KK12C

Kanniyakumari District

Common First Revision Test - January 2024

12202

Standard 12

CHEMISTRY

Time: 3.00 Hours Marks: 70

Part - I

I) **Answer all the questions** 15×1=15

II) **Choose the most suitable answer from the given four alternatives**

1) Wolframite Ore is separated from tin stone by the process
   a) Smelting b) Calcination
   c) Roasting d) Electromagnetic separation

2) Which one of the alkychlorosilane on hydrolysis yields to a very complex cross linked polymer
   a) $RSiCl_3$ b) R_2SiCl_2 c) R_3SiCl d) None of these

3) Boiling point order of Hydrogen halide is
   a) HF < HCl < HBr < HI b) HCl < HI < HF < HBo
   c) HCl < HBr < HI < HF d) HI < HBr < HCl < HF

4) Hydro formylation of propene in the presence of $Co_2(CO)_8$ given
   a) Butan-1-al b) 2 methyl propan-1-al
   c) Ethanal d) Both a and b

5) Which one of the following is not correct?
   a) $La(OH)_3$ is less basic than $Lu(OH)_3$
   b) In Lanthanoid Series ionic radius of Ln^{3+} ion decreases
   c) La is actually an element of transition metal series rather than Lanthanoide series
   d) Atomic radii of Zr and Hf are same because of Lanthanoid contraction

6) Fac. mer Isomerism is shown by
   a) $[Co(en)_3]^{3+}$ b) $[Co(NH)_3]_4\ Cl_2]^+$
   c) $[Co(NH_3)_3\ Cl_3]$. d) $[Co(NH_3)_5Cl]SO_4$

7) If 'a' stands for the edge length of the cubic system. SC, bcc and fcc. Then the ratio of radii of spheres in these systems will be respectively
   a) $\left(\frac{1}{2}a : \frac{\sqrt{3}}{2}a : \frac{\sqrt{2}a}{2}\right)$ b) $\left(\sqrt{1}a : \sqrt{3}a : \sqrt{2}a\right)$
   c) $\left(\frac{1}{2}a : \frac{\sqrt{3}}{4}a : \frac{1}{2\sqrt{2}}a\right)$ d) $\left(\frac{1}{2}a : \sqrt{3}a : \frac{1}{\sqrt{2}}a\right)$

8) The rate law for a reaction of A, B and L has been found to be rate = $K[A]^2[B][L]^{1/2}$. How would the rate of reaction change when concentration of [A] is reduced to $\left(\frac{1}{3}\right)$ and concentration of [L] is quadrupled is
   a) increased by 8 times b) reduced to 8 times
   c) increased by 8/9 times d) reduced to 8/9 times

9) Which of the following fluro compounds is most likely to behave as a lewis base?
   a) BF_3 b) PF_3 c) CF_4 d) SiF_4

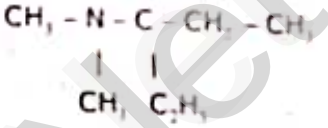
10) Among the following which one is used in pacemakers.
   a) Leclanche cell b) Mercury button cell
   c) Lithium -ion battery cell d) Fuel cell

11) **Assertion:** Coagulation power of Al^{3+} is more than Na^{+}
Reason: greater the valency of the flocculating ion added greater is its power to cause precipitation
a) If both assertion and reason are true and reason is the correct explanation of assertion
b) If both assertion and reason are true and reason is not the correct explanation of assertion
c) assertion is true but reason is false
d) Both assertion and reason are false

12) On reacting with neutral ferric chloride phenol gives
a) red colour
b) violet colour
c) dark green colour
d) no colouration

13) In the following reaction, $HC \equiv CH \xrightarrow[HgSO_4]{H_2SO_4} x$ product x will not give
a) Tollen's test
b) Victormeyer test
c) Iodoform test
d) Fehlings Solution test

14) IUPAC name for the amine



a) 3 - Bimethylamino - 3. Methyl pentane
b) 3 - (N, N, - Tri ethyl - 3 - amino pentane
c) 3 - (N, N-Trimethyl) - pentane
d) 3-(N, N-Dimethylamino)-3-Menthyl pentane

