DEPARTMENT OF GOVERNMENT EXAMINATIONS
HIGHER SECONDARY EXAMINATION – MARCH – 2011
(+2) CHEMISTRY - KEY (Scheme of Valuation)

PART – I

A		
Q. No.	Answer choice	Answer
1	d	$Cu_2(CN)_2 + (CN)_2$
2	a	Mish Metals
3	b	imperfect shielding of 4f electrons
4	d	en
5	a	3 neutrons
6	c	6.93×10^{-3} min^{-1}
7	d	they are easily assimilated and adsorbed
8	A	positive catalysis
9	c	it forms multi-layers on adsorbate
10	b	phenolphthalein
11	b	1-nitro-2-propanol
12	b	Diphenyl amine
13	c	Phenol
14	a	Glycine
15	c	D(+) glucose and D(-) fructose
16	a	o-nitrophenol
17	b	6.63×10^{-24} Kg ms^{-1}
18	a	$Z^* = Z-S$
19	c	Neon
20	b	$3d^6$
21	d	$n\lambda = 2d\sin\theta$
22	a	21 cal.deg^{-1} mole^{-1}
23	c	$\Delta H > O$; $\Delta S < O$
24	d	high pressure and low temperature
25	c	$Kp = Kc(RT)^1$
26	c	Benzyl Benzoate
27	c	three
28	a	peroxide
29	b	CH_3CHO
30	d	Calcium Oxalate

B		
Q. No.	Answer choice	Answer
1	c	Benzyl benzoate
2	c	three
3	a	Peroxide
4	b	CH_3 CHO
5	d	Calcium Oxalate
6	d	$n\lambda = 2d\sin\theta$
7	a	21 cal.deg^{-1} mole^{-1}
8	c	$\Delta H > O$; $\Delta S < O$
9	d	high pressure and low temperature
10	c	$Kp = Kc(RT)^1$
11	a	o-nitrophenol
12	b	6.63×10^{-24} Kg ms^{-1}
13	a	$Z^* = Z-S$
14	c	Neon
15	b	$3d^6$
16	b	1-nitro-2-propanol
17	b	Diphenyl amine
18	c	Phenol
19	a	Glycine
20	c	D(+) glucose and D(-) fructose
21	c	6.93×10^{-3} min^{-1}
22	d	they are easily assimilated and adsorbed
23	a	positive catalysis
24	c	it forms multilayers on adsorbate
25	b	phenolphthalein
26	d	$Cu_2(CN)_2 + (CN)_2$
27	a	Mish metals
28	b	Imperfect shielding of 4f electrons
29	d	en
30	a	3 neutrons

	PART - II		Marks
31	Correct statement (or) Mathematical expression only .... 2 marks Explaining the terms .....1 mark	3	3
32	$E.N = \frac{I.E(or)IP + EA}{2x2.8}$ $= \frac{17.4+3.62}{2\times2.8}$ or $\frac{17.4+3.62}{5.6}$ E.N = 3.75	1 1 1	3
33	It etches glass (or) attacks silicates and silica $Na_2SiO_3 + 6HF \rightarrow Na_2SiF_6 + 3H_2O$ (or) $SiO_2 + 4HF \rightarrow SiF_4 + 2H_2O$ (One equation is enough) Unbalanced equation ..... 1 mark	1 2	3
34	$H_3PO_4 \xrightarrow{523k} H_4P_2O_7 \xrightarrow{589k} 2HPO_3 + H_2O$ If temperature is not mentioned .....2 marks mere statement ..... 1 mark	3	3
35	Several (n-1)d and ns electron. Energies of (n-1)d and ns orbitals are fairly close to each other.	1½ 1½	3
36	$2Au + 9HCl + 3HNO_3 \rightarrow 2AuCl_3 + 3NOCl + 6H_2O$ Unbalanced equation .....2 marks Mere statement .....1 mark	3	3
37	a)Great tool for correlating facts of historical importance b) To understand evolution of life and rise and fall of civilization (or) used to determine the age (or) period 1mark	1½ 1½	3
38	Lattice points are occupied by molecules which do not carry charge. Example: ice (or) suitable example Mere mentioning the types of forces ..... 1 mark	2 1	3

