Sub. : CHEMISTRY

Std. : 12 Sci **Marks : 100**

Time : 2.30 hrs

SECTION - A [40]

Select correct option for following given questions.Question 1 to 40 are 1 mark M.C.Q. type. Choose correct option.

(1) Phenol dimerises in benzene having Van't Hoff factor 0.54. What is the degree of association ?

(a) 0.46 (b) 92

(c) 46 (d) 0.92

(2) The v.p. of water at 293 K is 17.5 mm. If 18 g of $C_6H_{12}O_6$ is added to 178.2 g of water, then the vapour pressure of the resulting solution will be :

(a) 17.325 mm (b) 17.675 mm

(c) 15.750 mm (d) 16.500 mm

(3) The V.H. factor –i can not be calculated by which one of the following expressions :

(a) $\pi V = \sqrt{i}\, nRT$

(b) $\Delta T_f = iKf \cdot m$

(c) $\Delta Tb = iK_b \cdot m$

(d) $\frac{P^0_{solvent} - P_{solution}}{P^0_{solvent}} = i\frac{x}{(N+x)}$

(4) The amount of solute (M.Wt. 60) that must be added to 180 g of water so that the vapour pressure of water is lowered by 10% is :

(a) 30 g (b) 60 g

(c) 120 g (d) 12 g

(5) What is the osmotic pressure of 0.0020 m sucrose ($C_{12}H_{22}O_{11}$) solution at 293 K ?

(a) 4870 Pa (b) 4.87 Pa

(c) 0.00487 Pa (d) 0.33 pa

(6) One kg of a sea water sample contains 6 mg of dissolved O_2. The ppm of O_2 in a sample.

(a) 0.6 (b) 6.0 (c) 60.0 (d) 16.0

(7) Which one of the following shows negative deviation from Raoult's law ?

(a) Ethanol and acetone

(b) Benzene and toluene

(c) Acetone and chloroform

(d) Chloroethane and bromoethane

(8) The standard electrode potentials of elements A, B and C are +0.68, –2.50 and –0.50 V respectively. The correct order of their reducing power is :

(a) A > B > C (b) A > C > B

(c) C > B > A (d) B > C > A

(9) Following metals that cannot be obtained by the electrolysis of their aqueous salt solution is :

(a) Cu, Fe (b) Mg, Al

(c) Sn, Ag (d) Cr, Ni

(10) When 9650 coulombs of electricity is drawn from the cell : Cu | Cu^{2+} (1 M) || Ag^+ (1 M) | Ag

(a) Concentrations of copper and silver ions decrease by 0.1 M each.

(b) Concentrations of copper ions falls by 0.05 M and of Ag ions falls by 0.1 M

(c) Concentration of copper ions does not change but of Ag ions falls by 0.1 M

(d) Concen. of Cu^{2+} ions increases by 0.05 M and 0.1

(11) 965 Coulomb is passed through 1 molar aq. $CuSo_4$ using Cu electrodes. The molarity of 1 M $CuSO_4$ solution after electrolysis is :

(a) 0.05 M (b) 0.1 M

(c) 0 M (d) 1 M

(12) $CH_3COCH_3 + NaOH + I_2 \rightarrow CHI_3 + NaI + CH_3COONa + H_2O$. Select co-efficient for the balanced reaction :

(a) 1, 4, 3, 1, 2, 1, 2

(b) 1, 4, 3, 1, 3, 1, 3

(c) 1, 4, 3, 2, 3, 1, 3

(d) 1, 4, 1, 3, 1, 3, 1

(13) Given that $E^0_{cell} = 0.36$ V, the ΔG^0 for the reation is : $Fe^{3+} + 3e^- \rightarrow Fe_{(s)}$

(a) 10.42 KJ (b) 5.21 KJ

(c) 20.84 KJ (d) 3.47 KJ

(14) Which of the following pair is having both the weak electrolytes ?

