RAMMANI MULTIPLE CAMPUS

Class 12 Chemistry FM: 75

Attempt all the questions

Group B: Short answer questions: (8*5)

1. Standard solution of Na_2CO_3 is used to determine the strength of H_2SO_4 during titration.

a) Which indicator is used to detect the completion of reaction? Is the solution prepared from Na_2CO_3 primary standard? Why? [1+1]

b) 5.3 g of pure Na_2CO_3 is added to 400 ml of deci-normal solution of H_2SO_4. How many grams of H_2SO_4 is further required to neutralize the resultant solution completely?

OR

In the first order reaction rate of reaction depends upon only one concentration term.

a) Derive integrated rate law equation for the first order reaction. [3]

b) The half-life period of first order reaction is 3 hours. Find the timer required to complete 87.5% of the reaction. [2]

2. From Hess' law it was concluded that, we can add or subtract the chemical reactions algebraically whose enthalpy values are known in order to obtain the desired reaction.

a) State Hess' law of heat summation [1]

b) Enthalpy of formation of benzene, water and carbon dioxide are 55, -395 and -285 $kjmol^{-1}$ respectively. Calculate the enthalpy of combustion of benzene. [4]

3. Transition elements occupy the position between highly electropositive s-block and electronegative p-block elemets.

a) They are also called d-block elements, why?[1]

b) They show variable oxidation state, why?[1]

c) Most of the compounds of transition metals are colored, Explain with the help of CFT. [3]

4. Starting from Zinc blende, how would you obtain pure Zinc? Explain with well-labeled diagram.

5. An aromatic compound **A** on reduction gives parent hydrocarbon **B**. **B** on nitration gives **C**. **C** on reduction in acidic solution gives **D**, which on coupling with diazonium salt gives p-aminoazobenzene. Identify **A, B, C** and **D** writing related reactions. Compound **A** is soluble in NaOH but insoluble in $NaHCO_3$, why? [4+1]

6. A primary alkyl halide **'P'** on reaction with aqueous solution of KOH gives compound **'Q'** which on catalytic dehydrogenation in presence of Cu gives compound 'R'. The compound **'R'** reacts with Fehling's solution to give the compound **'S'** which on reaction with PCl_3 gives acetyl chloride. Identify **P, Q, R** and **S**. Among **'Q'** and **'S'** which one is more acidic and why? [4+1]

OR

Aniline is an aromatic amine which which is colorless oily liquid with unpleasant smell.

a) Write any two methods of preparation of aniline. [2]

b) Compare its basic strength with aliphatic amine. [2]

c) What happens when it is treated with nitrous acid at 0 to 5^0C? [1]

7. Vinegar is the dilute solution of acetic acid.

a) Convert acetic acid into butane [2]

b) How can you identify formic acid from acetic acid? Give at least one test. [2]

c) Why formic acid differs from other monocarboxylic acid? [1]

8. Cement industry has great potential in Nepal, as there is large deposits of limestone.

a) Write flow sheet diagram of Portland cement production. [3]

Differentiate between OPC and PPC cement. [2]

Group C: Long answer questions (3*8)

9. a) Explain the application of solubility product principle and common ion effect in qualitative analysis.

b) What mass of NaOH should be dissolved in 1L of solution to prepare solution having $P^H=12$ at 25^0 C?

OR

a) The standard electrode potential for the following electrode reaction at standard state is given.

$Cu(s) \rightarrow Cu^{++}(aq) + 2e^- \ldots\ldots E^0\ Cu^{++}/Cu = +0.34V$

$Ag^+(aq) + e^- \rightarrow Ag(s) \ldots\ldots E^0\ Ag^+/Ag = +0.80V$

i. Write the cell notation indicating anode and cathode. (1)

ii. With 1M solution of ion at 25^0 C and 1atm. pressure, what will be the cell potential? (1)

ii. Calculate the free energy change in the reaction. (1)

iv. Can we store AgNO3 solution in a copper vessel? (1)

b) $KMnO_4$ is oxidizing agent having variable equivalent mass.

