2

Group A: Multiple Choice Questions

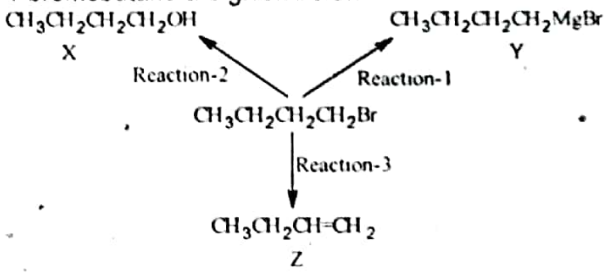
Tick the correct answer. **[11×1=11]**

1. 10 mL of 10M H_2SO_4 is diluted to 250 mL, the strength of the diluted solution is
   a. 0.80 N b. 0.40 N
   c. 1.0 N c. 0.60 N
2. What will be the pH of the solution obtained by mixing 100 c.c. of $\frac{N}{10}$ HCl and 100 c.c. of $\frac{N}{10}$ KOH ?
   a. 0 b. 7
   c. 4 d. 14
3. The rate of a gaseous reaction is given by k[A][B]. If the volume of vessel containing these gases is reduced to 1/4th of initial volume, the rate of reaction relative to the original rate would be
   a. $\frac{16}{1}$ b. $\frac{1}{16}$
   c. $\frac{4}{1}$ d. $\frac{1}{8}$
4. Transition metals are generally coloured because
   a. they absorb electromagnetic radiations
   b. their penultimate d-sub shells are fully filled
   c. of d-d transition
   d. of their high density
5. What happens when lead storage battery is discharged?
   a. SO_2 is evolved b. $PbSO_4$ is consumed
   c. Lead is formed d. H_2SO_4 is consumed
6. Which product is formed when nitrobenzene is reduced electrolytically?
   a. Azobenzene b. Azoxybenzene
   c. Hydrazobenzene d. p-aminophenol
7. Which grade of cement is generally used for construction work?
   a. 33 grade b. 53 grade
   c. 22 grade d. 73 grade
8. .....is the mixture of pulp, filler and other papermaking materials.
   a. PCC b. Fillers
   c. Stock d. Dyes
9. Zinc metal is extracted from the ore.....
   a. Cinnabar b. Argentite
   c. Copper pyrites d. Calamine
10. Which type of radiation is the least penetrating?
    a. alpha b. beta
    c. gamma d. X-ray
11. Which of the following compounds does not give a tertiary alcohol upon reaction with methyl magnesium bromide?
    a. 3-methylpentanal
    b. ethyl benzoate
    c. 4,4-dimethylcyclohexane
    d. 4-heptanone

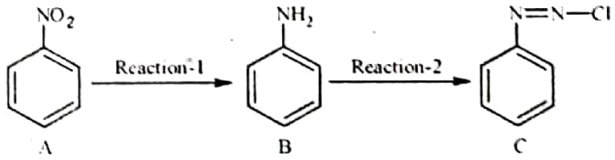
Group B: Short Answer Questions

Attempt all the questions. **[8×5=40]**

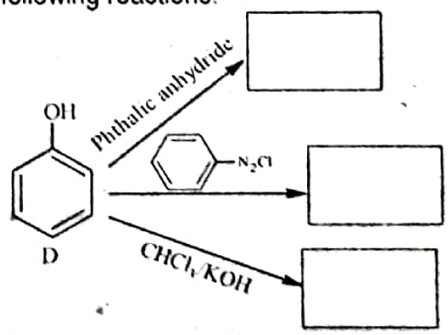
1. Haloalkanes have many chemical uses, particularly as intermediate in organic reactions. Three reaction of 1-bromobutane are given below. [1+1+1]



   a. For each of the reaction, state the reagent and solvent used. [3]
   b. What happens when compound Z on ozonolysis? [1]
   c. Write one use of compound Y. [1]
2. This question is concerned with organonitrogen compounds State the reagent needed to produce the two compounds A and B.