(a) HCl, $AgNO_3$ (b) NH_4OH, CH_3COOH

(c) NaOH, KNO_3 (d) NaCl, NH_4Cl

(15) 0.5 A when passed through aq. $AgNO_3$ for 193 sec. deposites 0.108 g Ag. The Eq. Wt. of Ag is (Ag = 108)

(a) 10.8 (b) 54

(c) 108 (d) 216

(16) If E^0 values of Ag^+/Ag, K^+/K, Mg^{2+}/Mg and Cr^{3+}/Cr are 0.80 V, –2.93 V, 2.37 V and –0.74 respectively, then correct order of the reducing power :

(a) Ag > Cr > Mg > K

(b) Ag > Cr > Mg < K

(c) K > Mg > Cr > Ag

(d) Cr > Ag > Mg > K

(17) Select incorrect statement/(s) ?

(a) In all cells, the cathode is negative and the anode is positive.

(b) The expression for the e.m.f. of an electrochemical cell :

$$E = E^0 - \frac{0.059}{n}\log\frac{[\text{oxidised} - \text{iron}]}{[\text{reduced} - \text{ion}]}$$

(c) In all cells, the anode is negative and the cathode is positive

(d) Only statement (a) and (c) are wrong.

(18) **when molten caH_2 is electrolysed between inert electrodes, which of the following occurs :**

(a) H_2 is liberated at cathode

(b) Ca is deposited at anode

(c) H^+ is oxidised at anode

(d) H_2 is liberated at anode

(19) $I_2 + 2e^- \rightarrow 2I^-$, $E^0_{RP} = +0.54$ volt.

$2\ Br^- + Br_2 \rightarrow 2e^-$, $E^0_{OP} = -1.09$ volt.

$Fe + Fe^{2+} \rightarrow 2e^-$, $E^0_{OP} = +0.44$ volt.

Which of the following reation is non-spontaneous ?

(a) $Br_2 + 2I^- \rightarrow 2Br^- + I_2$

(b) $Fe + Br_2 \rightarrow Fe^{2+} + 2Br^-$

(c) $Fe + I_2 \rightarrow Fe^{2+} + 2I^-$

(d) $I_2 + 2Br^- \rightarrow 2I^- + Br_2$

(20) **When an aqueous solution of conc. NaCl is electrolysed by using graphite electrodes :**

(a) pH of the resulting solution increases

(b) pH of the resulting solution decreases

(c) as the current flows, p^H of the solution around the anode increase

(d) as the cureent flows, p^H of the solution around the cathode increase

(21) **The SRP of $Ag^+ + e^- \rightarrow Ag$ is 0.799 V. At what concentration of Ag^+ ion, potential of the Ag/Ag^+ electrode will become 0.622 volt ?**

(a) 10^{-1} M (b) 10^{-2} M

(c) 10^{-3} M (d) 10^{-4} M

(22) **Which aq. solutions is mention wrongly that remains reutral, acidic or basic after electrolysis ?**

(a) conc. NaCl $\rightarrow$ basic

(b) $CuSO_4$ $\rightarrow$ acidic

(c) dil. NaCl $\rightarrow$ neutral

(d) K_2SO_4 $\rightarrow$ acidic

(23) **Iron ore is obtained by which process ?**

(a) electrolysis (b) roasting

(c) magnetic treatment (d) froth floatation

(24) **Heating pyrites in air to remove sulphur is known is :**

(a) calcinations (b) smelting

(c) fluxing (d) roasting

(25) **Which of the following processes involves the smelting process ?**

(a) $ZnCO_3 \rightarrow ZnO + CO_2$

(b) $2PbS + 3O_2 \rightarrow 2PbO + 2SO_2$

(c) $Fe_2O_3 + 3C \rightarrow 2Fe + CO$

(d) $Al_2O_3 \cdot 2H_2O \rightarrow Al_2O_3 + 2H_2O$

(26) **Which oxides can not be reduced by carbon to give the respective metals ?**

