

**B.Sc. CHEMISTRY
FIRST SEMESTER
INORGANIC CHEMISTRY I
BSC – 102 [REPEAT]
[USE OMR FOR OBJECTIVE PART]**

2025/12

**SET
A**

Duration: 1:30 hrs.

Full Marks: 35

Time: 15 mins.

(PART-A: Objective)

Marks: 10

Choose the correct answer from the following:

1×10=10

1. The intensity of electromagnetic radiation is determined by the
 - a. number of neutrons striking a unit area in unit time
 - b. number of photons striking a unit area in unit time
 - c. the number of protons striking a unit area in unit time.
 - d. the number of electrons striking a unit area in unit time
2. Electrons that are in different levels have
 - a. same probability distribution
 - b. different probability distribution
 - c. equivalent probability distribution
 - d. negative probability distribution
3. Principal quantum number gives
 - a. the relative size of distribution
 - b. general shape of distribution
 - c. orientations of the distribution
 - d. different radial distribution
4. Sodium chloride dissolves in water due to
 - a. ion dipole interaction
 - b. dipole dipole interaction
 - c. dipole induced dipole interaction
 - d. instantaneous dipole induced dipole interaction
5. Intermolecular hydrogen bonding
 - a. Increases the boiling point of a liquid
 - b. decreases the boiling point of a liquid
 - c. decreases melting point of a solid
 - d. breaks the original bond
6. Crystals with Frankel Defects are having
 - a. one type of hole
 - b. two types of holes
 - c. three types of holes
 - d. four types of holes
7. Boron has lesser ionization enthalpy than beryllium, because
 - a. Ionization enthalpy decreases with an increase in atomic number
 - b. The s electron can be removed easier than the p electron
 - c. Ionization enthalpy increases along the period
 - d. It is easier to remove electrons from p subshell than a filled s subshell
8. Which of the following is changeable?
 - a. Ionization energy
 - b. Electron affinity
 - c. electronegativity
 - d. Both b and c

9. The correct order of the electron affinity for one electron gain of the elements is
- | | |
|------------------|------------------|
| a. $F > Cl > Br$ | b. $P > N > As$ |
| c. $S > Se > O$ | d. $K > Li > Na$ |
10. The correct increasing order of ionic radii is
- | | |
|--|--|
| a. $S^{2-} < Cl^{-} < Ca^{2+} < K^{+}$ | b. $Ca^{2+} < K^{+} < Cl^{-} < S^{2-}$ |
| c. $K^{+} < S^{2-} < Ca^{2+} < Cl^{-}$ | d. $K^{+} < Ca^{2+} < Cl^{-} < S^{2-}$ |

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(Descriptive)

Time : 1 hr. 15 mins.

Marks: 25

[Answer question no.1 & any two (2) from the rest]

1. a. Give a brief account of dual nature of electron. 2+3=5
b. Write the applications of ionization energy?
2. a. What is Line Spectra ? How is it produced ? 3+4+3
b. What is Zeeman Effect? How this led to the concept of =10
Magnetic quantum number.
c. Give the mathematical description of the wave associated with the electronic motion about a nucleus, as first suggested by Schrodinger in his Wave Equation.
3. a. Explain the term Dipole Dipole interaction with suitable 3+4+3
example. =10
b. What is Intermolecular hydrogen bonding ? How does it differ from Intramolecular hydrogen bonding ?
c. Explain why ortho-nitro phenol has lower melting point as compared to para-nitro phenol.
4. a. Give an account of Heisenberg's Uncertainty Principle. 3+4+3
b. What is Schottky Defect ? How does it differ from Frankel =10
Defect?
c. What do you mean by positive and negative electron gain enthalpy? Give example.
5. a. What are the factors that affect electron gain enthalpy? 3+3+4
b. Define electronegativity and how it is measured? What is the =10
periodic trend of electronegativity?
c. Why Slater's rule is important? Find effective nuclear charge of a outermost electron in Ca atom.

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