



BWP-11-02-18

Note : Four possible choices A, B, C, D to each question are given. Which choice is correct, fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

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|--------|---|
| Q.No.1 | 27 g of Al will react completely with how much mass of $O_2$ to produce $Al_2O_3$ :   |
| (1)    | (A) 8 g of Oxygen (B) 16 g of Oxygen (C) 32 g of Oxygen (D) 24 g of Oxygen  |
| (2)    | Pressure remaining constant at which temperature the volume of a gas will become twice of what it is at $0^\circ C$ : (A) $546^\circ C$ (B) $200^\circ C$ (C) 546 K (D) 273 K   |
| (3)    | Solvent Extraction method is particularly useful technique for separation when the product to be separated is : (A) Non - Volatile or Thermally Unstable (B) Volatile or Thermally Stable (C) Non - Volatile or Thermally Stable (D) Volatile or Thermally Unstable |
| (4)    | Isotopes differ in : (A) Properties which depend upon mass (B) Arrangement of Electrons in Orbitals (C) Chemical Properties (D) The extent to which they may be affected in electromagnetic field   |
| (5)    | If Absolute Temperature of a Gas is doubled and the pressure is reduced to one half, the volume of the gas will : (A) Remains unchanged (B) Increase four times (C) Reduce to $1/4$ (D) Be doubled  |
| (6)    | When 6d Orbital is complete, the entering electron goes into : (A) 7f (B) 7s (C) 7p (D) 7d  |
| (7)    | Ionic Solids are characterized by : (A) Low Melting Points (B) Good conductivity in solid state (C) High Vapour Pressure (D) Solubility in Polar Solvents   |
| (8)    | When water freezes at $0^\circ C$ , its density decreases due to : (A) Cubic Structure of Ice (B) Empty Spaces present in the structure of Ice (C) Change of Bond Lengths (D) Change of Bond Angles   |
| (9)    | In the ground state of an atom, the electron is present : (A) In the Nucleus (B) In the Second Shell (C) Nearest to the Nucleus (D) Farthest from the Nucleus   |
| (10)   | For a given process, the heat changes at constant pressure ( $q_p$ ) and at constant volume ( $q_v$ ) are related to each other as : (A) $q_p = q_v$ (B) $q_p < q_v$ (C) $q_p > q_v$ (D) $q_p = q_v/2$  |
| (11)   | Which of the following species has un-paired electrons in the anti-bonding molecular orbitals : (A) $O_2^{-2}$ (B) $N_2^{-2}$ (C) $B_2$ (D) $F_2$   |
| (12)   | Which of the following Molecules has zero Dipole Moment : (A) $NH_3$ (B) $CHCl_3$ (C) $H_2O$ (D) $BF_3$   |
| (13)   | The pH of $10^{-3} \text{ mol dm}^{-3}$ of an aqueous solution of $H_2SO_4$ is : (A) 3.0 (B) 2.7 (C) 2.0 (D) 1.5  |
| (14)   | The Cathodic Reaction in the Electrolysis of dil $H_2SO_4$ with Pt electrodes is : (A) Reduction (B) Oxidation (C) Both Oxidation and Reduction (D) Neither Oxidation or Reduction  |
| (15)   | The molal boiling point constant is the ratio of the elevation in boiling point to : (A) Molarity (B) Molality (C) Mole Fraction of Solvent (D) Mole Fraction of Solute   |
| (16)   | For which system, does the equilibrium constant $K_c$ has units (Concentration) $^{-1}$ : (A) $N_2 + 3H_2 \rightleftharpoons 2NH_3$ (B) $H_2 + I_2 \rightleftharpoons 2HI$ (C) $2NO_2 \rightleftharpoons N_2O_4$ (D) $2HF \rightleftharpoons H_2 + F_2$             |
| (17)   | The rate of reaction : (A) Increases as the reaction proceeds (B) Decreases as the reaction proceeds (C) Remains the same as the reaction proceeds (D) May decrease or increase as the reaction proceeds  |





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| Roll No.               | 814 - 18000  | New Pattern                  | Inter (Part - I) / Group 2nd       |
| Chemistry (Subjective) | Inter-A-2018 | Time : 2 : 40 Hrs Marks = 68 | Session (2015 - 17) to (2017 - 19) |

Note : It is compulsory to attempt any (8 - 8) parts each from Q.No.2 and Q.No.3 and attempt any (6) parts from Q.No.4 .  
Attempt any (03) questions from Part II Write same Question No. and its Part No. as given in the question paper.