   i. What is the reagent for reaction-1 and reaction-2? [2]
   ii. Write the product when compound C is hydrolyzed? [1]
   iii. What product would you get when compound A is reduced with $LiAlH_4$? [1]
   iv. Convert compound B into p-aminoazobenzene. [1]
3. a. Draw the structural formula of the organic product of the following reactions. [3]



   b. How can you prepare methoxybenzene from phenol? [2]
4. This question is related to the organic compound containing hydroxyl as functional group.
   i. Write a reaction which distinguish primary alcohol from secondary alcohol. [2]
   ii. Write the isomer of alcohol having molecular formula C_3H_8O which gives positive iodoform test. [2]

iii. How can you prepare ethanol from cane sugar? Write a reaction only. [1]

OR

i. Write the functional isomer of C_3H_6O which gives positive Tollen's test. [2]

ii. Write the name of one derivatives of carboxylic acid which gives methanamine by heating with Br_2 and KOH. [2]

iii. Write one example of organic compound which gives aldol condensation reaction. [1]

5. a. Define addition and condensation polymer with example. [2]

b. Write one example of azo dye and antibiotics. [1]

c. Write two difference between PPC and OPC. [1]

d. What do you mean by insecticide? Draw the structure of DDT. [1]

6. This question is about iron and iron compounds.

a. Name the main ore of iron. [1]

b. Write the reaction which are involved in blast furnace for the extraction of iron. [3]

c. How can you prevent rusting of iron? [1]

OR

The metal 'M' has an ore 'X' which on calcination gives balck ppt of metal oxide 'Y'. This metal oxide belongs to Group II of basic radical in salt analysis. The metal ore 'X' on roasting gives metal 'M' with the evolution of a gas. The gas when passed through acidified solution of $K_2Cr_2O_7$, turns green.

a. Identify the metal ore. [1]

b. Write a reaction involving in the calcination of ore. [1]

c. Write the action of gas on acidified solution of $K_2Cr_2O_7$. [1]

d. Convert metal 'M' into its vitriol. [2]

7. a. How is normality differed from molarity? [1]

b. Write two difference between acid-base titration and redox titration. [2]

c. 0.715 gram of $Na_2CO_3.xH_2O$ required 20 mL of seminormal HCl solution for complete reaction. Find the value of x. [2]

8. a. How does surface area and concentration of reactants affect the rate of chemical reaction? [2]

b. The experimental data for the reaction $2A+B_2 \longrightarrow 2AB$ are as below.

Exp.	[A] mol L^{-1}	[B] mol L^{-1}	Rate mol $L^{-1}s^{-1}$
1	0.50	0.50	1.6×10^{-4}
2	0.50	1.00	3.2×10^{-4}
3	1.00	1.00	3.2×10^{-4}

i. Find the overall reaction and rate constant. [1]

ii. Calculate the rate of formation of AB when the initial concentration of A and B are 2 mol L^{-1} and 4 mol L^{-1} respectively. [2]

Group C: Long Answer Questions **[3×8=24]**

9. a. For a cell:

$Mg(s)/Mg^{++}(1M)//Cu^{++}(1M)/Cu(s)$

$E^{\circ}_{Mg^{++}/Mg} = -2.37V$ and $E^{\circ}_{Cu^{++}/Cu} = +0.34V$

i. Indicate anode and cathode. [1]

ii. Write the reaction taking place at electrode [1]

iii. Calculate the EMF at 1M solution of its ion. [1]

b. State Ostwald's dilution law and mention its limitation. [2]

c. What mass of KOH should be dissolved in 1 L of solution to prepare a solution having pH 12 at 25°C? [3]

OR

a. What will be the resultant pH when 200 mL of aqueous solution of HCl (pH=2) is mixed with 300 mL of an aqueous solution of NaOH (pH =12) [4]

b. Define degree of ionization. [1]

10. a. An aliphatic compound (A) react with $SOCl_2$ to give (B).The compound (B) on dehydrohalogenation yield (C). The compound (C) on ozonolysis gives a mixture of ethanal and methanal. If the compound (A) is an alcohol and gives positive iodoform test. Wtite the IUPAC name of A,B,C. [3]

b. What product would you expect when benzaldehyde is heated with NaOH solution? [2]

c. Write one example of coupling reaction. [1]

d. How can you separate 1° amine from 2° amine? Write a reaction only. [2]

