

11181
CHEMISTRY
PART-I

(A) 20/10

NOTE: Attempt all questions of Section-A by filling the corresponding bubble on the MCQ ANSWER SHEET and return it to the Superintendent within given time, even if you have not attempted any question.

SECTION-A

Time: 20 Minutes

Marks: 18

1. The viscosity of water at ²⁰25°C is taken as A) 0.33 centipoise, B) 1 centipoise, C) 1.33 centipoise, D) 2 centipoise
2. K_p is more than K_c when the difference of the number mole of products and reactants is
A) 0, B) positive, C) negative, D) one
3. Enthalpy can be measured indirectly by applying law. A) gas, B) Avogadro's, C) Faraday's, D) Hess's
4. A reaction is first order with respect to both A and B. The rate equation is A) Rate = $K[A][B]^2$,
B) Rate = $K[A][B]$, C) Rate = $K[A]$, D) Rate = $K[B]$
5. Elevation of boiling point is a property A) additive, B) colligative, C) constitutive, D) none of these
6. Which compound has the highest % of oxygen? A) HCHO, B) C_2H_5OH , C) CH_3COOH , D) $H_2C_2O_4$
7. Which of the following salts will have greater positive charge on its 1 molar aqueous solution?
A) KCl, B) NaCl, C) $AlCl_3$, D) $ZnCl_2$
8. determined charge on electron. A) Millikan, B) J.J Thomson, C) Chadwick, D) Moseley
9. The value of ideal gas constant in $dm^3.torr.K^{-1}.mol^{-1}$ is A) 0.0821, B) 1.9872, C) 8.3143, D) 62.364
10. The unit of K_c for the system, $PCl_5 \rightarrow PCl_3 + Cl_2$ is A) $mol^2.dm^{-6}$, B) $mol.dm^{-6}$, C) $mol.dm^{-3}$,
D) $mol^{-1}.dm^3$
11. Conjugate acid-base differ by A) a proton, B) a proton pair, C) an electron, D) an electron pair
12. Freezing point of solution is as compared to that of the solvent. A) higher, B) lower, C) variable,
D) the same
13. Which one of the following molecules has zero dipole moment? A) ammonia, B) water, C) chlorine,
D) carbon dioxide
14. The value of compressibility factor z is for an ideal gas. A) 0, B) 1, C) less than 1, D) more than 1
15. Which one of the following is not electromagnetic in nature? A) IR rays, B) x-rays, C) beta rays,
D) radio waves
16. Which one of the following processes has a positive ΔH value? A) ionization energy, B) electron affinity,
C) combustion, D) lattice energy
17. The oxidation number of chlorine in $HClO_3$ is A) +1, B) +3, C) +5, D) +7
18. Which one has the least melting point? A) ionic crystal, B) covalent crystal, C) metallic crystal,
D) molecular crystal

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CHEMISTRY
PART-I

(A) 2014

Time: 2 Hours 40 Minutes

SECTION-B

Marks: 40

1. Attempt any ten of the following. All carry equal marks.
 - i. Explain salt hydrolysis with examples.
 - ii. Differentiate between electrolytic and electrical conduction. Give example.
 - iii. Discuss the assumptions of collision theory of chemical reactions.
 - iv. Calculate the wavelength of photon when the electron jumps from $n_2=4$ to $n_1=3$
 - v. Explain the following: (i) Habit of crystal (ii) Transition temperature
 - vi. All the four bonds in CH_4 are equal. Explain with reasons.
 - vii. Calculate the mole fraction of each component in the solution of 500 g of water and 600 g of glucose.
 - viii. Write down the postulates of Planck's Quantum theory of radiations.
 - ix. Explain experimental verification of Graham's law of diffusion.
 - x. What do you mean by state of a system? What are state functions?
 - xi. Differentiate types of chemical equilibrium with examples.
 - xii. What will be the volume of 7.5×10^{22} molecules of HCl at STP?
 - xiii. Discuss properties of liquids.

SECTION-C

Marks: 27

NOTE: Attempt any three of the following questions. All questions carry equal marks.

2.
 - i. Discuss the predictions of direction of reaction and reaction quotient.
 - ii. Explain the structure of ethene on the basis of hybridization.
3.
 - i. Write a note on depression of freezing point of solution.
 - ii. Balance the following reaction by Redox method:
 $\text{KMnO}_4 + \text{KNO}_2 + \text{H}_2\text{SO}_4 \longrightarrow \text{MnSO}_4 + \text{KNO}_3 + \text{K}_2\text{SO}_4 + \text{H}_2\text{O}$
4.
 - i. Write a note on applications of boiling point.
 - ii. Explain the factors that affect the rate of reaction.
5. Write short notes on the following: i. Azimuthal Quantum Number ii. Avogadro's Law