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| ASIA ENGLISH SCHOOL | | 1 st Term Exam 2009-10 |
| Secondary /Higher Secondary Section | | Date :10-09-09 |
| Asia Campus, Drive-in Road, Ahmedabad-380054 | | Time : 3 hours |
| Std : XII Sci | Sub : Chemistry | Total Marks : 100 |

Roll No. _____

Instructions :

- (1) This question paper has total 60 questions and all are compulsory.
- (2) Write your answer to the points and as instructed in the question.
- (3) Use log table or simple calculator for calculations.
- (4) $h=6.626 \times 10^{-27}$ erg. Sec : $R = 1.987$ cal.mole, $R = 0.082$ lit atm $\text{mol}^{-1} \text{K}^{-1}$.

SECTION - A

Question Nos. 1 to 16 are multiple choice type. Each of one mark. Select the correct option of the following. [16]

- (1) An electron has spin quantum number $\frac{1}{2}$ and magnetic quantum No.1 It can not be present in,
[a] S-orbital [b] p-orbital [c] d-orbital [d] f-orbital
- (2) CH_3CHO ? $\text{H}_2\text{C}=\text{O}$? ? H_2O ? Y ? Identify Y
[a] CH_3COOH [b] CH_3HCOH [c] COOOH
[c] $\text{CH}_3\text{CH}_2\text{NH}_2$ [d] CH_3CONH_2
- (3) Azo dye test is given by
[a] All amines [b] Only primary amines
[c] Only primary aliphatic amines [d] Only primary aromatic amines
- (4) What is the value of Van't Hoff factor (i) when a solute dissociate in the solution.
[a] < 1 [b] 1 [c] > 1 [d] > 1
- (5) Two moles of an ideal gas expanded spontaneously into a vacuum. The work done is
[a] 2J [b] 4 k Cal [c] infinity [d] Zero
- (6) Which is not obtained at anode on the electrolysis of Al_2O_3
[a] CO_2 [b] Al [c] O_2 [d] CO
- (7) Oxidation of which compound is not possible ?
[a] CH_3COCH_3 [b] CH_3CHO
[c] CH_3COOH [d] $\text{CH}_3\text{CH}_2\text{OH}$
- (8) In which of the following molecule is d^2sp^3 hybridization seen.
[a] SF_6 [b] $\text{Fe}(\text{CO})_5$ [c] $\text{Co}(\text{NH}_3)_6^{3+}$ [d] NiCl_4^{2-}
- (9) Out of molarity (M) molality (m), formality (F) and mole fraction (X) those independent of temp : are,
[a] M, m [b] F, X [c] m, X [d] M, x
- (10) If during an experiment copper is to be replaced by another conductor of some conductivity what would you use ?
[a] CuO [b] ReO_3 [c] TiO_2 [d] FeO
- (11) What is the correct value of r^2/r^3 for tetrahedral structure ?
[a] Less than 0.22 [b] 0.414
[c] 0.22 to 0.41 [d] 0.732
- (12) From the following which is not an anionic detergent ?
[a] Cetyl trimethyl ammonium chloride
[b] Sodium lauryl alko-sulphonate
[c] Sodium alkyl benzene
[d] 2-dodecyl benzene sulphonate

(P.T.O.)

- (13) Tranquilisers are substance used for the treatment of
 [a] Blood infection [b] Physical disorders
 [c] Mental diseases [d] Cancer
- (14) Cyanide process is used for the extraction of
 [a] Cr [b] Ag [c] Au [d] Sn
- (15) Which substance is used to get very low temp. by its magnetic effect ?
 [a] GeO_2 [b] Lanthanide Oxide
 [c] Gadolinium Sulphate [d] Thali um sulphate
- (16) What is the proportion of ethanol in azcotropic mixtures.
 [a] 5% [b] 95% [c] 6.8% [d] 15%

SECTION – B

Answer the following 16 questions each carrying one mark.

