

Model Question of HSC Examination 2015

(English Version)

Subject : Chemistry 2nd Paper (Creative)

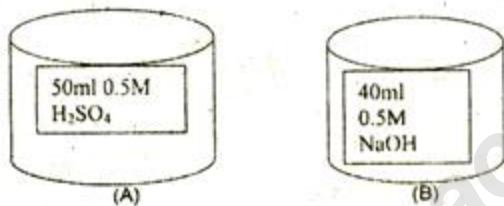
Time : 2 Hours 10 Minutes

Full Marks—40

1. ► Steel is the alloy of iron and carbon. When steel is dissolved in Dilute sulphuric acid, Iron (II) is produced. Any by titrating this produced Iron (II) with KMnO_4 we can determine the % of iron in steel. Engineer Sharariar use the above process to determine the amount of iron in 0.36gm sample of steel. For this purpose he needs 48.5 ml of 0.025M KMnO_4 solution.

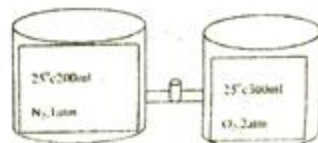
- What is redox reaction? 1
- Find out the oxidation no of central metal atom of KMnO_4 ? 2
- Balance the above reaction by ion electron method that occurs in titrating process? 3
- Why Engineer Sharariar use KMnO_4 solution to determine the amount of iron in sample of steel? How he calculates the amount of iron in above sample of steel-Analyze. 4

2. ►



- What is molar solution? 1
 - Express (B) solution in ppm unit? 2
 - Is it enough amount of H_2SO_4 present in (A) solution to reacts with 10gm Mg? Explain? 3
 - What will be the nature of solution (acidic or Basic) when (A) and (B) solution mix together? Give your argument. 4
3. ► (A) and (B) is the isomer of $\text{C}_3\text{H}_8\text{O}$. (A) reacts with metal to produce bubble of H_2 . (b) cannot from H_2 . (A)-give white ppt after 5-10 min when reacts with Lucas reagent and on oxidation it gives ketone.
- What is Lucas reagent? 1
 - Write the structures of possible isomer of $\text{C}_3\text{H}_8\text{O}$? 2
 - Can B compound be produce from alkyl halide? Explain? 3
 - Identify the A compound considering the above reaction. 4

4. ►



- Write down boyels law? 1
 - Why ethanol does not gives iodoform test? 2
 - Find out the total pressure of gas mixture, when crock is open? 3
 - In what conditions the gas of (A) pot will show line in graph as like ___ (i)? Give your evaluation. 4
5. ► Observe the following compound :
- $\text{H}_2\text{N}-\text{CH}_2-\text{COOH}$
 - $\text{H}_2\text{N}-\text{CH}(\text{CH}_3)-\text{COOH}$
 - $\text{H}_2\text{N}-(\text{CH}_2)_6-\text{NH}_2$
- Write down the IUPAC name of compound - (II) 1
 - What is glycoside bond? 2
 - Which of the above compounds will show optical isomer? Explain 3
 - Analyze the type of bond and also the type of polymerization reaction, when compound (iii) reacts with adipic acid. 4
6. ► A Zn rod is dipped into 1.0×10^{-5} M ZnSO_4 solution and copper rod is dipped into 0.1M CuSO_4 solution. These two rods are connected by a wire through a potentiometer. A salt bridge is used to connected the two solution. As a result a electrochemical cell is produce. At 25°C the reading of the potentiometers is 1.10V.
- What is electrode potential? 1
 - Represent the above electrochemical cell. 2
 - Write anode, cathode and overall cell reaction. 3
 - Calculate the cell emf. 4

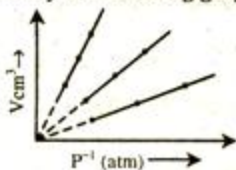
Subject : Chemistry 2nd Paper (MCQ)

