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(FOR THE CANDIDATES ADMITTED

SUB CODE **24UCY202**

DURING THE ACADEMIC YEAR 2022

ONLY)

REG.NO. :

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

END-OF-SEMESTER EXAMINATIONS: MAY 2025

B.Sc CHEMISTRY

MAXIMUM MARKS: 75

SEMESTER: II

TIME: 3 HOURS

PART – III

24UCY202 – CC II: ORGANIC AND PHYSICAL CHEMISTRY

SECTION - A

(10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS

(K1)

1. Which alcohol is produced by the fermentation of starch and sugar in microorganisms?
a) isopropyl alcohol b) tert-butyl alcohol c) ethyl alcohol d) n-propyl alcohol
2. Find the catalyst is used in Rosenmund reduction.
a) poisoned Pd-BaSO₄ b) Ni/H₂ c) SnCl₂-HCl d) Pd-H₂SO₄
3. The concept of matter wave was suggested by
a) Heisenberg b) De Broglie c) Schrodinger d) Laplace
4. When work is done on system or by a system there is a change in _____.
a) external energy b) adiabatic energy c) internal energy d) isothermal energy
5. Entropy of the system always _____ in a reversible system.
a) increases b) decreases c) remains constant d) zero

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES

(K2)

6. What is meant by keto-enol tautomerism?
7. What are primary standard substances? Give example.
8. What is Planck's radiation theory?
9. Define law of conservation of energy.
10. State third law of thermodynamics.

SECTION – B

(5 X 5 = 25 MARKS)

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

11. a) Explain the preparation and properties of oxalic acid.

(OR)

b) Describe the synthesis of 4-methyl uracil from acetoacetic ester.

12. a) Sketch the mechanism of Perkin condensation.
(OR)

b) Write short notes on complexometric titration.

13. a) List out the limitations of classical theory.
(OR)

b) Derive De-Broglie's equation.

14. a) Describe the relationship between C_p and C_v .
(OR)

b) Explain the comparison of isothermal and adiabatic expansions.

15. a) Narrate the need for second law of thermodynamics.
(OR)

b) Derive Gibbs-Helmholtz equation.

SECTION – C **(5 X 8 = 40 MARKS)**

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

16. a) Explain distinction between primary, secondary and tertiary alcohols.
(OR)

b) Discuss the synthetic applications of malonic ester.

17. a) Illustrate the following reactions with mechanism. (4+4).
(i) Aldol condensation (ii) MPV reduction
(OR)

b) What is the principle of volumetric analysis? Explain strong acid vs strong base and redox titrations.

18. a) Discuss about black body radiation.
(OR)

b) Analyze Schrodinger wave equation of particle in one dimensional box.

19. a) Illustrate reversible adiabatic expansion of an ideal gas.
(OR)

b) Explain Joule-Thomson effect.

20. a) Describe the measurement of enthalpy of reactions by bomb calorimeter.
(OR)

b) Discuss the isothermal expansion of an ideal gas with change in pressure, volume and temperature.