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

SUBJECT CODE 22 UCY 202

REG.NO.

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

END-OF-SEMESTER EXAMINATIONS : MAY – 2023

B.Sc. – CHEMISTRY **MAXIMUM MARKS: 50**

II SEMESTER **TIME : 3 HOURS**

PART – III
ORGANIC AND PHYSICAL CHEMISTRY

SECTION – A (10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.

MULTIPLE CHOICE QUESTIONS. (K1)

1. Identify the product when malonic ester reacts with urea in presence of C_2H_2ONa _____.

   a) barbituric acid b) crotonic acid

   c) succinic acid d) dimethyl acetic acid

2. Which one of the following is a primary standard substance?

   a) $KMnO_4$ b) NaOH c) $Na_2S_2O_3$ d) $K_2Cr_2O_7$

3. The ejected electrons from the surface of the metal in photoelectric effect are called _____.

   a) proton b) electron c) photoelectrons d) neutron

4. In which thermodynamic process there is no flow of heat between the system and the surroundings?

   a) isobaric b) adiabatic c) isochoric d) isothermal

5. Standard enthalpy is usually measured at _____.

   a) 25ºF and 10atm pressure b) 25ºC and 1atm pressure

   c) 273 K and 1atm pressure d) 100ºC and 10atm pressure

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

6. What is meant by keto-enol tautomerism?

7. Write the oxidation of aldehyde by Tollen's reagent.

8. State Heisenberg's uncertainty principle.

9. Define the terms Heat and Work.

10. State the third law of thermodynamics.

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SECTION – B (5 X 3 = 15 MARKS)

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

11. a) How will you synthesize 4-methyl uracil from acetoacetic ester?

(OR)

b) Justify the preparation and uses of acetic anhydride.

12. a) How will you prepare carbonyl compound by Rosenmund reduction?

(OR)

b) Write a note on acid-base titration with suitable example.

13. a) List the limitations of classical theory of quantum chemistry.

(OR)

b) Explain Compton effect and it consequences.

14. a) Explain briefly law of conservation of energy.

(OR)

b) State and explain zeroth law of thermodynamics.

15. a) State and explain Hess's law.

(OR)

b) Describe various statements of second law of thermodynamics.

SECTION – C (5 X 5 = 25 MARKS)

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

16. a) Differentiate primary, secondary and tertiary alcohols.

(OR)

b) Discuss the preparation and properties of oxalic acid.

17. a) Explain Aldol condensation with its mechanism.

(OR)

b) Sketch the mechanism of Oppenauer oxidation.

18. a) Derive De-Broglie's equation.

(OR)

b) Derive wave function and energy of particle in one dimensional box using Schrodinger wave equation.

19. a) Derive the relationship between Cp and Cv.

(OR)

b) Explain schematically Joule-Thomson effect.

20. a) Derive an expression for entropy change in isothermal expansion of an ideal gases interms of T and V.

(OR)

b) Derive Gibbs Helmholtz equation.

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ETHICAL PAPER