Time: 35 Minutes

Full Marks — 35

[Darken the circle (O) with black ball point pen from the alternatives]

- Which one of the following is not an organic compound?
 (a) Vinegar (b) Calcium carbide
 (c) Petroleum (d) Wood
- The number of possible enantiomeric pairs that can be produced during monochlorination of 2-methyl butane is
 (a) 2 (b) 3
 (c) 4 (d) 1
- Baeyer's reagent is
 (a) Alkaline $KMnO_4$ solution
 (b) Acidified $KMnO_4$ solution
 (c) Neutral $KMnO_4$ solution
 (d) Aqueous solution of bromine
- The rate of diffusion of methane at a given temperature is twice that of a gas X. The molecular mass of X is—
 (a) 64 (b) 32
 (c) 4 (d) 8
- If the absolute temperature of a gas is doubled and the pressure is reduced to one-half, the volume of the gas will be—
 (a) remain unchanged
 (b) be doubled
 (c) increase four-fold
 (d) be reduced to $1/4^{th}$
- Which of the following gaseous law is followed by the following graph?



- Boyle's (b) Charle's
 (c) Gay Lussac
 (d) Dalton's partial pressure
- What is the critical temperature of Helium gas?
 (a) $-83.1^\circ C$ (b) $-240^\circ C$
 (c) $-268^\circ C$ (d) $-284^\circ C$
- CH_2O is empirical formula of
 i. Glucose ii. Fructose
 iii. Sucrose
 Which one of the following is correct?
 (a) i and ii (b) ii and iii
 (c) i and iii (d) i, ii and iii
- What is the oxidation number of iron in potassium ferrocyanide compound?
 (a) +1 (b) +3
 (c) +2 (d) +4
- $FeCl_2 + Cl_2 \rightarrow FeCl_3$; In this reaction—
 i. iron is oxidized
 ii. chloride of $FeCl_2$ is oxidized
 iii. chlorine is reduced
 Which one of the following is correct?
 (a) i (b) ii
 (c) iii (d) i and iii
- If half cell reaction $A + e^- \rightarrow A^-$ has a large negative reduction potential, it follows that—
 (a) A is readily reduced
 (b) A is readily oxidized
 (c) A^- is readily reduced
 (d) A^- is readily oxidized

- $Zn + Cu^{2+} \rightarrow Zn^{2+} + Cu$. What happens when the reaction proceeds forward.
 i. Zinc plate increases in weight
 ii. Zinc plate decreases in weight
 iii. Copper plate increases in weight
 Which one of the following is correct?
 (a) i and ii (b) ii and iii
 (c) i and iii (d) i, ii and iii
- Which of the following reagent is used as fuel in a Daniel cell?
 (a) Cu (b) Zn
 (c) $ZnSO_4$ (d) $CuSO_4$
- Which lungs disease is caused by sulphate compound?
 (a) Broncho asthma
 (b) Alveoli damage
 (c) Lungs damage
 (d) Black spot in lung
- The root mean square velocity of an ideal gas at constant pressure varies with the density (d) as
 (a) d^2 (b) d
 (c) \sqrt{d} (d) $\frac{1}{\sqrt{d}}$
- Pressure is
 (a) $\frac{M}{d}$ (b) $\frac{M}{V}$
 (c) $\frac{F}{A}$ (d) $\frac{r}{M}$
- At SATP, the volume of one mole gas is
 (a) 22.44 litre (b) 22.04 litre
 (c) 24.78 litre (d) 22.4 litre
- CH_3MgI is being treated with the formaldehyde and the products thus obtained is hydrolyzed yields
 (a) a primary alcohol
 (b) a secondary alcohol
 (c) acetaldehyde
 (d) a tertiary alcohol
- Phenol reacts with chloroform in alcoholic KOH medium to produce salicylaldehyde. The name of the reaction is
 (a) Rosenmund reduction
 (b) Reimer-Tiemann reaction
 (c) Fridal Craft reaction
 (d) Carbylamine reaction
- Protein on complete hydrolysis produces
 (a) nucleic acids (b) peptides
 (c) amino acids (d) lipid
 $X - NCl \rightarrow C_6H_5Cl + N_2$
 Answer the questions no 21 and 22 according to the given reaction.
- $X - N_2Cl$ reacts with water at $25^\circ C$ temperature what will be produced?
 i. Benzene ii. Phenol
 iii. Aniline
 Which one of the following is correct?
 (a) i (b) ii
 (c) iii (d) i, ii and iii
- The given reaction is an example of
 (a) Sandmeyer reaction
 (b) Gatterman reaction
 (c) Kolbe reaction
 (d) Coupling reaction