[16]

- (17) Write Bragg Equation.
 (18) What is Larmor circulation.
 (19) What is the important property of Nitinol ? Give uses of Nitinol
 (20) State the third Law of Thermodynamics
 (21) Draw the electronic structure of carboxylic acid
 (22) What are micro alloys ?
 (23) To what extent a Concentration cell can work ?
 (24) Calculate the magnetic moment of Co^{2+} (At.no.of Co=27)
 (25) The B.P. of 0.1 M NaCl solution is $102^{\circ}C$, but its B.P. will be less than this at mountains give reasons.
 (26) The absolute value of free energy of any substance can not be calculated why ?
 (27) What is the relation between bond order and bond length ?
 (28) Give the formula for finding out equivalent conductance and its unit.
 (29) How is phenyl hydrazine prepared from benzene diazonium chloride !
 (30) Write only reaction for a fries rearrangement.
 (31) What is used as a hybrid fuel in rockets.
 (32) Can we apply Heisenbergs uncertainty principle to a stationary electron ? Why ?

SECTION – C

Answer the following 16 questions each of 2 marks.

[32]

- (33) What is called unit cell ? Calculate the no. of atoms per unit cell in BCC and FCC crystals.
 (34) Write short note on nonionic and cationic detergent.
 (35) Write the preparation method of potassium permanganate
 (36) Calculate ΔG and ΔG° for the reaction. $A + B \rightleftharpoons C + D$ at $27^{\circ}C$ for which $K = 10^2$
 (37) Calculate cell potential of the following electro chemical cell at $25^{\circ}C$ temp.

$$Al_{(s)} / Al_{1.0M}^{3+} // Cu_{0.02M}^{2+} / Cu_{(s)}$$

$$E^{\circ}_{Al/Al^{3+}} = 1.66V$$

$$E^{\circ}_{Cu/Cu^{2+}} = 0.34V$$
 (38) The oxidation states of transition elements depends on which factors ?
 (39) The V.P. of water at $27^{\circ}C$ is 26mm. What will be the V.P. of a solution obtained by dissolving 18g. glucose in 90g. of water. [Mole : wt.of glucose = 180 gm/mole, Mole : wt of $H_2O = 18gm/mole$]
 (40) Convert chlorobenzene to salicylldehyde
 (41) Write Aldol condensation (only reaction) with two illustrations.
 (42) Define H-bonding and give importance of H-bonding (2 points)
 (43) Convert chlorobenzene to acetanilide.
 (44) Define esterification with one suitable illustrations

Contd...

- (45) State Kohlrausch's Law. Explain its application by a suitable example.
 (46) Explain ferromagnetic and antiferromagnetic substances.
 (47) State and explain Henry's Law.
 (48) Convert formaldehyde to ethyl alcohol

SECTION – D

Answer the following to the points of 12 questions of 3 marks.

- (49) Write short note : Corrosion of metal with reactions.
 (50) Explain the separation of 1^o, 2^o and 3^o amines
 (51) Explain Schottky and Frenkel defects.
 (52) What is α , β and γ , δ ? Explain its formation and symmetry with suitable illustrations.
 (53) 0.052 gms of glucose has been dissolved in 80.2 gm of water. Calculate (i) the boiling point and (ii) freezing point of the solution. $K_b = 5.2 \text{ K mol}^{-1}$ $K_f = 1.86 \text{ K mol}^{-1}$
 (54) Calculate the equilibrium constant for the reaction at 400K. $2\text{NOCl}_{(g)} \rightleftharpoons 2\text{NO}_{(g)} + \text{Cl}_{2(g)}$
 $\Delta H^\circ = 77.2 \text{ kJ mol}^{-1}$ $\Delta S^\circ = 122 \text{ J K}^{-1} \text{ mol}^{-1}$
 (55) The potential of the following given cell is 0.59 volt. Calculate the ionic product of water K_w . $\text{Pt} / \text{H}_{2(1\text{atm})} / \text{KOH}_{(0.01\text{M})} \parallel \text{HCl}_{(0.01\text{M})} / \text{H}_{2(1\text{atm})} / \text{Pt}$
 (56) (1) Explain condensation reaction of acetone
 (2) Reactions of acetyl chloride with water, ammonia and ethanol.
 (57) Explain the industrial method of preparation of pure phenol.
 (58) Explain Hume and Rothery rules for preparation of alloys.
 (59) Write short note on solid and liquid fuels used as Rocket propellants.
 (60) Explain the chemistry of photography.
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