Roll No. : _____ FBD-11-2-23 10

Objective

Paper Code

6484

Intermediate Part First

CHEMISTRY (Objective) GROUP - II

Time: 20 Minutes Marks: 17

Q.No.1 **You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill the relevant circle in front of that question number on computerized answer sheet. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero marks in that question. Attempt as many questions as given in objective type question paper and leave other circles blank.coa**

S.#	Questions	A	B	C	D
1	Indicate the catalyst used for the reaction: $HCOOH \rightarrow H_2O + CO$	Cu	MnO_2	Pt	$A\ell_2O_3$
2	If the salt bridge is not used between two half cells, then the voltage:	Decreases rapidly	Decreases slowly	Does not change	Drops to zero
3	The reaction at cathode during the electrolysis of dil. H_2SO_4 with Pt electrodes is:	Oxidation	Reduction	Both oxidation and reduction	Neither oxidation nor reduction
4	Which solution has the highest boiling point?	5.85% solution of $NaC\ell$	18.0% solution of glucose	6.0% solution of urea	All have the same boiling point
5	When H_2S is added to $HC\ell$ aqueous solution, the ionization of H_2S:	Increases	Remains constant	Decreases	Increases rapidly
6	An excess of aqueous silver nitrate is added to aqueous barium chloride and precipitate is removed by filtration. What are the main ions in the filtrate?	Ag^+ and NO_3^- only	Ba^{2+} and NO_3^- only	Ba^{2+}, NO_3^- and $C\ell^-$	Ag^+, Ba^{2+} and NO_3^-
7	The change in heat energy of a chemical reaction at constant temperature and pressure is called:	Internal energy change	Bond energy	Enthalpy change	Heat of sublimation
8	If an endothermic reaction is allowed to take place very rapidly in the air, the temperature of the surrounding air:	Decreases	Increases	Remains constant	Remains unchanged
9	The number of bonds in nitrogen molecule is:	One sigma and one pi	One sigma and two pi	Three sigma only	Two sigma and one pi
10	In the ground state of an atom, the electron is present:	In the nucleus	In the second shell	Nearest to the nucleus	Farthest from the nucleus
11	NaF and MgO are isomorphs of each other and exist in:	Tetragonal form	Rhombohedral form	Orthorhombic form	Cubic form
12	London dispersion forces are the only forces present among the:	Molecules of water in liquid state	Atoms of He in gaseous state at high temperature	Molecules of hydrogen chloride gas	Molecules of solid iodine
13	The value of R in $NmK^{-1}mol^{-1}$ is:	1.987	8.3143	0.0821	62.4
14	A real gas obeying van der Waals equation will resemble ideal gas if:	Both "a" and "b" are small	Both "a" and "b" are large	"a" is small and "b" is large	"a" is large and "b" is small
15	The stationary phase in adsorption chromatography is:	Solid	Water	Organic liquid	Gas
16	The mass of water formed when 2g of H_2 and 64g of O_2 are combined together is:	68g	36g	18g	66g
17	27g of $A\ell$ will react completely with how much mass of O_2 to produce $A\ell_2O_3$?	32g of oxygen	24g of oxygen	16g of oxygen	8g of oxygen

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Intermediate Part First

Roll No. _____

CHEMISTRY (Subjective) GROUP - II

FBD-11-2-23

Time: 02:40 Hours Marks: 68

SECTION – I

2. **Write short answers of any EIGHT parts.** 16
   (i) Define gram atom. Give example.
   (ii) How many molecules are present in 3.6 gram of H_2O?
   (iii) Mg atom is twice heavier than that of carbon atom. How?
   (iv) Define Charles's Law. Give its mathematical form.
   (v) What is the physical significance of van der Waals' constants "a" and "b". Give their units.
   (vi) Write any two applications of plasma.
   (vii) Justify that the distance gaps between different orbits go on increasing from the lower to the higher orbits.
   (viii) Why the positive rays are called canal rays?
   (ix) Calculate mass of electron by using e/m value.
   (x) Define exothermic reaction. Give example.
   (xi) What are spontaneous and non-spontaneous reactions? Give example.
   (xii) Prove that: $q_p = \Delta H$

3. **Write short answers of any EIGHT parts.** 16
   (i) Give any two qualities of an ideal solution.
   (ii) Prove that: $\frac{\Delta p}{p^\circ} = x_2$
   (iii) What is meant by liquids practically immiscible?
   (iv) What is meant by catalytic poisoning?
   (v) Define rate of reaction. Give its units.
   (vi) How order of reaction is determined by a method of large excess?
   (vii) What is solvent extraction?
   (viii) How moderate cooling is advantageous over slow cooling in crystallization process?
   (ix) What is the significance of distribution coefficient in chromatography?
   (x) Ice floats over water. Justify it.
   (xi) Show hydrogen bonding in alcohol and water.
   (xii) Define liquid crystals with an example.

4. **Write short answers of any SIX parts.** 12
   (i) Why 2nd ionization energy value is greater than 1st?
   (ii) Define bond energy. Give example.
   (iii) Draw molecular orbital diagram of nitrogen molecule.
   (iv) Define solubility product.
   (v) State Le-Chatelier's principle.
   (vi) Justify that chemical equilibrium is dynamic in nature.
   (vii) Write two functions of salt bridge.
   (viii) Define electrode potential.
   (ix) What is meant by E.M.F of cell?

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SECTION – II

Attempt any THREE questions. Each question carries 08 marks.

5. (a) What is combustion analysis? How the percentages of various elements present in an organic compounds are determined? 04
   (b) What pressure is exerted by a mixture of 2.00g of H_2 and 8.00g of N_2 at 273K in a $10dm^3$ vessel? 04

6. (a) Describe the measurement of vapour pressure by manometric method with diagram. 03,01
   (b) How the enthalpy of combustion of substance can be measured by bomb calorimeter. Explain with diagram.

7. (a) Define and explain: (i) Atomic emission spectrum (ii) Atomic absorption spectrum 03,01
   (b) $N_2(g)$ and $H_2(g)$ combine to give $NH_3(g)$. The value of K_c in this reaction at 500°C is 6.0×10^{-2}. Calculate the value of K_p for this reaction. 04

8. (a) Define hybridization and explain hybridization in NH_3. 04
   (b) Write note on alkaline battery. 01,03

9. (a) Differentiate between hydration and hydrolysis. Describe with two examples in each case. 04
   (b) How does the Arrhenius equation help us to calculate the energy of activation of a reaction. 02,02