried out in blue light wavelength of 440nm at 35^{o} C using light intensity of 1.5 X 10 -3 J/S. An exposure of 20 minutes produced a decrease of 0.07mM of bromine. The solution absorbed 80% of light passing through it. Determine the quantum yield of the reaction.

18. a) Illustrate the con rotatory and dis rotatory motions $4n\pi$ and $(4n+2)\pi$ systems.

(OR)

b) Discuss in detail the Di pi methane rearrangement.

19. a) Describe the stereoismerism of 4, 6 membered cyclic compounds

(OR)

b) Inference the stability and reactivity in relation to conformation of decalins.

20. a) Discuss in detail the structural elucidation of reserpine

(OR)

b) Establish the structure of papaverine by its synthesis and the following compounds.

i) $C_{11}H_{11}NO_2$ ii) $C_9H_{12}O_2$ iii) Point of linkage between $C_{11}H_{11}NO_2$ and $C_9H_{12}O_2$

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