OR

a. What happens when propanone is treated with PCl_5? [1]

b. What is major product when benzaldeyde is heated with NaOH? Write the name of reaction. [2]

c. Complete the following reaction. [2]

$$CH_3CHO \xrightarrow{HCN} A \xrightarrow{H_2O/H^+} B$$

d. Formic acid gives positive Tollen's test but acetic acid does not, why? Give reason with suitable reaction. [2]

e. What is the major product when acetic acid heated with P_2O_5? [1]

11. An organic compound (X) which is used as preservative of biological specimen and also used to prepare urinary anticeptic.

a. Write the name and formula of compound (X). [2]

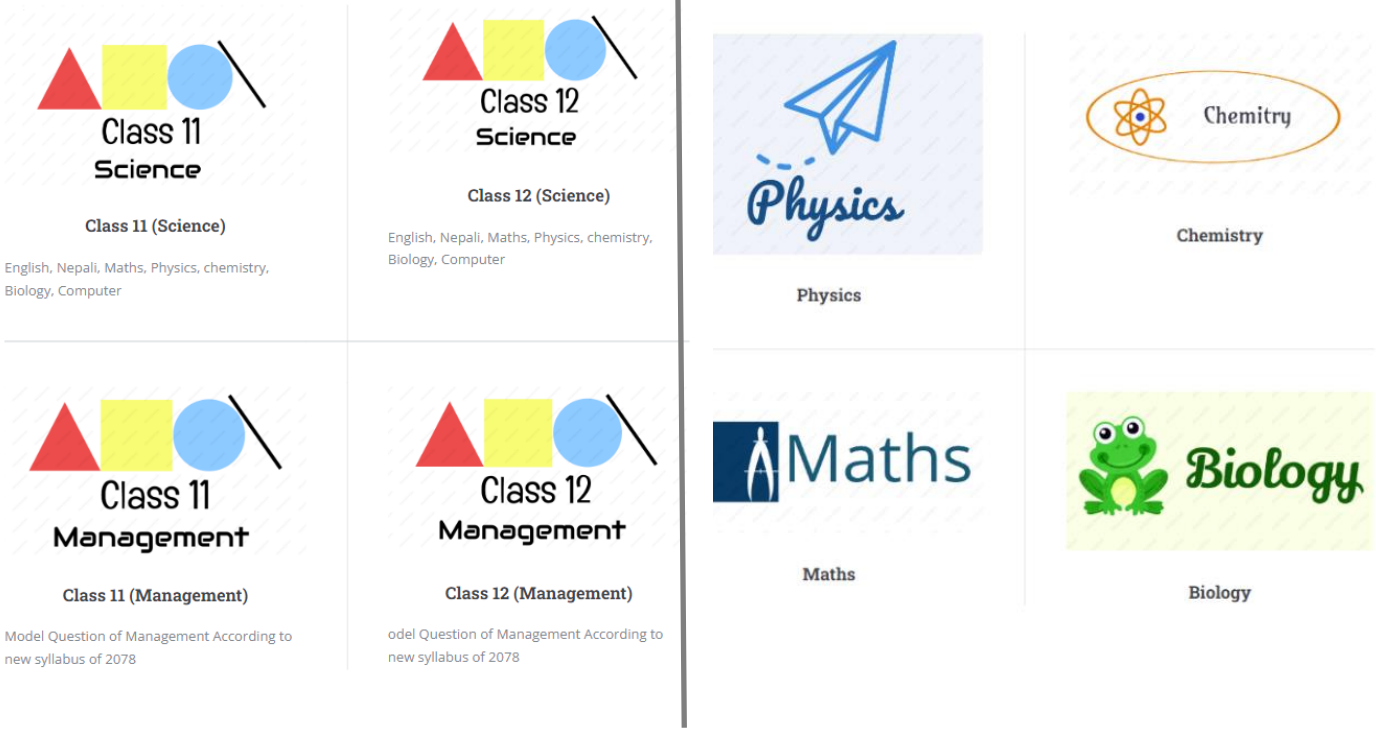
b. What product would you expect when the compound (X) is heated with concentrated NaOH solution? [2]

c. A polymer is obtained by heating (X) with phenol in acidic medium, write the structure of polymer. [2]

d. What happens when compound (X) is treated with Grignard reagent followed by hydrolysis? [2]

BIPO's notes

Class 12 complete notes and paper collection and solutions.



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