i. Calculate the equivalent mass of $KMnO_4$ in acidic and alkaline medium (2)

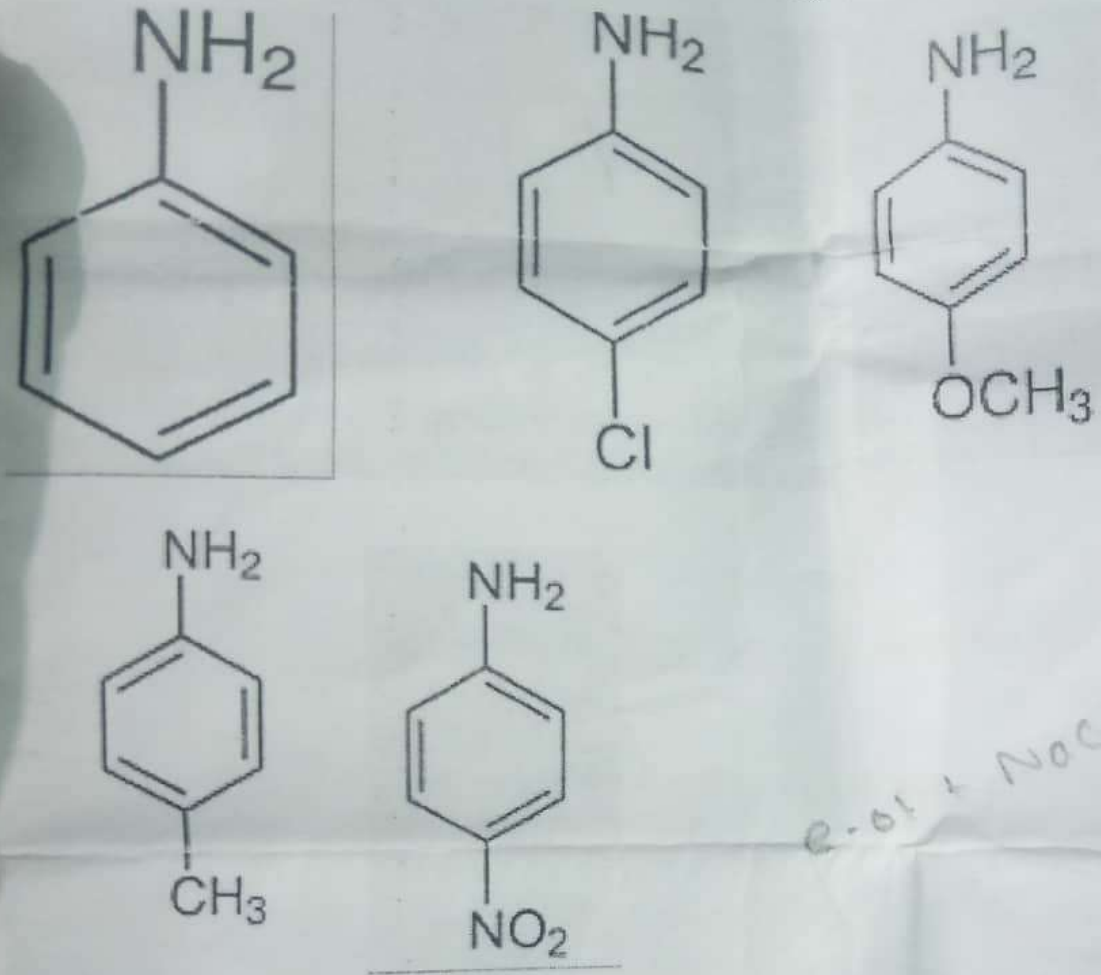
ii. What is primary standard solution?. What are essential characteristic of primary standard solution? [1+2]

10. a) Give two reactions to distinguish between acetaldehyde and ketone. [2]

b) Write isomers of C_4H_8O with their IUPAC names. Which one of them gives iodoform test? [3]

c) Convert acetaldehyde to acetic acid and then acetic acid to formic acid [3]

11. a)Arrange the following compounds in the decreasing order of their basic nature and explain the proposed order.(5)



b) Convert ethylchloride into ethanoic acid. (3)

