CHEMISTRY

BOOKS - KALYANI CHEMISTRY (ENGLISH)

SELF ASSESSMENT PAPER 03

Questions

1. Fill in the blanks by choosing the appropriate word/words from those given in the brakets:

(ethanol, He, low, diethyl ether, 96500 C,

6.023×10^{23} electrons, 6, octahedral, Kr, high,

alkyl)

Valence bond theory helps in determining the

_____and ___of the complex.

2. Fill in the blanks by choosing the appropriate

word/words from those given in the brakets:

(ethanol, He, low, diethyl ether, 96500 C,

6.023×10^{23} electrons, 6, octahedral, Kr, high,

alkyl)

____gas is used in ___temperature gas thermometers.

3. Fill in the blanks by choosing the appropriate word/words from those given in the brakets:

(ethanol, He, low, diethyl ether, 96500 C, 6.023×10^{23} electrons, 6, octahedral, Kr, high, alkyl)

According to Faraday.s Law, one gram equivalent of ion is liberated by _____.

4. Fill in the blanks by choosing the appropriate word/words from those given in the brakets:

(ethanol, He, low, diethyl ether, 96500 C, 6.023×10^{23} electrons, 6, octahedral, Kr, high, alkyl)

The percentage of unocuupied spaces in bcc and fcc arrangements are ___and____respectively.

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5. Reaction of which among the following ethers with HI in cold leads to the formation of methyl alcohol ?

    A. ethyl methyl ether

    B. methyl propyl ether

    C. isopropyl methyl ether

    D. tert-butyl methyl ether

Answer:

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6. Toluene react with a halogen in the presence of iron (III) chloride giving ortho andpara halo compounds. The reactions is

A. Electrophilic elimination reaction

B. Electrophilic substitution reaction

C. Free radical addition reaction

D. Nucleophilic substitution reaction

Answer:

7. A mineral is called an ore if:

    A. the metal present in the mineral is costly

    B. a metal cannot be extracted from it

    C. a metal can be profitably extracted from it

    D. None of these

Answer:

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8. The solubility of a gas varies directly with pressure of the gas is based upon :

1) Raoult's Law

2) Henry's law

3) Nernst's Distribution law

4) None of these

    A. Raoult.s law

    B. Henry. law

    C. Nernst.s Distribution law

    D. None of these

Answer:

9. Match the following

(i) Acetophenone-mol L^{-1}

(ii) Coagulation-Starch

(iii) Rate of reaction-Due to the neutralization of

charge

(iv) Carbohydrate-Positive iodoform test

10. Arrange the following in an incrasing order of absic strength in water :

$C_6H_5NH_2, (C_2H_5)NH, (C_2H_5)N$ and NH_3

(ii) Arrange the following in increasing order of baisc strength is gas phase:

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11. What is the electronic cofiguration of charomium atom (z= 24) Give reason for your answer.

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12. What type of isomersism is exhibited by the following pairs opf compound $[Cr(SCN)(H_2O)_5]^{2+}$ and $[Cr(NCS)(H_2O)_5]^{2+}$

13. A 10% solution of sucrose (molar mass 342) is isotonic with 1.754% solution of urea. Calculate the molecular mass of urea.

14. What will be the effect of temperature on rate constant ?

15. Which one of the following is a food preservative : equanil, morphine, sodium benzoate ?

(ii) Write the therapeutic action of Aspirin on human body and mention the class of drugs to which each of these belong :

16. For the reaction $R \rightarrow P$, the concentration of a reactant changes from 0.03M to 0.02M in 25 minutes. Calculate the average rate of reaction using units of time both in minutes and seconds.

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17. What will be the major product obtained when 2-bromobutane reacts with alcoholic potassium hydroxide ? State the type of reaction involved in it.

18. Write the structures of the three compounds which have the same molecular formula of C_4H_8O but have different functional groups.

19. Explain why :

(i) Glucose is soluble in water but cyclohexane is not.

(ii) Aldehyde group is absent in the pentaacetate of D-glucose.
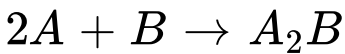
20. Conversion of Acetaldehyde into isopropyl alcohol

21. Give one chemical test each to distinguish between the following pairs of compounds :

Propanal and Propanone.

22. For the reaction:

$$2A + B \rightarrow A_2B$$

the rate $= k[A][B]^2$ with k $= 2.0 \times 10^{-6} mol^{-2}L^2s^{-1}$. Calculate the initial rate of the reaction when $[A] = 0.1 mol L^{-1}$, $[b] = 0.2 mol L^{-1}$. Calculate the rate of reaction after [A] is reduced to $0.06 mol L^{-1}$

23. 18 g glucose, $C_6H_{12}O_6$ (Molar Mass = 180 g mol^{-1}) is dessolved in 1 kg of water in a sauce pan. At what temperature will this solution boil ? K_b for water $= 0.52 K kg mol^{-1}$, boiling point of pure water =373.15 K)

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24. What is a semiconductor ? Describe the two main types of semiconductors.

