**Class – XII**

**Subject –** **CHEMISTRY**

MM : 70 Time: 3 hours

***General Instructions*** *–*

1. ***All questions are compulsory.***
2. ***Marks for each question are indicated against it.***
3. ***Questions number 1 to 8 are very short answer questions and carry 1 mark each.***
4. ***Questions number 9 to 18 are short answer questions and carry 2 marks each.***
5. ***Questions number 19 to 27 are also short answer questions and carry 3 marks each.***
6. ***Questions number 28 to 30 are long answer questions and carry 5 marks each.***
7. ***Use Log tables, if necessary. Use of calculator is not allowed****.*

1. What is Glycosidic linkage ? [1]

2. Write the structure of 2-Methylcyclohexanone. [1]

3. Why is Zinc not considered to be a Transition element though it is present in the First [1]

 series of Transition elements ?

 4. Give the IUPAC name of [Co(NH3)4(H2O)2]Cl3 [1] 5. Why do Transition metals form Complex compounds ? [1]

6. What are Reducing sugars ? [1]

7. What is Homogeneous catalysis ? [1]

8. Why does the conductivity of a solution decrease with dilution ? [1]

9. Silver crystallizes in fcc lattice. If the edge length of the cell is 4.077 x10-8 cm and density [2]

 is 10.5 g cm-3,calculate the atomic mass of silver.

10. i) Ionic solids conduct electricity in molten state but not in solid state.Why ? [2]

 ii) Give one difference between Frenkel defect and Schottky defect.

11. Zinc/Silver cell is used in hearing aids and electric watches : [2]

 Zn -----🡪 Zn2+ + 2 e- , E0 = -0.76 V

 Ag2O + H2O + 2e- --🡪 2Ag + 2 OH- , E0 = 0.344 V

 i)Which are the oxidized and reduced species in the above cell ?

 ii) Find E0 of the cell and ΔrG0 in joules.

12. Define conductivity and Molar conductivity for the solution of an electrolyte. Discuss their [2]

 Variation with concentration.

 13. Explain why [Co(NH3)6]3+ is an inner orbital complex while [Ni(NH3)6]2+ is an outer orbital [2]

 complex..

 **OR**

 What is Crystal field splitting energy ? How does the magnitude of Δo decide the actual

 configuration of d orbitals in a coordination entity ?

 .

14. i) State Raoult’s law for a binary solution containing volatile components. [2]

 ii) What is the effect of the addition of non volatile solute on the vapour pressure of pure liquid ?

 15. i) Why do primary Amines have higher boiling point than tertiary amines ? [2]

 ii) Why are aliphatic amines stronger bases than aromatic amines ?

16. State reasons : [2]

 i) Ethylamine is soluble in water whereas Aniline is not.

 ii) Aromatic primary amines cannot be prepared by Gabriel phthalimide synthesis.

 **OR**

 What happens when :

 i) Aniline reacts with bromine water at room temperature .

 ii) Aniline is treated with Sodium nitrite and dilute Hydrochloric acid at 273 K.

 17. Bring about the following conversions : [2]

i) Phenol to Salicyaldehyde.

ii) Ethanal to Pentan-2-ol.

 18. Explain the following : [2]

 i) Boiling point of Ethanol is higher than that of Methoxymethane.

 ii) Mixture of o-nitrophenol and p- nitrophenol can be separated easily.

 \*19. Anees went for mountaineering.He had to carry an oxygen cylinder and cope with breathing [3]

 problem.Decreased pressure decreases the solubility of gases in blood.

1. What do the mountaineers experience when they reach the top ? Why ?
2. Name and State the law which is related to the above observation.

 20. a) Draw the structures of following molecules : i) H2S2O7 ii) XeF4 [3]

 b) Why do Noble gases have very low boiling points ?

 21. State reasons for the following : [3]

 i) The third Ionisation enthalpy of Mn is exceptionally high.

 ii) Cu+ is colourless but Cu2+ is coloured.

 iii) Among transition metals,the highest oxidation state is exhibited in Oxoanions of a metal.

 22. Describe the principle involved in each of the following processes of metallurgy : [3]

 i) Froth floatation method

 ii) Zone refining of metals

 iii) Mond’s process

23. Complete the following reactions : [3]

 i) CH3CH=C(CH3)2 + HBr -------🡪

 ii) CH3CH2CH2OH + SOCl2 -----------🡪

 iii) CH3CH2Br + Mg ---------🡪

24. i)What are Essential and Non-essential Amino acids ? [3]

 ii) Name the four bases of DNA and RNA.

 25. i) What are Antibiotics ? Give examples. [3]

 ii)What are Artificial sweetening agents ?

 iii)Give one difference between Antiseptic and Disinfectant.

 26. i) Differentiate between Copolymer and Homopolymer with example. [2+1]

 ii) What is the significance of 6,6 in Nylon-6,6 ?

27. Account for the following : [3]

 i) Most of the medicines are colloidal in nature.

 ii) Sky appears blue in colour .

 iii) Gas mask is used for breathing in coal mines.

28. a) The thermal decomposition of HCOOH is a first order reaction with a rate constant of 2.4 x10-3 s-1 [3+2]

 at a certain temperature.Calculate how long will it take for three-fourths of initial quantity of

 HCOOH to decompose.

 b) Explain the following terms :

 i) Rate of a reaction.

 ii) Activation energy of a reaction.

 **OR**

a)The half life for radioactive decay of 14C is 5730 years.An archeological artifact containing wood had only 80% of the 14C found in a living tree. Estimate the age of the sample.

 b) Explain the following terms :

 i) Order of a reaction.

 ii) Molecularity of a reaction.

 29. a) Give simple chemical tests to distinguish between the following pairs of compounds - [2+3]

 i) Propanal and Propanone ii) Acetophenone and Benzaldehyde

 b) An Organic compound ‘A’ (Molecular formula C8H8O) neither reduces Tollens or Fehlings reagent nor

 does it decolourise Bromine water.On drastic oxidation with Chromic acid , it gives a carboxylic acid ‘B’

 having formula C7H6O2. ’C’. Organic compound ‘A’ gives yellow precipitate ‘C’ on heating with Iodine

 in the presence of Sodium hydroxide.Identify A ,B & C and write all the reactions involved .

**OR**

 a) Illustrate the following name reactions –

 i) Canizzaro reaction ii) HVZ reaction

 b) How will convert the following :

 i) Benzoic acid to Benzamide

 ii) Phenol to Benzoic acid

 iii) Methy chloride to Methoxymethane

 30. a) Complete the following reactions :- [2+3]

 i) C+ H2SO4 (conc.)--------------🡪

 ii)Cu + HNO3 (conc.)------------🡪

 b) Account for the following :

 i) H3PO2 is a stronger reducing agent than H3PO3.

 ii) HF has highest boiling point while HCl has lowest boiling point among hydrogen halides.

 iii) Interhalogen compounds are more reactive than halogens from which they are formed.

 **OR**

 a)What happens when :

 i) Chlorine is passed through a hot concentrated solution of NaOH.

 ii) Ammonium nitrate is heated.

 b) Explain the following observations :

 i) PCl3 fumes in moist air.

 ii) N2 is a gas while P4 is a solid.

 iii) All Halogens are coloured.

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