

Code: A-C223113-M

I Semester Exam – 2024-25**3 x 980**

Std.: XI

Sub: **CHEMISTRY**Marks: **50**

Date:

Roll No.: _____

Time: **2½ hrs.****General Instructions :-**

The question paper is divided into 4 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.

Section - A**Q.1 Select and write the correct answer.****7**

- i) Which molecule is linear?
a) SO_3 b) CO_2 c) H_2S d) Cl_2O
- ii) Which of the following halogens does always show oxidation state - 1?
a) F b) Cl c) Br d) I
- iii) How many gm of H_2O present in 0.25 mol of it?
a) 4.5 b) 18 c) 0.25 d) 5.4
- iv) The maximum number of electrons in a subshell for which $l = 3$ is _____.
a) 14 b) 10 c) 8 d) 4
- v) If the valence shell electronic configuration is ns^2np^5 , the element will belong to _____.
a) alkali metals b) halogens
c) alkaline earth metals d) actinides
- vi) P-orbitals are _____ in shape.
a) Spherical b) dumb bell
c) double dumb bell d) diagonal
- vii) Which of the following temperature will read the same value on Celsius and fahrenheit scales?
a) -40° b) $+40^\circ$ c) -80° d) -20°

Q.2 Answer the following.**7**

- i) What is the oxidation number of oxygen in superoxide?
- ii) What is the bond order in N_2 molecule?
- iii) What is SI unit of temperature?
- iv) If an element 'X' has mass number 11 and it has 6 neutrons, then write it's representation.
- v) Why the second ionization enthalpy is greater than the first ionization enthalpy?

P.T.O

- vi) How many particles are present in 1 mole of substance?
 vii) Which of the following pair is not isoelectronic?
 (i) Na^+ and Na (ii) Mg^{+2} and Ne

Section -B

Attempt any **Eight**.

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- Q.3** Distinguish between Sigma and Pi bond.
- Q.4** Define : (a) Bond Length
(b) Bond Enthalpy
- Q.5** Identify the type of overlap present in the following molecules
(a) F_2 (b) HF
- Q.6** Calculate the oxidation number of the underlined atoms.
(a) $\text{H}_2\underline{\text{S}}\text{O}_4$
(b) $\text{H}\underline{\text{N}}\text{O}_3$
- Q.7** Write the formulae of the following compounds.
(a) Mercury (II) chloride
(b) Tin (IV) oxide
- Q.8** Match the pairs :
- | Column A | Column B |
|-----------------------|-------------------------------------|
| 1) Neutron | a) Six electrons |
| 2) P-orbital | b) $-1.6 \times 10^{-19} \text{ C}$ |
| 3) Charge on electron | c) Ultraviolet region |
| 4) Lyman series | d) Chadwick |
- Q.9** Convert the following degree Celsius to degree Fahrenheit :
a) 40°C b) 30°C
- Q.10** Explain : Cu forms coloured salt while Zn forms colourless salt.
- Q.11** Explain : ^{13}Al is a metal and ^{15}P is nonmetal.
- Q.12** State and explain Pauli's exclusion principle.
- Q.13** (a) The mass of an atom of hydrogen is 1.008u. What is the mass of 18 atoms of hydrogen?
(b) What is the volume of Carbon dioxide occupied by 5 moles of Carbon dioxide gas at STP.

Section - C

Attempt any **Four**.

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- Q.14** Predict the shape and bond angles in the following molecules.
(a) CF_4
(b) NF_3
Give reason : HF is a polar molecule.
- Q.15** Balance the redox reaction by half reaction method :

$$\text{H}_2\text{C}_2\text{O}_{4(\text{aq})} + \text{MnO}_4^- \rightarrow \text{CO}_{2(\text{g})} + \text{Mn}^{+2}_{(\text{aq})} \text{ (acidic)}$$
- Q.16** Explain : Electronegativity and electron gain enthalpy. Which of the two can be measured experimentally?
- Q.17** Write the condensed orbital notation of electronic configuration of the following elements :
(a) Oxygen ($z=8$), (b) Silicon ($z=14$), (c) Calcium ($z=20$)

- Q.18** (i) State Avogadro's law.
(ii) Calculate the mass of Potassium Chlorate required to liberate 6.72 dm^3 of oxygen at STP. Molar mass of Potassium chlorate is 122.5 g mol^{-1} .
- Q.19** Write the orbital notations for the electrons in the orbitals with the following quantum numbers :
- (a) $n = 2, l = 1$
(b) $n = 4, l = 2$
(c) $n = 3, l = 2$

Section - D**Attempt any Two.****8**

- Q.20** State Octet rule.
In case of bond formation in acetylene molecule :-
(a) How many covalent bonds are formed?
(b) State number of sigma and pi bonds formed.
(c) Name the type of hybridization.

- Q.21** Complete the following table.

Molecule	Hybridization	Bond Angle
i) CH_4		
ii) C_2H_4		
iii) BeF_2		
iv) NH_3		

- Q.22** Define ionization enthalpy. Name the factors on which ionization enthalpy depends? How does it vary down the group and across a period?
- Q.23** (a) Explain in brief, the significance of azimuthal quantum number.
(b) State Heisenberg uncertainty principle.
(c) Define : Isotones
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