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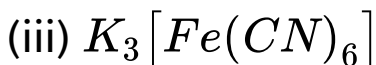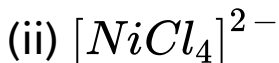**25.** Write the key characteristics of catalytic reactions.

26. A decinormal solution of solution chloride exerts an osmotic pressure of 4.82 atmospheres at $27°C$. Calculate the degree of dissociation of sodium chloride.

27. Write the IUPAC name of the following :

(i) $[Co(NH_3)_6]Cl_3$

(ii) $[NiCl_4]^{2-}$

(iii) $K_3[Fe(CN)_6]$

28. Give balanced equation for the following reactions:

(i) Potassium permanganate is heated with concentrated hydrochloric acid.

(ii) Potassium dichromate is treated with

acidified ferrous sulphate solution.

(iii) Hydrogen peroxide is treated with acidified $KMnO_4$ solution.

29. An organic compound [A] having molecular formula C_2H_7N on treatment with nitrous acid gives a compound [B] having molecular formula C_2H_6O.[B] on treatment with an organic compound (C) gives a carboxylic acid [D] and a sweet smelling compound (E). Oxidation of [B] with acidified potassium dichromate also gives

[D].

Identify [A], [B], [C], [D] and [E].

30. In a given transition series, there is no signifiecant change in the atomic radii of elements with increse in atomc number. Explain why.

31. What are depressants ? How would you separate zinc sulphide (ZnS) and lead sulphide (PbS) ores ?

32. Define the following terms,

(a) Ideal solution.

(b) Azeotrope.

(c) Osmotic pressure.

(ii) A solution of glucose $(C_6H_{12}O_6)$ in water is labelled as 10% by weight what would be the

molality of the solution ? (Molar mass of glucose=180 g mol^{-1})

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33. A current of 4A is passed through a molten solution for 45 min. 2.977 g of metal is deposited. Calculate the charge carried by the metal cation if its atomic mass is 106.4 g/mol.

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34. Give balanced equation for the reaction :

(i) Phosphorous reacts with conc. Sulphuric acid.

(ii) Ozone is treated with potassium iodide solution. Give balanced equation.

(iii) Sulphuric acid is treated with hydrogen sulphide.

(iv) Ozone reacts with lead sulphide.

(v) Chlorine is passed through hot concentrated NaOH solution.

35. (A) Explain why-

(i) Though nitrogen exhibit +5 oxidation state, it does not form pentahalides.

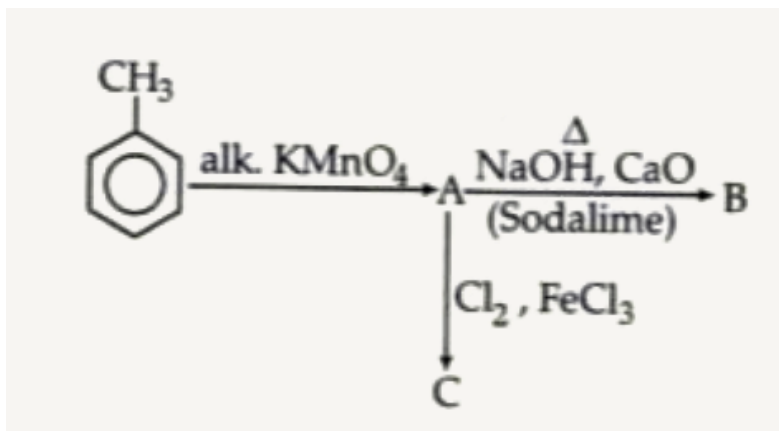(ii) Interhalogen compounds are more reactive than their constituent elements.

(iii) The boiling of HF is very high ?

(B) Draw the structure of the molecule and state its geometry.

36. (i) Identity the products A,B and C:

CH$_3$

alk. KMnO$_4$ → A $\xrightarrow[\text{(Sodalime)}]{\Delta \text{ NaOH, CaO}}$ B
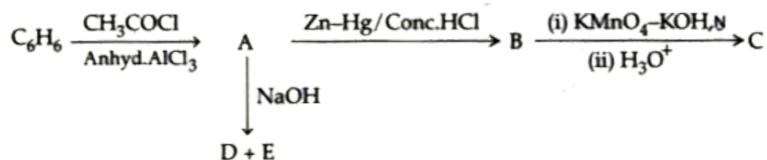
Cl$_2$, FeCl$_3$

↓

C

(ii) Starting with Grignard.s reagent, how will you prepare propanoic acid ?

(iii) Give balanced equation for the following name reaction : Kolbe.s electrolytic reaction.

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37. (A) Write the structures of A,B,C,D and E in the following reactions,

$$C_6H_6 \xrightarrow[\text{Anhyd.AlCl}_3]{\text{CH}_3\text{COCl}} A \xrightarrow{\text{Zn–Hg/Conc.HCl}} B \xrightarrow[\text{(ii) H}_3\text{O}^+]{\text{(i) KMnO}_4\text{–KOH},\triangle} C$$

A $\downarrow$ NaOH

D + E

(B) Give balanced equation for the following name reaction : Rosenmund reaction.