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CHEMISTRY

Mock paper 1

Part A

I Answer all the questions. **10x1=10**

1) Sprinkling of salt help in clearing the snow covered roads in hilly areas. What is the phenomenon involved in the process?
2) What does the van't Hoff factor 'i' for a solute in solvent account for?
3) What complex is formed in Leclanche cell?
4) The rate constant for a reaction is $1.2x10^{-2}\ s^{-1}$.what is the order of the reaction?

5) Mention the role of silica during the extraction of copper from copper pyrites.

6) What is emulsifying agent ?

7) Complete the following equation : $XeF_2 + PF_5 \rightarrow$

8) What happens to the boiling point of isomeric haloalkanes with increase in branching?

9) Mention the hybridized state of carboxyl carbon atom.

10) Which vitamins deficiency causes scurvy ?

Part B

II Answer any five of the following. **5x2=10**

11) What types of stoichiometric defect is shown by

a) ZnS b) AgBr

12)State Kohlrausch law of independent migration of ions

13) For a reactions A $\rightarrow$ B, the rate of reaction increases by 27 times when the concentration of A is increased 3 times. What is the order of the reaction?

14) Give reasons: a) Cu^{+2} is paramagnetic while Zn^{+2} is diamagnetic.

b) Element Cerium (Ce) exhibits +4 oxidation state.

15) Explain Kolbe's reaction for the formation of Salicylic acid.

16) What is the role of following chemicals in food

a) Saccharin

b) Sodium benzoate

17) Explain Clemmson's reduction with an equation.

18) Explain Saponification of fats with equation.

PART-C

III Answer any five of the following. 5x3=15

19) Draw the neat labeled diagram for the extraction of aluminium from purified alumina. Write the overall reaction that takes place in the cell? What is the role of cryolite in the above process?

20) Describe the manufacture of ammonia by Haber's process.

21) a) Explain with reaction the amphoteric nature of Al_2O_3 .

b) complete the following reaction : $5SO_2 + 2MnO_4^- + 2H_2O \rightarrow$ (2+1)

22) a) How is Cl_2 prepared by Deacons process ?

b) Write the structure of chlorous acid . (2+1)

23) How is $KMnO_4$ manufactured by pyrolusite ore?

24) a) Compare the chemistry of actinoids with that of lanthanoids with reference to electronic configuration and oxidation states.

b) Name the member of of lanthanoid series which is well known to exhibit +4 oxidation state. (2+1)

25) With the help of VBT account for hybridisation,geometry and magnetic property of $[CoF_6]^{3-}$ (At no of Co = 27).

26) Give the IUPAC name of $[CoCl_2(NH_3)_4]Cl$. Draw the cis & trans isomer of $[CoCl_2(NH_3)_4]^+$ ion.

PART- D4

IV. Answer any three of the following. 3x5=15

27) a) A compound AB crystallizes in FCC lattice in which A occupies each corner of the cube & B occupies centre of each face of the cube.What is the formula of the compound?

b) What are p- type & n- type semiconductors?

c) What is anisotropy? (2+2+1)

28) a) Vapour pressure of pure benzene is 0.850 bar, 0.5 g of non volatile solute is added to 39.0 g of benzene (molar mass 78 g/mol). Vapour pressure of solution is 0.845 bar. What is the molar mass of solid?

b) Give any three differences between ideal & non ideal solution. (2 +3)

29) a) Write the anode and cathode equations that take place in lead storage battery.

b) Explain the mechanism of electrolysis of fused NaCl.

c) Mention the name of battery used in hearing aid. (2+2+1)

30) a) The rate of reaction increases four times when temperature of the reaction raises from 340 K to 360 K.Calculate the E_a of the reaction.(R= 8.314 J/mol/K).

b) Draw the graph of potential energy Vs reaction coordinate to show the effect of catalyst on activation energy. (3+2)

31) a) write a note on cleansing action of soap.

b) Explain the mechanism of enzyme catalysis.

c) Mention any two application of colloids. (2+2+1)

PART-D5

V. Answer any four of the following. 4x5=20

32) a) Mention the major products formed in the following reactions.

i) 2-bromo pentane

ii) $C_2H_5Br + KNO_2 \rightarrow$

iii) $C_2H_5Cl + [H]$

b) Name the gas liberated when chloroform is slowly oxidized by air in the presence of light.

c) Give one use of CCl_4. (3+1+1)

33) a) Explain the mechanism of acid catalysed dehydration of ehanol into ethene.

b) A carbonyl compound with the formula C_2H_4O reacts with CH_3MgBr followed by hydrolysis to form' A' which when treated with 85% H_3PO_4 at 440 K gives 'B' & water. Identify 'A' and 'B'. (3+2)

34) a) write the equations for

i) Gattermann-Koch reaction to convert benzene to benzaldehyde.

ii)The formation of oxime from carbonyl compounds.

Iii) The reaction between carboxylic acid and PCl_5.

b)Explain the mechanism of addition of HCN to ketones. (3+2)

35)a) How is benzenediazonium chloride prepared from aniline?

b)Write the IUPAC name of : i) $CH_3\text{-}N(C_2H_5)\text{-}CH_3$

ii) Give the structure of p-bromo aniline.

c) Methylamine is soluble in water but not in aniline. Give reason. (2+2+1)

36) a) How do you account for the presence of 1^0 alcoholic group, aldehydic group and hydroxyl group in glucose?

b) what is denaturation of protein? Give example. (3+2)

37) a) Write the structure of monomers of each of the following.

i) Nylon-6,6 ii) Bakelite

b) What is biodegradable synthetic polymer? Give an example.

c) What are thermosetting polymers? (2+2+1)