Chemistry Assignment-1

Class-XII

1. Write the formulae and commercial names of the ores of the following metals:

   a) Mercury b) Zinc c) Copper

2. Explain the following terms:

   a) Bends

   b) Ferromagnetic substances

   c) Peptization

   d) Autoreduction

   e) Zeta potential

   f) Ambidient nucleophile

3. Write the balanced chemical equation(s)to show that rusting of iron is envisaged as an electrochemical process.

4. Differentiate between :

   a) Macromolecular and Multimolecular colloids.

   b) Roasting and Calcination.

   c) Ideal and Non –ideal solutions.

   d) P-type and n-type semiconductors.

5. A first order reaction takes 40 minutes for 30% decomposition. Calculate its half life period.

6. Describe the metallurgical process of extraction of Aluminium from its ore.

7. Elaborate and explain:

   a) Mond's process

   b) Fuel cells

   c) Reverse osmosis

   d) Pseudo –unimolecular reactions

   e) Metal deficient defects.

f) Ultra filtration

8. Calculate the cell potential of the given cell;

   $Mg/Mg^{2+}(0.01M)$ // Cu^{2+} (0.001M)/Cu .

   Given ; E^0(cell) = 3.05V

9. The rate of reaction quadruples when the temperature changes from 293K to 313K. Calculate the energy of activation of the reaction assuming that it does not change with temperature.

10. A solution of an aqueous $CuSO_4$ is electrolysed between platinum electrodes using a current of 5 Amperes for 20 minutes. What is the mass of product formed at cathode? Write the reaction taking place at cathode .

11. A 5% solution (by mass) of cane sugar in water has freezing point of 271 K. Calculate the freezing point of a 5% glucose in water if freezing point of pure water is 273.15K.

12. Convert the following:

    a) Acetaldehyde to Acetamide.

    b) Benzene to phenol

    c) Benzoic acid to aniline

    d) Benzyl alcohol to phenyl ethanoic acid.

    e) Aniline to p-nitro aniline

    f) But-1-ene to But-2-ene

13. Write the mechanism of acid catalysed dehydration of alcohols.

14. Write the mechanism of heterogenous catalysis.

15. Explain giving Chemical equation:

    a) Rosenmund's reduction

    b) Clemmenson's reduction

    c) Aldol Condensation

    d) Finkelstein reaction

    e) Kolbe's reaction

    f) Wurtz reaction

16. Give reasons for the following

    a) During nucleophilic addition reaction of carbonyls with ammonia derivatives pH is maintained between 3 to 4.

    b) Benzene sulphanillic acid has high solubility in water.

    c) Allylic halides have greater reactivity for SN1 mechanism

    d) Chloroform is stored under dark colour bottles

    e) T- butyl ether is prepared using williamson's synthesis as a special case

    f) Aniline does not undergo friedel-craft reaction

17. Complete the following and write the IUPAC name of the major product formed

    a) $CH_3CH_2CH_2OCH_3$ + HI ----------→

    b) CH_3CH_2COOH + C_6H_5OH ----------→

    c) $C_6H_5NH_2$ + HNO_2 + HCl ----------→

    d) $CH_3CH{=}CH_2$ + H_2O ----------$^{H+}$→

18. Distinguish between:

    a) Phenol and ethanol

    b) Acetaldehyde and benzaldehyde

    c) Aniline and N- methyl aniline

    d) Propanone and propanal

19. Write two uses of;

    a) Carbon tetra Chloride

    b) Ethanol

    c) Methanal

20. What are alloys? Write the constituents of following alloys and write two uses each :

    a) Solder

    b) Brass

    c) Steel

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