

Roll No.

11201

**B. Sc. (Pass Course) 1st Semester
(Regular/Re-Appear/Improvement)
Examination – Jan.-2023**

CHEMISTRY - I (Inorganic Chemistry)

Paper : CH-101

Time : Three hours] [Maximum Marks : 30

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination

Note : Attempt *five* questions in all, selecting *one* question from each Unit. Question No. 1 is *compulsory*. All questions carry equal marks.

1. Answer the following briefly : 1 × 6 = 6

- (a) Define Bond Energy.
- (b) Which rule get violated in $1s^2, 2s^2, 3p^2$?
- (c) Give type of hybridization in XeF_2 .

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- (d) What will be the value of bond order in Ne_2 ?
- (e) Write value of $(n + l)$ for 11th electron in Sodium.
- (f) Define Fajan's rule.

UNIT – I

- 2. (a)** Draw radial probability distribution curves for 2s, 3p and 3d-orbitals. 3
- (b)** Define Heisenberg uncertainty principle. Write its mathematical expression and significance. 3
- 3. (a)** Write physical significance of ψ and ψ^2 . 3
- (b)** Determine the wavelength associated with electron that travels with 60% of the speed of light. 3

UNIT – II

- 4. (a)** Why size of cation is less and anion is larger than its parent atom ? 3

(2)

- (b) Explain Hund's rule of maximum multiplicity with example. 3
5. (a) Explain Slater's rule for calculating effective nuclear charge for electron. 3
- (b) Define electronegativity. Give *one* method for its determination. 3

UNIT – III

6. (a) Draw MO diagram of NO and calculate its bond order and magnetic behavior. 3
- (b) Explain the shape of SO_4^{2-} & SF_6 on basis of hybridization. <https://www.iguonline.com> 3
7. (a) Calculate percentage ionic character in HF. Given the electronegativities of H and F are 2.1 and 4.0 respectively. 3
- (b) Explain the shape of NH_3 & CF_3 on basis of VSEPR theory. 3

(3)

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UNIT – IV

8. (a) Draw & explain the structure of Zinc blende. 3
- (b) Explain order of covalent character among NaF , $NaCl$, $NaBr$ & NaI using Fajan rule. 3
9. (a) Define radius ratio. How is it related to coordination number? 3
- (b) What are lattice defects? Explain stoichiometric defects in detail. 3

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