WEEKLY EXAM 2080/06/07

Subject: Chemistry | **GRADE XII (SCIENCE)** | **F.M.: 40**

Time : 1:30 hrs. | **SET A** | **P.M.: 20**

Group A

Multiple choice questions: **[7×1 = 7]**

1. The rate constant of a reaction is 2.1×10^{-2} mol^{-2} L^2 min^{-1}. The order of the reaction is
   a) zero b) first c) second d) third

2. How much water should be evaporated from 400 ml of $\frac{N}{10}$ HCl to make it exactly 2N?
   a) 360mL b) 370mL c) 380mL d) 390mL

3. The unit of rate constant depends upon
   a) Number of reactant b) Concentration
   c) Order of reaction d) Molecularity

4. Alcohol vapour can be dehydrated by passing over heated
   a) Al_2O_3 b) CaO c) $CaCl_2$ d) $Ca(OH)_2$

5. Iodo form is formed when
   a) Acetone reacts with I_2 and alkali
   b) C_2H_4 reacts with I_2 in CCl_4
   c) Methyl alcohol reacts with alkaline hypo-iodite
   d) Formaldehyde reacts with alkali

6. Halo forms are trihalogen derivaties of
   a) Ethane b) Methane c) Propane d) Benzene

7. Bell metal is an alloy of
   a) Cu, Pb and Sn b) Sn and Cu
   c) Zn and Pb d) Zn, Cu and Sn

Group B

[5×5=25]

1. What is meant by acidimetry? A solution of conc. HCl contain 38% HCl by mass.
   i) What is the molarity of this solution if the density of solution is 1.19g/cc.
   ii) What volume of the conc. HCl is required to neutralize one litre of 0.1m NaOH solution? [1+2+2]

2. Distinguish between order and molecularity. Derive integrated rate law equation for zero order and also derive its half life period. [2+2+1]

3. An aliphatic halo alkane (A) gives compound (B) when heated with alc NaOH. The compound (B) reacts with HBr to give major product (C) on heating compound (C) with sodium in the presence of dryether yields 2, 3–dimethyl butane. What product will you expect when the compound (B) is subjected to ozonolysis? Compound A gives secondary alcohol with aq. NaOH. [5]

4. a) Identify X and Y in the following reaction. [2]

$$X \xrightarrow{Mg/\text{ ether}} Y \xrightarrow[(ii)\ H_2O/H+]{(i)\ CO_2} Z$$

Compound X gives butane when heated with Na in the presence of dry Ether.

b) Convert: i) Bromo ethane to ethyne [2]
ii) ethanol to methanol

5. The following data are given for the reaction $2x + y \rightarrow z$ [2+1+1+1]

Exp. No	[X] mol L^{-1}	[Y] mol L^{-1}	Initial rate mol L^{-1} S^{-1}
1	0.1	0.1	7×10^{-3}
2	0.3	0.2	8.4×10^{-2}
3	0.3	0.4	3.36×10^{-1}
4	0.4	0.1	2.8×10^{-2}

Calculate:

i) The order with respect to X and Y
ii) Rate constant
iii) Half life of reaction with respect to x
iv) Rate of formation of product when [X] = 0.6 mol L^{-1} and Y = 0.3 mol L^{-1}

Group C [1×8=8]

1. An alcohol (P) having molecular formula $C_4H_{10}O$ undergoes victor – Meyers test to give blue colour at the end of reaction when added KOH solution.

i) Draw structure formula and write IUPAC name of P. [1]
ii) Write down complete chemical reaction for the victor meyer test of P. [2]
iii) How would you prepare (P), starting form CH_3MgBr? [2]
iv) What product would you obtain when P is oxidized? [1]
v) Convert propan-1ol into propan-2-ol [2]

All the best