Model test paper –Chemistry

Class 12 **MM:70**

SEC A-Questions carrying one mark:

1)

i. The coordination number of Zn^{2+} and S^{2-} in crystal structure of wurtzite are:
(a) 4,4 (b) 6,6 (c) 8,4 (d) 8,8

ii. Choose the ideal solution from following:
(a) carbon disulphide and acetone (b) phenol and aniline (c) chloroform and acetone (d) ethyl iodide and ethyl bromide

iii. Two solution A and B are separated by animal membrane if solvent flows from A to B
(a) A is more concentrated than B (b) A is less concentrated then B
(c) Both A and B are of same concentration (d) both A and B get diluted.

iv. A plant cell shrinks when it is kept in a:
(a) Hypotonic solution (b) Hypertonic solution (c) Isotonic solution (d) Pure water

v. The amount of charge required to obtain one mole of aluminum from Al^{3+} is:
(a) 96500 C (b) 2x96500 C (c) 3x96500 C (d) 96500/2 C

vi. Oleum is:
(a) $H_2S_2O_7$ (b) $H_2S_2O_6$ (c) $H_4S_2O_7$ (d) $H_3S_2O_7$

vii. The correct order of thermal stability of hydrogen halides is:
(a) $H_2O<H_2S<H_2Se<H_2Te$ (b) $H_2O>H_2S>H_2Se>H_2Te$ (c) $H_2S>H_2O>H_2Te>H_2Se$ (d) $H_2Te<H_2S<H_2O<H_2Se$

viii. The shape of the complex $[Ag(NH_3)_2]^+$ is :
(a) octahedral (b) square planar (c) tetrahedral (d) linear

ix. Correct formula of tetracarbonyl nickel (0)is
(a) $K[Ni(CO)_4]$ (b) $Ni_2(CO)_4$ (C) $Ni(CO)_4$ (d) None of these

x. Which of the following will react with sodium hydroxide solution in water ?
(a) C_6H_5OH (b) $C_6H_5CH_2OH$ (c) $(CH_3)_3COH$ (d) C_2H_5OH

xi. Which of the following is most reactive towards nucleophilic addition reaction:
(a) CH_3COCH_3 (b)CH_3CHO (c) $CH_3COC_2H_5$ (d) HCHO

xii. Which is most acidic?
(a) CF_3COOH (b) CCl_3COOH (c) CBr_3COOH (d) CH_3COOH

xiii. Ketones give silver mirror test with Tollen's reagent. (T/F)

xiv. Amongst the following the strongest base in aqueous medium is:
(a) CH_3NH_2 (b) $NCCH_2NH_2$ (c) $(CH_3)_2NH$ (d) $C_6H_5NHCH_3$

xv. Catalytic reduction of carbylamines always gives primary amines. (T/F)

xvi. When a primary amine reacts with chloroform in ethanolic KOH then the product is:
(a) isocyanide (b) aldehyde (c) cyanide (d) alcohol.

xvii. Which of the following base is not present in DNA?
(a) adenine (b) thymine (c) cytosine (d) uracil.

xviii. Which of the following polymers is stored in the liver of animals?
(a) amylose (b) cellulose (c) glycogen (d) Amylopectin

xix. Keratin, Fibroin and Collagen are fibrous proteins. (T/F)

xx. Teflon is used to make non-stick utensils. (T/F)

xxi. Monomer unit of PVC is:
(a) vinyl chloride (b) ethylene (c) chloroprene (d) acrylonitrile.

xxii. Mifepristone is used as:
(a) Anti-microbial (b) Anti-malarial (c) Antifertility drug (d) Tranquilizer.

xxiii. Chloroquinine is used to cure typhoid. (T/F)

II) Comprehension:Read the passage and answer the following questions.

Lyophilic sols are more stable than lyophobic sols.This is due to the fact that lyophilic colloids are extensively solvated,i.e.colloidal particles are covered by a sheath of liquid in which they are dispersed.

Lyophilic colloids have a unique property of protecting lyophobic colloids.When a lyophilic sol is added to the lyophobic sol ,the lyophilic particles form a layer around lyophobic particles and thus protect the latter from electrolytes.lyophilic colloids used for this purpose are called protective colloids.

Answer the following questions:

1) which type of colloids are stable in nature?
2) Define lyophilic colloids
3) Which type of colloids undergo solvation?
4) What are protective colloids?

5) How protection of colloids can be done?