15) Aspirin is a/an
a) AcetylSalicylic acid
b) Benzoyl Salicylic acid
c) Chloro benzoic acid
d) Anthranilic acid

Part - II

Answer any 6 questions. Q.No. 24 is compulsory **6×2=12**

16) How is potash alum prepared?
17) What are interstitial compounds?
18) Define unit cell.
19) Write the pH of the following Substance
a) Vinegar b) Baking Soda c) Sea water d) Black coffee
20) what is meant by electro. Osmosis
21) In an octahedral crystal, draw the figure to show splitting of d-orbitals
22) Give the uses of diethyl ether
23) How do antiseptics differ from disinfectants?
24) Identify compounds A,B, in the following sequence of reactions.

$$CH_3 - CH_2Br + AgCN \xrightarrow[\Delta]{C_2H_5OH} A \xrightarrow[[H]]{Na(Hg)/C_2H_5OH} B$$

Part - III

Answer any 6 questions. Q.No. 30 is compulsory **6×3=18**

25) Give the limitations of Ellingham diagram
26) Draw the structures of the following compounds
a) Thiosulphuric acid
b) Marshall's acid
c) Hypophosphoric acid
27) Give three uses of Silicones
28) Derive an expression for Nernst equation.
29) Write Arrhenius equation and explains the terms involved.

30) Calcualte the pH of the buffer solution containing 0.20 mole per litre sodium acetate and 0.18 mole per litre acetic acid. Ka for acetic is 1.8×10^{-5} [Given log 1.8 = 0.26, log 9=9.5]

31) 1 mole of HI is allowed to react with [t-butyl methyl ether] 2 - Methoxy - 2 - Methyl - propane. Identify the product and write down the Mechanism of the reaction.

32) Complete the following

a) $CH_3 - CH_2 - CH_2OH \xrightarrow{PCC}$

b) $CH_3 - CH = CH - COH \xrightarrow[ii)H_2O]{i)LiAlH_4}$

c) $CH_3 - CH = CH - CH_2 - CH_2 - CN \xrightarrow{DIBAL-H}$

33) Write a note on Vulcanization of rubber

Part - IV

5×5=25

Answer all the questions

34) a) i) Describe a method for refining NicKel. (3)

ii) Write about liquation process. (2)

(OR)

b) i) Explain the manufacture of Chlorine by Deacon's process. (3)

ii) How does $AlCl_3$ prepared by McAffe process. (2)

35) a) i) Explain why Cr^{2+} is strongly reducing while Mn^{3+} is strongly Oxidising

ii) Write the Oxidation state, Co.ordination number and nature of ligand for the complex $K_4[Mn(CN)_6]$ (3)

(OR)

b) i) State: Ostwald dilution law (2)

ii) Calculate the percentage efficiency of packing in case of body centered cubic crystal (3)

36) a) i) Is it possible to store copper sulphate in an iron vessel for a longtime (3m)

Given: $E^\circ Cu^{2+}/cu = 0.34$ v and $E^\circ Fe^{2+}/Fe = -0.44$v

ii) Peptising agent is added to convert precipitate into colloidal solution. Explain with an example. (2)

(OR)

b) i) 0.1M copper Sulphate solution in which copper electrode is dipped at 25°C. Calculate the electrode potential of copper. (Give $E^\circ Cu^{2+}/cu = 0.34$ v (3)

ii) Identify the conjugate acid base pair for the following reaction in aqueous solution.

a) $HS^-_{(aq)} + HF \rightleftharpoons F^-_{(aq)} + H_2S_{(aq)}$

b) $NH_4^+ + CO_3^{2-} \rightleftharpoons NH_3 + HCO_3^-$

37) a) Explain intermediate compound formation theroy of Catalysis with an exmaple. (5)

(OR)

b) What are the functions of lipids in living organism. (5)

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38) a) What happens acetic acid with
i) P_2O_5 ii) P_4/Cl_2 iii) Red P at 473 K

(OR)

b) Write note on
i) Nef. Carbonyl Synthesis
ii) Mendius reaction
iii) Thorpe nitrile condensation

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