39	% Efficiency $= \left(\frac{T_1 - T_2}{T_1}\right) \times 100$ % $\eta = \frac{383 - 298}{383} \times 100$ %η = 22.2 (or) 22.19	1 1 1	3
40	Correct statement for not mentioning non-equilibrium condition .....2 marks (or) Q expression ..... 1 mark	3	3
41	Correct statement Example (Equation or statement)	2 1	3
42	k = $Ae^{-Ea/RT}$ Explanation of any four terms (4 x ½ = 2)	1 2	3
43	General characteristics of catalytic reaction Any three points ..... 3 x 1 = 3	3	3
44	Correct definition Any suitable example	2 1	3
45	Racemic mix and Meso form differences. 3 points (3 x 1 =3)	3	3
46	Terylene preparation. Correct equation Mere statement ..... 1 mark	3	3
47	Correct equation Con H_2SO_4 (or) H^+ or Cu / 573 K Mere statement ..... 1 mark	2 1	3
48	Correct equation mentioning $AlCl_3$ Mere statement ..... 1 mark	2 1	3
49	Acetyl salicylic acid is aspirin Correct equation Mere statement ..... 1 mark	1 2	3
50	$CH_3CONH_2 \xrightarrow{Br_2/KoH} CH_3NH_2 + CO_2$ A B (A) $CH_3 - \underset{\underset{O}{\|}}{C} - NH_2$ (or) Acetamide ..... 1 mark (B) $CH_3 - NH_2$ (or) methylamine 1mark	3	3
51	Characteristics of dye (Any three) 3 x 1 = 3	3	3

	PART – III SECTION – A		
52	**de-Broglie's equation:** **According to Planek's** $E = h\nu$ **According to Einstein's** $E = mc^2$ $h\nu = mc^2$ **but** $\nu = c/\lambda$ $\lambda = \frac{h}{mc}$ **or** $\frac{h}{mv}$ **or** $\frac{h}{p}$	 1 1 1 1 1	5
53	**Extraction of Zinc** **Ore** **Concentration** **roasting – correct equation** ***(or) unbalanced equation (or) verbal explanation ….. ½ mark*** **reduction – correct equation** ***(or) verbal explanation ……. ½ mark*** **Purification: anode** **cathode** **electrolyte**	 ½ ½ 1 1 ½ ½ 1	5
54	Lanthanides – Actinides differences Any five differences …… (5 x 1 = 5)	5	5
55	$K_4[Fe(CN)_6]$ a) IUPAC name: Potassium hexacyanoferrate (II) b) Central metal ion: Iron (II) or Fe^{2+} or Ferrous (or) Fe (II) c) ligand: CN^- (or) cyano d) coordination No: 6 e) charge on the complex: - 4 or $[Fe(CN)_6]^{4-}$	 1 1 1 1 1	5

SECTION – B

56	Characteristics of free energy Five characteristics (5 x 1= 5)	5	5

57	Dissociation of PCl_5 (i) $PCl_{5(g)} \rightleftharpoons PCl_{3(g)} + Cl_{2(g)}$ (ii) $K_c = \frac{[PCl_3][Cl_2]}{[PCl_5]}$ (iii) $K_c = \frac{x/v.x/v}{(a-x)/v}$ (iv) $K_c = \frac{x^2}{(a-x)v}$ (v) $x = \frac{Number\ of\ moles\ dissociated}{Total\ number\ of\ moles\ present\ initially}$ (vi) $K_c = \frac{x^2}{(1-x)v}$ (or) any other correct derivation for K_c (3 marks) $K_p = \frac{P_{PCl_3}P_{Cl_2}}{P_{PCl_5}}$ $K_p = \frac{x^2 p}{1-x^2}$	(6 x ½ =3)	3 1 1	5
58	Characteristics of Order of a reaction Five Characteristics Points (5x1 =5)		5
59	EMF of Zinc – Silver Cell Cathode: I) $2Ag^+ + 2e^- \rightarrow 2Ag$ $E^0 = +0.80$ V Anode: II) $Zn \rightarrow Zn^{2+} + 2e^-$ $E^0 = -0.76$ V --- III) Cell: $2Ag^+ + Zn \rightleftharpoons 2Ag + Zn^{2+}$ $E^0 = +1.56$ V (or) III equation with E^0 value ..... 2 mark (or) E^0 Cell = $E^0_R - E^0_L$ ..... 1 mark = 0.80 – (-0.76) = 1.56 V ..... 1 mark $E_{cell} = E^o_{cell} - \frac{0.0591}{n} \log K$ (or) $E_{cell} = E^o_{cell} - \frac{0.0591}{n} \log \frac{[Zn^{2+}]}{[Ag^+]^2}$ $= 1.56 - \frac{0.0591}{2} \log \frac{[10^{-3}]}{[10^{-1}]^2}$ = 1.58955 V (with units)		2 1 1 1	5