

Roll No.

91051

B. Sc. Bio-Technology

1st Semester w. e. f. 2012-13

Examination – November, 2019

INORGANIC CHEMISTRY

Paper : BT- 106

Time : Three Hours] [Maximum Marks : 40

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 Section. Question No. 1 is *compulsory*. All questions carry equal marks.

1. (a) Name the part of wave Function which govern's the shape of the orbital. 1 × 8 = 8
- (b) Give the general electronic configuration of P-Block element.

- (c) What is hybridization of central Atom in Methane (CH₄) ?
- (d) Define Radius Ratio.
- (e) What is the Co-ordination Number of Na in NaCl ?
- (f) Define Electronic configuration.
- (g) Define electro negativity.
- (h) What is the Full Form of VSEPR in VSEPR theory ?

SECTION – A

2. (a) If the Uncertainty in position (Δx) of a ball of mass 1 kg is of the order of 1 Å. Calculate the uncertainty in its velocity. 3
- (b) State and explain the Applications of Aufbau principle. 3
- (c) Calculate the number of electron in Magnesium Whose (n + l) value is one. 2
3. (a) Find out the Number of waves made by a Bohr electron in one complete revolution in the 3rd orbit. 2

- (b) Using Heisenberg uncertainty prove that an electron cannot exist into the Nucleus. 3
- (c) Arrange the given orbitals 3S, 4d and 5p in terms of their (n + l) rules. 3

SECTION - B

- 4. (a) Using Slater's rule, calculate the effective nuclear charge for a 3d electron in case of chromium. 2
- (b) Explain Mulliken scale of Electro negativity. 2
- (c) Explain the Factor Affecting Ionisation potential. 4
- 5. (a) What is the trend in the size of N^{3-} , O^{2-} and F^- ? 2
- (b) Why Ionisation energy of B is less than that of Be and of O is less than that of N? 3
- (c) How will you account for the oxidising and Reducing behaviour of element in the periodic table? 3

SECTION - C

- 6. (a) Explain the structure of SF_6 on the basis of Hybridization. 4

- (b) Explain the Magnetic behaviour, Bond order in No using M. O. Diagram. 4
- 7. (a) Explain the structure of SF_4 on the basis of VSEPR Theory. 4
- (b) What is Hybridization ? What are the important Characteristic of Hybridization ? 4

SECTION - D

- 8. (a) Explain the following : 4
 - (i) Fajan's rule
 - (ii) Born Haber Cycle
- (b) Explain the structure of NaCl. 2
- (c) Give difference between n-semiconductor and p-semiconductor. 2
- 9. (a) Explain the following 6
 - (i) Radius Ratio
 - (ii) Stoichiometric defect
- (b) Explain the structure of ZnS 2

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