(a) Cu_2O, SnO_2 (b) Fe_2O_3, ZnO

(c) CaO, K_2O (d) PbO, Fe_3O_4

(27) **Purest form of iron is :**

(a) cast iron (b) Pig iron

(c) wrought iron (d) stainless steel

(28) **The hardest variety of ion is :**

(a) cast iron (b) mild steel

(c) hard steel (d) wrought iron

(29) **Which of the following is not an ore ?**

(a) malachite (b) siderite

(c) cryolite (d) blister copper

(30) **Which of the following is a malachite ore ?**

(a) Cu_2S, FeS (b) $CuCO_3$, $Cu(OH)_2$

(c) Cu_2O (d) $CuCO_3$, CuO

(31) **A mineral is known as an ore of a metal if the metal :**

(a) can be produced from it

(b) cannot be produced from it

(c) can be produced from it profitably

(d) none

(32) **Saphire is a mineral of :**

(a) Ag (b) Al

(c) Au (d) Pt

(33) **The role of reducing agent during extraction of metal is :**

(a) to make +ve value of $\Delta G°$

(b) to make –ve value of $\Delta G°$

(c) to make zero value of $\Delta G°$

(d) to maintain constant value of $\Delta G°$

(34) **Which oxides are present as impurities in bauxite mineral ?**

(a) TiO_2 (b) Fe_2O_3

(c) SiO_2 (d) Given all

(35) **Correct formula of slag can be :**

(a) $CaSiO_3$ (b) $FeSiO_3$

(c) $CuSiO_3$ (d) a and b both

(36) **Extraction of metal from sulphide ore is done by :**

(a) smelting (b) calcination

(c) hydrometallurgy (d) electrolysis

(37) **The cryolite is used in the electrolytic extraction of Al :**

(a) to dissolve bauxite

(b) to protect anode

(c) to get more aluminium

(d) to act as a reducing agent

(38) **Zone refining process is usded to obtain :**

(a) Very high temperature

(b) Ultra pure oxides

(c) Ultra pure Si

(d) Ultra pure metals

(39) **The metal obtained by hydrometallurgy is :**

(a) Cu (b) Ag

(c) Au (d) All

(40) **The blister copper is obtained by :**

(a) Bassemerisation (b) roasting

(c) Calcination (d) Electrolytic reduction

SECTION - B [30]

(41) **The process in which ore is heated in air below at its m.p. is known as :**

(a) roasting (b) reduction

(c) calcinations (d) distillation

(42) **Amphoteric oxide is :**

(a) Cl_2O_7 (b) Bi_2O_3

(c) As_2O_3 (d) N_2O_3

(43) **Phosphorus is absent in :**

(a) Chlor apatite (b) teeth and bones

(c) DNA and RNA (d) carbohydrate

(44) $P_4 + Cl_{2(limited)} \rightarrow x \xrightarrow{H_2O} y$, **thus, x and y are respectively :**

(a) PCl_3, H_3PO_3 (b) PCl_3, H_3PO_4

(c) PCl_5, H_3PO_4 (d) PCl_5, $POCl_3$

(45) **The correct relation between oxo-acids of phosphorous and its oxidation states is :**

(a) phosphorus acid → +1, +3

(b) Phosphoric acid → +5, +3

(c) phosphorus acid → –3, +3

(d) phosphoric acid → +1, +3

(46) **Which Xenon compounds are not possible ?**

(a) XeF_6, XeO_2F_2 (b) XeF_2, XeO_3

(c) XeF_3, XeO_2F (d) XeF_4, $XeOF_4$

(47) **Wrong pair of acid and its anhydride :**

(a) $H_3PO_4 \rightarrow P_4O_6$ (b) $HClO_4 \rightarrow Cl_2O_7$

(c) $HNO_3 \rightarrow N_2O_5$ (d) $H_2SO_4 \rightarrow SO_3$

(48) **Maximum number of "oxo"–groups are present in the which acid ?**

(a) H_3PO_4 (b) $HClO_4$

(b) H_3PO_2 (d) H_2SO_4

(49) **Which acid gives only two series of salt ?**

(a) H_3PO_4 (b) H_3PO_2

(c) H_3PO_3 (d) $H_4P_2O_7$

(50) **Which acid gives only two series of salt ?**

(a) $BCl_3 > PCl_3 > AsCl_3$

(b) $ECl_3 > AsCl_3 > PCl_3$

(c) $BCl_3 > PCl_3 = AsCl_3$

(d) $BCl_3 = PCl_3 > AsCl_3$

(51) **The incorrect order of the acidic strength :**

(a) $HClO_4 > HBrO_4 > HIO_4$

(b) $HClO_4 > HClO_3 > HClO_2$

(c) $H_3PO_4 > H_3PO_3 > H_3PO_2$

(d) $H_2S > H_2SO_3 > H_2SO_4$

(52) **The least acidic oxide :**

(a) N_2O_5 (b) P_4O_6 (c) As_4O_{10} (d) As_4O_6

(53) **The correct option for compound and its name :**

(a) $FCl \rightarrow$ flurorine mono chloride,
$BrCl \rightarrow$ bromine mono chloride

