

Note: There are three sections in this paper i.e. Section A, B & C.

VERSION : A

Time Allowed: 20 Minutes

"Section-A"

Marks: 18

INSTRUCTIONS:

- Attempt this section on the MCQs Answer Sheet only.
- Use black ball point or marker for shading only one circle for correct option of a question.
- No mark will be awarded for cutting, erasing, over writing and multiple circles shading.

Q. 1. Choose the correct option i.e. A,B,C, or D.

1. Which one of the following reaction is spontaneous?

- (A) Endothermic (B) Exothermic (C) Reversible (D) Irreversible

2. By changing the temperature for a system at equilibrium changes its

- (A) Position of equilibrium (B) K_c (C) Both A & B (D) None of these

3. When compressed gas is allowed to pass through a nozzle of jet into region of low pressure, it produces

- (A) Expansion (B) Cooling (C) Fusion (D) Vaporization

4. What will be the volume at S.T.P in 16 gram of sulphur ?

- (A) 0.469 dm³ (B) 11.2 dm³ (C) 10.51 dm³ (D) 22.4 dm³

5. Percentage of carbon in CH₄ is

- (A) 12 (B) 16 (C) 50 (D) 75

6. What will be the frequency of radiation with wave number equal to $0.5 \times 10^8 \text{ m}^{-1}$?

- (A) $2.5 \times 10^8 \text{ Hz}$ (B) $2 \times 10^8 \text{ Hz}$ (C) $1.5 \times 10^{16} \text{ Hz}$ (D) $10 \times 10^{16} \text{ Hz}$

7. If the heat of solution is the solubility of a substance decreases with increase in temperature.

- (A) Positive (B) Negative (C) Zero (D) All of these

8. Lead storage battery is type of batteries.

- (A) Primary (B) Secondary (C) Solar (D) Fuel

9. Carbon monoxide molecule possesses covalent bond.

- (A) One (B) Two (C) Three (D) Four

10. When solutes particles are greater in size & do not dissolve completely, then the mixture form is called

- (A) Solution (B) Suspension (C) Colloidal (D) None of these

11. Which one of the following has no effect on the equilibrium constant of a reaction?

- (A) Amount of reactants (B) Temperature (C) Pressure (D) Catalyst

12. Which one of the following is more volatile?

- (A) CHBr₃ (B) CBr₄ (C) CHCl₃ (D) CCl₄

13. The overall arrangement of particles in a crystal is called

- (A) Space lattice (B) Unit cell (C) Crystal growth (D) True solid

14. The value of P_{Kw} with increase in temperature.

- (A) Decreases (B) Increases (C) Remain constant (D) Both A & B

15. Strontium imparts colour to the Bunsen flame.

- (A) Yellow (B) Red (C) Pink (D) Violet

16. Activated complex is a substance which is

- (A) Unstable (B) Stable (C) Can be isolated (D) Can exit as product

17. The oxidation state of chromium in $K_2Cr_2O_7$ is

- (A) +2 (B) +4 (C) +6 (D) +7

18. Water and can mix easily in all proportions.

- (A) Ethanol (B) Phenol (C) Benzene (D) Ether

"Section-B"

Marks: 40

- Q. 2. Write short answers of any TEN (10) of the following parts. Each part carries equal marks.
- With the help of Kc, how will you predict the direction of reaction?
 - Discuss conjugate acids and bases with examples.
 - How does Bohr's model explain the hydrogen spectrum?
 - Discuss collision theory of a reaction rate.
 - Briefly discuss how a gas can be liquefied on large scale?
 - Write note on the advantages of the electrolytic cell.
 - Explain Valence Bond Theory.
 - Enthalpy change is a state function but heat is not. Explain with reasons.
 - Write note on importance of liquid crystal.
 - What is mole fraction? Explain with example.
 - Explain lattice energy by giving example.
 - Write note on Hund's rule.
 - 200 grams of NaOH are dissolved in water & the volume is diluted to 200 ml. Calculate the molarity of a solution.

"Section-C"

Marks: 27

Note:- Answer any THREE (3) questions. Each question carries equal marks.

- Q. 3. (a) Explain elevation of boiling point of solution.
(b) Write note on Ionization of water.
- Q. 4. (a) Derive an expression using Bohr's Model, for the energy difference (ΔE) and wave number in hydrogen atom.
(b) Write note on plasma, the fourth state of matter.
- Q. 5. (a) Discuss the transition state theory of a reaction rate.
(b) State and explain Hess's law of constant heat summation.
- Q. 6. Write short note on the following:
(a) Rate expression
(b) Evaporation & factors affecting evaporation.