SEC-B:two mark questions

2.) An element having BCC geometry has atomic mass 60 gram per mol. Calculate density of unit cell if its edge length is 300 pm

OR

A solid has NaCl structure. If the radius of cation A is 100 pm what is the radius of anion B.

3) Differentiate between Schottky defect and Frenkel defect.

4) Molal elevation constant for benzene is 2.52 K/m. A solution of some organic substance in benzene boils at 0.126 degree Celsius higher than benzene. What is the molality of solution?

OR

A solution of glycerol $C_3H_8O_3$ in water was prepared by dissolving some glycerol in 500 g of water. This solution has B.P. of 100.42 degree Celsius while pure water boils at 100 degree Celsius. What mass of glycerol was dissolved to make the solution?

5). Rate equation for a reaction is given as $R=k[A]^0[B]^0$. Find the order of the reaction and how will its rate be affected when concentration of A is doubled?

OR

Identify the order of reaction from the following rate constants.(i)$k=2.3*10^{-5}\ L\ mol^{-1}\ s^{-1}$ (ii)$k=3*10^{-4} s^{-1}$

6.) Explain Mond's process for refining of nickel.

7.) Draw the structure of XeO_3

8.) Why do transition elements form coloured complexes?

9). Give IUPAC name of $K[Ag(CN)_2]$.

10.) Out of aldehydes and ketones which is more reactive towards nucleophilic addition reaction and why?

OR

Arrange $HClO$, $HClO_2$, $HClO_3$, $HClO_4$ in decreasing order of acidic character and give reason to support your answer.

11) Give preparation of Nylon 6,6.

SEC –C: 3 mark questions

12). Calculate EMF of the following cell at 25 degree Celsius:

$Fe|Fe^{2+}(0.001M)\ ||H^+(0.01M)|H_2(g)(1bar)|Pt$;std.reduction potential of iron is -0.44V

OR

Calculate Λ^0_m for acetic acid if $\Lambda^0_m(HCl) = 426\ S\ cm^2\ mol^{-1}$, $\Lambda^0_m(NaCl) = 126\ S\ cm^2\ mol^{-1}$ and $\Lambda^0_m(CH_3COONa) = 91\ S\ cm^2\ mol^{-1}$

13)(a). Draw structure of H_3PO_3 and give its basicity.

(b). Arrange hydrides of group 16 in decreasing order of boiling point

14) (a) Why phenol is more acidic than alcohol?

(b) Explain Reimer Tiemann reaction .

OR

How will you distinguish between 1º, 2º and 3º alcohols on the basis of Victor Meyer's test?

15) A first order reaction is 20% complete in 10 minutes. Calculate time required for 75% completion of the reaction.

SEC –D :5 mark questions

16)(a) Out of Cu^+ and Cu^{2+} which is coloured and why?

(b) Why do transition metals exhibit variable oxidation States

OR

(a)Give preparation of potassium dichromate.

(b) Explain lanthanide contraction.

17) Explain the following name reactions:

(a) Fittig reaction (b) Swart's reaction (c) friedal craft acylation (d) diazotization reaction (e) Hunsdiecker reaction.

OR

(a) Compare the reactivity of alkyl halides with aryl halides.
(b) Briefly explain SN_2 reaction.

Answers and hints:

(i) a (ii) d (iii) b (iv) b (v) c (vi) a (vii) b (viii) d (ix) c (x) a
(xi) d (xii) a (xiii) F (xiv) c (xv) F (xvi) a (xvii) d (xviii) c
(xix) T (xx) T (xxi) a (xxii) c (xxiii) F

Ans.2 Z =2 (BCC); a=300pm=$3*10^{-10}$ cm=$3*10^{-8}$ cm
Density=ZM/a^3 N =$2*60/(3*10^{-8})*(6.02*10^{23})$=7.38gcm^{-3}

Ans.3 r^+/r^-= (0.414-0.732) for NaCl So , r^- = 100/0.414-0.732 =241.54-136.61

Ans.4 $T_b=K_b*m$,m=$\Delta T_b/m$ = 0.126/2.52=0.05mol/Kg
Ans.13 $E^0_{cell} = E^0_{cell} -0.059/2 \log [Fe^{2+}]/[H^+]^2$

$E^0_{cell} = E_R - E_L$

=0-(-0.044) = 0.44V

0.44-0.059/2 log[0.001]/[0.01]^2

0.44-0.059/2log10

0.44-0.0295=0.4105V

Ans.14.$CH_3COOH = CH_3COONa + HCl - NaCl$

91+426-126=391 S cm^2 mol^{-1}