(b) $O_2F_2 \rightarrow$ fluorine monoxide,
$OF_2 \rightarrow$ oxygen di-fluoride

(c) $BrI \rightarrow$ bromine mono iodide,
$ClF_3 \rightarrow$ chlorine tri-fluoride

(d) $HOBr \rightarrow$ hypo bromous acid,
$NaOI \rightarrow$ sodium hypo iodide

(54) **The total number of isomers of the molecular formula $C_4H_{10}O$ is :**

(a) 2 (b) 7

(c) 4 (d) 5

(55) **Ethanoyl chloride reacts with phenol in the presence of dil. alkali to give :**

(a) ethyl benzoate (b) m-hydroxybenzaldeyde

(c) phenyl acetate (d) phenyl benzoate

SECTION - C [18]

(56) **The correct IUPAC name of $CH_2 = C(C_2H_5) CH_2 - CH(OH) CH_3$ is :**

(a) 2-ethyl pent-2-ene-4-ol

(b) 2-hydroxy-4-methyl pentane

(c) 4-ethyl pent-4-ene-2-ol

(d) 4-methyl hexan-2-ol

(57) **Which of the following is soluble in water ?**

(a) $CHCl_3$ (b) C_6H_5-Cl

(c) CH_2OH-CH_2OH (d) CCl_4

(58) **Which of the following has maximum boiling poing ?**

(a) glycerol (b) ethylene glycol

(c) ethanol (d) ethoxy ethane

(59) **The compound which is not isomeric with diethyl ether is :**

(a) n-propyl methyl ether

(b) iso-butyl achohol

(c) butanal

(d) n-butyl alcohol

(60) **Which of the following can not give phenol ?**

(a) Cumene process

(b) Dow process

(c) BDAC salt + dil. H_2SO_4

(d) Willamson synthesis

(61) **Select correct option for matching :**

(I)		(II)	
(p)	cyclo hexyl chloride	(i)	vinylic halide
(q)	4-chloro pent-2-ene	(ii)	benzylic halide
(r)	chloro ethene	(iii)	2° - halide
(s)	1-chloro-1-phenyl ethane	(iv)	allylic halide

(a) [p – i, q – iii, r – ii, s – iv]

(b) [p – iv, q – ii, r – iii, s – i]

(c) [p – ii, q – i, r – iii, s – iv]

(d) [p – iii, q – iv, r – i, s – ii]

SECTION - D [12]

(62) **Which is most acidic ?**

(a) Phenol (b) o-nitro phenol

(c) 2, 4 - DNP (d) p-nitro phenol

(63) **For R – S nomenclature the correct order of priority of functional groups is :**

(a) –Cl, $-CONH_2$, –CHO, $-COCH_3$

(b) –COCl, $-CONH_2$, $-COCH_3$, $-NH_2$

(c) –COOH, $-COCH_3$, $-CONH_2$, $-CH = CH_2$

(d) –OH, $-NH_2$, –COOR, $-CH_3$

(64) **Which reaction does not give 1°-alcohol ?**

(A) $CH_3 - CH = CH_2 + H_2O / H+ \rightarrow$

(B) Butanal + $NaBH_4 / H_2O \rightarrow$

(C) But-2-one + $NaBH_4 / H_2O \rightarrow$

(D) Ethyl benzoate + $LiAlH_4 / H_2O \rightarrow$

(a) A, B (b) A, C

(d) B, C (d) B, D

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P. No.

Que NO.	Ans.	Que NO.	Ans.	Que NO.	Ans.
1	D	25	B	49	C
2	A	26	C	50	B
3	A	27	C	51	D
4	B	28	A	52	D
5	A	29	D	53	B
6	B	30	B	54	B
7	C	31	C	55	C
8	B	32	B	56	C
9	B	33	B	57	C
10	D	34	D	58	A
11	D	35	D	59	C
12	B	36	A	60	D
13	A	37	Grace	61	D
14	D	38	C	62	C
15	C	39	D	63	D
16	C	40	A	64	B
17	D	41	A	~~65~~	
18	D	42	C	~~66~~	
19	D	43	D		
20	D	44	A		
21	C	45	Grace		
22	D	46	C		
23	C	47	A		
24	D	48	B		