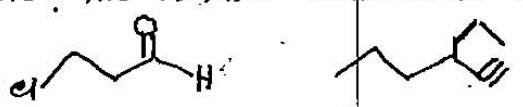


CLASS-XI
CHEMISTRY
[2014]

[1-7-1 marks
8-18-2 marks
19-20-3 marks
21-27-5 marks]

{ TIME-3hr
FM = 70

- ① How many moles of NaOH are contained in 27 ml of 0.15(M) NaOH?
- ② Heavy water is toxic in nature why?
- ③ Equilibrium is dynamic in nature comment
- ④ Draw the hybridized structure of acetylene
- ⑤ Arrange Mg, Al, Al^{3+} in increasing order of size
- ⑥ An electron is placed in 4f orbital, what possible values of quantum No n, l, m , and s can it have?
- ⑦ Write the IUPAC name of the following compound

- ⑧ If 10^{21} molecules are removed from 200 mg of CO_2 then how many moles of CO_2 are left?
- ⑨ The dipole moment of CO_2 is zero why?
- ⑩ Complete the following reaction $CH_3-CH=CH_2 + HCl \xrightarrow{\text{Peroxide}}$
- ⑪ Define, (a) common ion effect (b) Le-Chatelier's principle
- ⑫ (a) Li forms oxide, sodium forms peroxide while potassium forms superoxide
(b) Be exhibits some similarities with aluminium explain why
- ⑬ State Hund's rule of maximum multiplicity write the electronic configuration of an element with atomic no 57, and 41
- ⑭ Discuss Born-Haber's cycle for determination of lattice energy of NaCl.

- (15) Write equations for any two
 (i) Wurtz reaction (ii) Corey house synthesis (iii) Clemmensen's reduction
- (16) (i) State and explain M.O. theory
 (ii) Prove that O_2 is a paramagnetic substance
- (17) (i) State and explain law of mass action.
 (ii) Find out a relationship between K_p , K_c and K_x
- (18) (i) Define solubility and solubility product
 (ii) Define Buffer solⁿ. explain Buffer action with example.
- (19) (i) Write down the basic postulates of Kinetic theory of gases
 (ii) Prove that $PV = \frac{1}{3} mnc^2$
- (20) Explain (1) why ice floats in water.
 (2) why bond angle of H_2O is more than H_2S
 (3) Li^+ is the largest cation in the periodic table in aqueous medium
- (21) (i) Define normality and molarity
 (ii) A piece of aluminium weighing 2.7 gram is heated with 75.0 ml of sulphuric acid (sp gravity 1.18 containing 24.7% H_2SO_4 by weight) After the metal is carefully dissolved the solution is diluted to 400 ml. Calculate the molarity of the free H_2SO_4 in the resulting solution
- (22) (i) 1 mole of H_2 , 2 moles of I_2 and 3 moles of HI were taken in a 1 litre flask, If the value of K_c for the equation $H_2 + I_2 \rightleftharpoons 2HI$ is 50 at 440 what will be the concentration of each species at equilibrium.

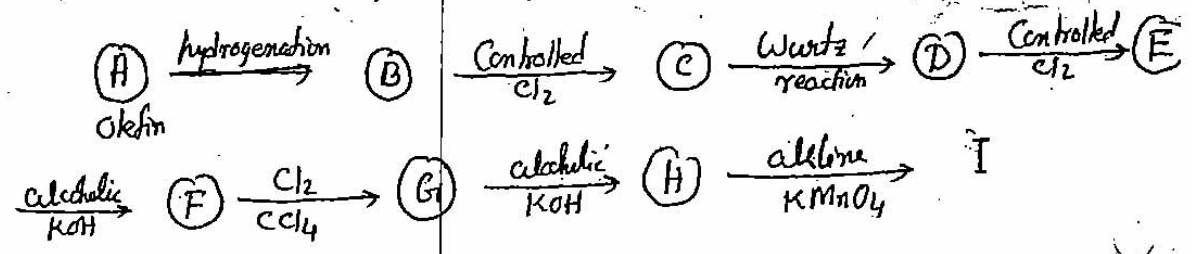
- 28) At 27°C and 1 atm N_2O_4 is 20% dissociated into NO_2 , find (a) K_p
 (b) the percent dissociation at 27°C and at a total pressure of 0.1 atm

- 29) ① Define hydrolysis of salt
 ② Find out the relationship of hydrolysis of salt of weak acid and strong base
 ③ What is the solubility of AgCl in 0.1(M) AgNO_3 solution? what is its solubility in a 0.1(M) NaCl solution K_{sp} of $[\text{AgCl}] = 1.8 \times 10^{-10}$

- 24) Solve the following conversion
 ① Acetylene to glycol
 ② Ethene to propene
 ③ Acetylene to isopropyl alcohol
 ④ Methyl bromide to acetic acid
 ⑤ 1-bromo propane to 2-bromo propane

OR

An olefin with two carbon atoms undergoes the following reaction complete the reaction and identify the compound from [A-I]

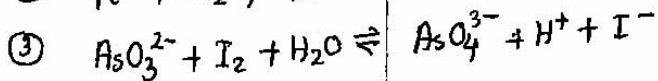
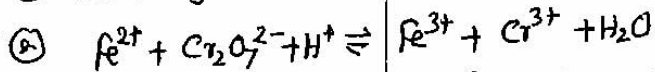
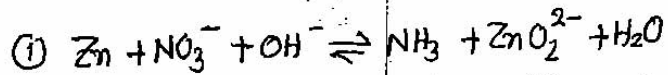


- 25) ① An alkyl halide X of formula $\text{C}_6\text{H}_{13}\text{Cl}$ on treatment with potassium tertiary butoxide, gives two isomeric alkene Y and Z C_6H_{12} both alkene on hydrogenation gives 2, 3-dimethyl butane predict the structure X, Y and Z

- ② How is mustard gas prepared?
 ③ Explain why alkynes are acidic in nature not alkanes and alkene.

(26) Write down the hybridized structure of the following compound
① Ethene ② H_2O ③ NH_3 ④ PCl_5 ⑤ XeF_2

(27) (a) Balance the following equation



(b) Define metallic bonding and Vanderwall's forces.

OR

① Give all the steps involved in the extraction of Na by Down's process

② The 1st I.E. of Carbon atom is greater than that of B where as the reverse is true for 2nd (I.E) explain.

③ Arrange the following elements in the increasing order of metallic character B, K, Al, Mg.