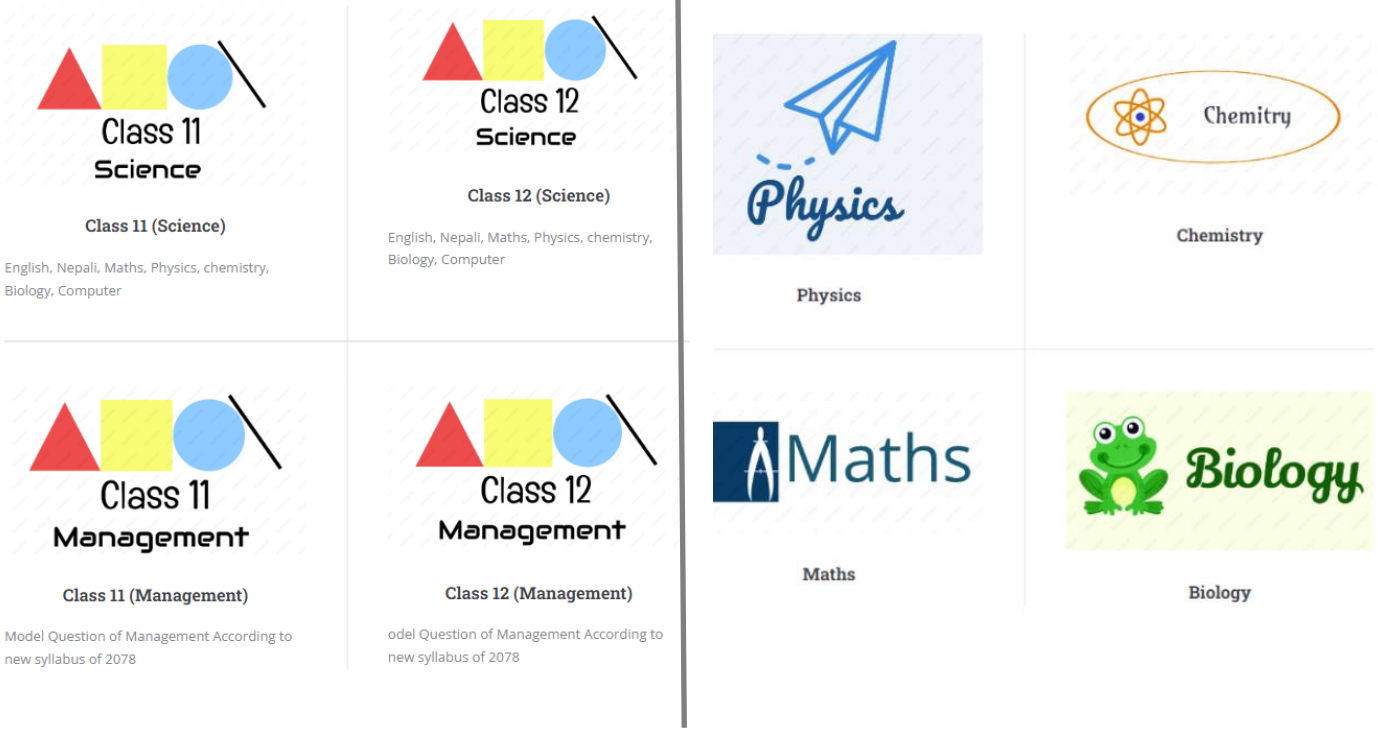
OR

a) Primary alcohol with molecular wt. 46 is boiled with sodium hydroxide and iodine. When the same alcohol is heated with ethanoic acid in presence of conc. H_2SO_4, one of the derivatives of carboxylic acid is obtained. Write the reactions involved in both conditions. What would be the product obtained when the same alcohol is heated with conc.H_2SO_4? How would you distinguish the above alcohol from methanol? [1+1+1+1+1=5]

b) How would you identify primary secondary and tertiary alcohol by Victor's Mayer method? (3)

BIPO's notes

Class 12 complete notes and paper collection and solutions.



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