

### General Instructions :-

The question paper is divided into **Four** section.

1. **Section-A** : Q.No. 1 contains **Seven multiple choice** type of questions carrying **One mark** each.  
Q.No.2 contains **Seven very short answer** type of questions carrying **One mark** each.
2. **Section-B** : Q.No. 3 to Q.No. 13 contains **Eleven short answer - I** type of questions carrying **two marks** each.
3. **Section-C** : Q.No.14 to Q.No.19 are contains **Six short answer - II** type of questions carrying **Three marks** each.
4. **Section-D** : Q.No.20 to Q.No.23 contains **Four long answer** type of questions carrying **Four mark** each.
5. Use of logarithmic table is allowed. Use of calculator is not allowed.
6. Figures to the right indicate full marks.
7. For each MCQ, correct answer must be written along with its alphabet.  
e.g (a) ..... / (b) ..... / (c) ..... / (d) .....  
Only first attempt will be considered for evaluation.
8. Physical constants:
  - i) At. wt. H = 1, N = 14, S = 32,

### Section - A

**Q.1** Select and write the correct answer.

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- i) The maximum number of electrons in a given subshell is given by\_\_\_\_\_
- a)  $2(2l + 1)$                                       b)  $2l + 1$
- c)  $2(2l - 1)$                                       d)  $(n - 1)$
- ii) Which of the following compound has highest boiling point.
- a) n-pentane                                          b) Iso-butane
- c) Butane                                              d) neo - pentane
- iii) Which of the following compounds can demonstrate law of multiple proportion?
- a)  $\text{Na}_2\text{S}$ ,  $\text{NaF}$                                       b)  $\text{CuSO}_4$ ,  $\text{FeSO}_4$
- c)  $\text{NaCl}$ ,  $\text{NaBr}$                                       d)  $\text{CO}$ ,  $\text{CO}_2$
- iv) 7 gram of  $\text{N}_2$  reacts with 3 gram of  $\text{H}_2$  as per the reaction  $\text{N}_{2(\text{g})} + 3\text{H}_{2(\text{g})} \longrightarrow 2\text{NH}_{3(\text{g})}$ .  
The limiting reagent in this reaction is \_\_\_\_\_
- a)  $\text{N}_2$                                                       b)  $\text{NH}_3$
- c)  $\text{H}_2$                                                       d) Both  $\text{N}_2$  &  $\text{H}_2$
- v) Which of the following compound is an example of alkyne.
- a)  $\text{C}_3\text{H}_8$                                                 b)  $\text{C}_3\text{H}_6$
- c)  $\text{C}_3\text{H}_4$                                                 d)  $\text{C}_4\text{H}_8$
- vi) Nucleophile are.
- a) Nucleus loving                                      b) Nucleus hating
- c) Electron loving                                      d) Electron hating
- vii) What type of isomerism is shown by But - 1 - yne and But - 2 - yne?
- a) Chain isomerism                                      b) Position isomerism
- c) Geometrical isomerism                              d) Tautomerism

P.T.O.

**Q.2 Answer the following.**

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- i) Write IUPAC name of following compound  $\text{CH}_3\text{COCH}(\text{CH}_3)_2$
- ii) Round off the following quantity to three significant figures – 0.06700
- iii) An atom of an element contains 29 electrons and 35 neutrons. Deduce the number of protons.
- iv) Calculate number of atoms in 1.6 g of sulphur.
- v) Functional group present in primary amine is \_\_\_\_\_
- vi) State Heisenberg uncertainty principle.
- vii) Name the alkene used in the manufacture of polyethene bags.

**Section -B****Attempt any Eight.**

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- Q.3** Write chemical equations for combustion of butane & methane.
- Q.4** State and explain law of definite proportion.
- Q.5** Write postulates of Bohr's theory of hydrogen atom.
- Q.6** Explain.
  - a) Homolytic cleavage with suitable example.
  - b) Heterolytic cleavage with suitable example.
- Q.7**
  - a) Perform the following:  $1.05 \times 10^{-4} - 9.7 \times 10^{-5}$
  - b) Define : Molarity
- Q.8** Write structural formula of following IUPAC names mentioned.
  - i) 2 - Bromo - 3 - methyl butane ✓
  - ii) 2, 3 - Dimethyl Pentane ✓
- Q.9** What weight of Calcium oxide will be formed on heating 19.3 g of Calcium carbonate? (At.wt - Ca = 40, C = 12, O = 16)
- Q.10** What is Carbocation and Carbanion.
- Q.11** Electronic configuration of Oxygen is written as  $1\text{S}^2 2\text{S}^2 2\text{P}_x^2 2\text{P}_y^1 2\text{P}_z^1$  and not as  $1\text{S}^2 2\text{S}^2 2\text{P}_x^2 2\text{P}_y^2 2\text{P}_z^0$  Explain.
- Q.12** Draw the resonance structures of following.
  - a) Buta - 1, 3 - diene
  - b) Acetate ion
- Q.13**
  - a) How many gram of  $\text{H}_2\text{O}$  are present in 0.25 mole of it? [At wt. H = 1, O = 16]
  - b) How will you convert ethyl chloride into n - butane.

**Section - C****Attempt any Four.**

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- Q.14**
  - a) Draw the shape of 2S orbital.
  - b) If  $n = 2$ , what are the values of quantum number 'l' and 'm' ?
- Q.15**
  - a) State and explain saytzeff's rule with suitable example.
  - b) Draw geometrical isomers of But - 2 - ene.
- Q.16** Which of the following gas occupies higher volume?
  - i)  $6.022 \times 10^{24}$  atoms of Helium
  - ii) 0.2 moles of Helium
- Q.17** Differentiate between aromatic and aliphatic compounds.

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