Make Diagram where necessary.

Part - I

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22 x 2 = 44

- Q.No.2** (i) What is Molecular Ion? How is it formed?  
(ii) Why Actual Yield is usually less than Theoretical Yield?  
(iii) What is Avogadro's Number? Give its numerical value.  
(iv) How undesirable Colour can be removed from a Crude Crystalline Product?  
(v) What is the difference between Adsorption Chromatography and Partition Chromatography?  
(vi) Write two characteristics of Plasma.  
(vii) State Avogadro's Law and give an example.  
(viii)  $\text{SO}_2$  is comparatively non-ideal at 273 K but behaves ideally at  $327^\circ\text{C}$ , why?  
(ix) What are Irreversible Reactions? Give an example.  
(x) How does a Catalyst affect the equilibrium position of a reversible reaction?  
(xi) Define pH of a Solution. Give its mathematical formula.  
(xii) What are Basic Buffers? How are they prepared?
- Q.No.3** (i) Ice Floats on Water. Give reason.  
(ii) The Crystals showing Isomorphism mostly have the same atomic ratio, give reason.  
(iii) Earthenware Vessels keep water cool, give reason.  
(iv) Heat of Sublimation of Iodine is very high, give reason.  
(v) Ionic Bonds are stronger than Covalent Bonds, give reason.  
(vi) Helium shows diamagnetic behaviour, give reason.  
(vii) Bond Distance is the Compromise Distance between two atoms, justify.  
(viii) How Dipole Moment is helpful to determine the Molecular Structure?  
(ix) Define State Function and write two properties that are State Function.  
(x) Define Standard Enthalpy of Combustion and Standard Enthalpy of Solution.  
(xi) Calculate the Molality of 8% w/w NaCl Solution.  
(xii) State Raoult's Law.
- Q.No.4** (i) Differentiate between Atomic Emission Spectrum and Atomic Absorption Spectrum.  
(ii) Why are the Positive Rays called "Canal Rays"? Give reason.  
(iii) Why the e/m value of Positive Rays obtained from  $\text{H}_2$  Gas is 1836 times lesser than that of Cathode Rays?  
(iv) Differentiate between Zeeman Effect and Stark Effect.  
(v) Why is the Porous Plate or a Salt Bridge not required in Lead Storage Accumulator?  
(vi) How is the Standard Oxidation Potential of Zn is + 0.76 V but the Reduction Potential is - 0.76 V?  
(vii) Why can Na and K displace  $\text{H}_2$  from Acids but Pt, Pd and Cu can not displace?  
(viii) How Electrochemical Series helps to predict the feasibility of a chemical reaction? Give an example.  
(ix) Justify that a Catalyst is specific for a chemical reaction using  $\text{HCOOH}$  as reactant producing different products.

Part - II

- Q.No.5** (a) A well known Ideal Gas is enclosed in a container having volume  $500\text{ cm}^3$  at S.T.P. (4)  
Its mass comes out to be 0.72 g. What is the Molar Mass of this Gas?  
(b) Define Liquid Crystal. Give four applications of Liquid Crystals. (4)
- Q.No.6** (a) Write four applications of Dalton's Law of Partial Pressure. (4)  
(b) Derive Radius of Revolving Electron in the nth Orbit of Hydrogen (H) Atom. (4)
- Q.No.7** (a) Define Ionization Energy. Write down factors influencing Ionization Energy. (4)  
(b) State 1st Law of Thermodynamics. Prove that  $\Delta H = q_p$  (4)
- Q.No.8** (a) Define pH and pOH. How are they related with  $\text{pK}_w$ ? (4)  
(b) Define Electrochemical Series. Give its three applications. (4)
- Q.No.9** (a) Pure Benzene has Vapour Pressure of 122.0 torr at  $32^\circ\text{C}$ . When 20 g of a non-volatile solute were dissolved in 300 g of Benzene, a vapour pressure of 120 torr was observed. Calculate the Molecular Mass of the solute. The Molecular Mass of Benzene being 78.1. (4)  
(b) How does Arrhenius Equation helps to calculate the energy of activation? (4)