MODEL QUESTION PAPER
CHEMISTRY

Time: 1.30 hours Total score : 40 Marks

Instructions

- First 15 minutes is cool off time
- Read all questions carefully
- questions with scores 1,2,3 & 4 are categorised separately
- Five questions are given in each category. Answer any 4 questions from each category.
- Answer each questions by keeping time.

Answer any four questions from 1 to 5. 1 score each (4x1=4)

1. Find the wrong electronic configurations from the following and correct them

   a) $1s^2\ 2s^2\ 2p^3$ B) $1s^2\ 2s^2\ 2p^6\ 3s^2$ C) $1s^2\ 2s^2\ 2p^4\ 3s^1$

2. Find the number of water molecules in 18 g of water.

3. The method used to separate magnetic impurities from tinstore.....

4. Which of the following is an oxidation reaction?

   $Zn \rightarrow Zn^{2+} + 2\bar{e}$

   $Zn^{2+} + 2e \rightarrow Zn$

5. PVC is a polymer used the preparation of pipes. What is the name of its monomer?

Answer any four questions from 6 to 10 2 score each (4x2=8)

6. Names of some alloy steels are given in the box.

Alnico	Stainless Steel	Nichrom

7. Find the number of mole atoms in the following samples and arrange them in the incresing order of number of atoms.

   (hint : atomic mass : H = 1, Ca = 40)

   a) 10 g Hydrogen b) 100 g Calcium

8. See the question given

   $CH_3\text{-}COOH + CH_3\text{-}OH \rightarrow A + H_2O$

   a) Write the formula of A and complete the equation

   b) To which category of compounds does A belong?

9. The structure of a compound is $CH_3\text{-}CH{=}CH_2\text{-}CH_3$

a) To which category of hydrocarbon does this compounds belong?
(Alkane, Alkene, Alkyne)
b) Give the IUPAC name of the compound

10. The subshell electrone configuration of an element is
$1s^2\ 2s^2\ 2p^6\ 3s^2\ 3d^3\ 4s^2$
a) What is the atomic number of this elements?
b) To which group do this element belong?

Answer any four questions from 11 to 15 3 score each (4x3=12)

11. Metals Mg, Zn, Fe and Cu of same size are taken in foru test tubes. Same amount of dil: HCl is added to them.
a) Which metal reacts vigorously with dilute acid?
b) Which gas is formed by the reaction of metals with dil : HCl acid?
c) Which of these metals can displace Zn from $ZnSO_4$ solution?

12. Complete the table. (Hint : atomic mass : He = 4, N = 14, O = 16)

Substance	Molecular mass	Amount taken (g)	Volume L	Number
N_2	28	(a)	22.4	(b)
Cl_2	71	(c)	(d)	$10 \times 6.00 \times 10^{23}$
O_2	(e)	160	(f)	$5 \times 6.022 \times 10^{23}$

13. a) Write examples for a pair of position isomers from the following compounds.

1. $CH_3\text{-}O\text{-}CH_2\text{-}CH_3$
2. $CH_3\text{-}O\text{-}CH_3$
3. $CH_3\text{-}CH_2\text{-}CH_2\text{-}OH$
4. $CH_3\text{-}\underset{\displaystyle OH}{\underset{|}{C}}H\text{-}CH_3$

b) Write the IUPAC name of the compound 4.
c) Select a functional isomer of this compound from the give.

14. Some metals and solution are given in the box

$MgSO_4$ solution	$AgNO_3$ solution		$CuSO_4$ solution
KCl solution	Pb rod	Mg rod	Cu rod

a) Select from the box the materials needed to construct a galvanic cell.
b) Which is the anode of the cell constructed?
c) Write the equation of the reaction taking place at the cathod of the cell.

15. A few drops of Conc. H_2SO_4 are added to a little sugar crystals taken in a watch glass
    a) What will be the observation?
    b) Analyse the equation and explain the reason

$$C_{12}H_{22}O_{11} \xrightarrow{\text{Con, } H_2SO4} 12C + 11H_2O$$

    c) Which property of sulphuric acid is exhibited here?

Answer any four questions from 16 to 20 4 score each (4x3=16)

16. The electrolysis of molten NaCl is done in an electrolytic cell.
    a) Write is the product obtained at the cathod?
    b) Write the chemical equation of the reaction taking place at the cathode.
    c) If an equation solution of NaCl is electrolysed insted of molten NaCl, what products will be obtained at the anode and cathode?

17. Match Suitably

	Reactants	Products	Name of the Reaction
1.	CH_3-CH_3-Cl_2	CH_3=CH_2+CH_4	Addition Reaction
2.	$2CH_3$-CH_3+$7O_2$	CH_3- CH_3	Substitution Reaction
3.	CH_2=CH_2+H_2	$4CO_2$+ $6H_2O$	Thermal cracking
4.	CH_3-CH_2-CH_3	CH_3- CH_2- Cl+HCl	Combustion

18. A glass rod dipped in con HCl is shown in a gas jar filled with ammonia.
    a) Write the observation
    b) Sulphuric acid is not used to dry the ammonia gas. Why?
    c) A System at equilibrium is given.

$$N_{2\ (g)} + 3H_{2\ (g} \rightleftharpoons 2NH_{3\ (g} + \text{heat}$$

19. The main chain of hydrocarbon is given

    C - C - C - C

    a) Complete the structurel formula.
    b) Write the IUPAC name of this compound.
    c) Write the IUPAC name of the compound obtained by adding a-COOH group in the first carbon atom of this compound.

20. Analyse the given subshell electronic configuration and answer the question

    A-$1s^2\ 2s^2\ 2p^6$
    B-$1s^2\ 2s^2\ 2p^6\ 3s^2 3p^4$
    C-$1s^2\ 2s^2\ 2p^6\ 3s^2 3p^6\ 3d^6 4s^2$
    D-$1s^2\ 2s^2\ 2p^6\ 3s^2$

    a) Which among these elements shows -2 oxidation number?
    b) Which is the element that does not take part in chemical reaction?
    c) Which element shows different oxidation states?
    d) Which among the given elements shows the lowest ionisation energy?