

(NO. OF PAGES: 2)

(FOR THE CANDIDATES ADMITTED

25UCY202

DURING THE ACADEMIC YEAR 2025-2026 ONLY)

REG.NO. :

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

END-OF-SEMESTER EXAMINATIONS : MAY 2026

BSC CHEMISTRY
SEMESTER: IIMAXIMUM MARKS: 75
TIME : 3 HOURS

PART - III

ORGANIC AND PHYSICAL CHEMISTRY

SECTION – A (10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS

(K1)

- Absolute alcohol consists of
a) 95% Ethanol + 5% Water b) 90% Ethanol + 10% Water
c) 100% Ethanol d) 99% Ethanol + 1% Methanol
- Addition of a Grignard reagent (RMgX) to an aldehyde followed by hydrolysis yields...
a) Primary alcohol b) Secondary alcohol c) Tertiary alcohol d) ketone
- Planck's theory was originally proposed to explain
a) Photoelectric effect b) Compton effect
c) Black body radiation d) Line spectrum of Hydrogen
- The first law of thermodynamics states that energy can not be
a) created only b) destroyed only c) converted d) created and destroyed
- The Helmholtz work function (A) is defined as
a) $A = E - TS$ b) $A = E + TS$ c) $A = TS - E$ d) none of these

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES

(K2)

- What is primary alcohol?
- List out the primary nutrients in plants.
- What is the main difference between an orbit and an orbital?
- What is inversion of temperature?
- Define Bond energy

SECTION – B

(5 X 5 = 25 marks)

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

11. a. Write the preparation of Diethyl ether.

(OR)

- b. List out the preparation, properties and uses of acetic anhydride.

12. a. Identify the preparation of carbonyl compounds by Rosenmund reduction.

(OR)

b. Evaluate the oxidation of aldehydes using Tollen's reagent and Fehling's Solution.

12. a. Discuss the Bohr theory of hydrogen atom .

(OR)

b. Tell about the statement of Heisenberg's uncertainty principle.

14. A. List out the various types of Thermodynamic processes

(OR)

B. Compare the isothermal and adiabatic expansions.

15. a. Summarize the various statements of Second law of thermodynamics. (5 marks)

(OR)

b. Determine the principle and process of Carnot's cycle.

SECTION – C**(5 X 8 = 40 marks)****ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K4 (Or) K5)**

16. a) i) Identify the Keto-enol tautomerism in acetoacetic ester ii) Describe the general methods of preparation and properties of oxalic acid. (4+4=8 marks)

(OR)

b. Summarize Manufacture of ethanol from molasses. (8 marks)

17. a. Discuss the following Mechanism (i) Aldol condensation (ii) Cannizzaro reaction (4+4 marks)

(OR)

b. What are primary nutrients? Discuss the Manufacture of

i) urea ii) super phosphate of lime (2+3+3=8 marks)

18. a. Applications to particle in one-dimensional box (8 mark)**(OR)**

b. Discuss the Einstein's theory of Photoelectric effect. (8 marks)

19. a. Define Heat capacity. Discuss the relation between C_p and C_v in Gaseous system. (2+ 6 marks)**(OR)**

b. What is meant by Joule Thomson effect? Explain the Joule – Thomson coefficient for an ideal gas. (4+4 = 8 marks)

20. a. a) Measure the enthalpy of reactions by Bomb Calorimeter. . (8 marks)

(OR)

b. i. Discuss the Entropy changes in reversible and irreversible spontaneous processes.

ii. Write the statement of third law of thermodynamics (5+3=8 marks)