- What is the mass of an atom of nitrogen?
 (a) 2.0223×10^{23} (b) $2.032 \times 10^{23} g$
 (c) $2.032 \times 10^{-23} kg$ (d) $2.32 \times 10^{-23} g$
- How many gam of Na_2CO_3 required to produce 500 mL of 0.3 M solution?
 (a) 15.9 (b) 31.8
 (c) 18.8 (d) 53
- Read the stem carefully and answer the questions number 25 & 26.
 Kamal burnt some amount of lime stone and obtained 17 gm residue. A tomic mass of Ca = 40, Ca = 40, C = 12 and O = 16.
- What is the amount (in gm) of lime stone burnt?
 (a) 32.14 (b) 44.56
 (c) 30.36 (d) 30.26
- The properties of substance present in residue are
 i. aqueous solution of substance mixing with Chlorine produces bleaching powder
 ii. It always remains as pure state in nature
 iii. it is basic oxide
 Which one of the following is correct?
 (a) i and ii (b) ii and iii
 (c) i and iii (d) i, ii and iii
- Which of the following is not used to prepare coloured glass?
 (a) Cu_2O (b) FeO
 (c) NiO (d) MnO_2
- Which of the following terms is not related to nanoparticle?
 (a) semiconductor (b) quantum dot
 (c) fullerene (d) grapheme
- Which one is called deci molar solution?
 (a) 0.01M (b) 0.5M
 (c) 0.1M (d) 0.05M
- The solution whose concentration is known is called
 i. Molar solution ii. Standard solution
 iii. Molal solution
 Which one of the following is correct?
 (a) i and ii (b) ii and iii
 (c) i and iii (d) i, ii and iii
- What is the co-ordination number of Na^+ in $NaCl$ lattice?
 (a) 4 (b) 6
 (c) 8 (d) 10
- Correct order of boiling points of 1° , 2° and 3° alcohol is
 (a) $1^\circ > 2^\circ > 3^\circ$ (b) $3^\circ > 2^\circ > 1^\circ$
 (c) $2^\circ > 1^\circ > 3^\circ$ (d) $2^\circ > 3^\circ > 1^\circ$
- How many amino acids are involved in protein synthesis in living system.
 (a) 20 (b) 22
 (c) 10 (d) 8
- Which one is the oxidizing agent of $H_2S + Cl_2 = S + 2HCl$?
 (a) H_2S (b) Cl_2
 (c) S (d) HCl
- What is the value of electrode potential in dry cell?
 (a) 2.5V (b) 1.5V
 (c) 2.0V (d) 1.0V

1	(b)	2	(d)	3	(a)	4	(a)	5	(c)	6	(a)	7	(b)	8	(a)	9	(c)	10	(d)	11	(b)	12	(b)	13	(b)	14	(a)	15	(d)	16	(c)
17	(c)	18	(a)	19	(b)	20	(c)	21	(b)	22	(a)	23	(d)	24	(a)	25	(c)	26	(d)	27	(d)	28	(a)	29	(c)	30	(d)	31	(b)	32	(a)
33	(a)	34	(b)	35	(b)																										