

**RayatshikshanSanstha's**  
**RajarshiChhatrapati Shahu College Kolhapur**  
**Department of Chemistry**  
**B.Sc. Part I Semester I (2021-22)**  
**InorganicChemistry Paper No. I (71605)**

**Date &Time :** 17/6/2022 02.00 to 4.30 pm

**Marks: 50**

**Instruction:-**

1. All question compulsory
  2. Figuers to the right hand side indicate full marks.
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**Q1 Multiple Choice Questions**

**(10 Marks)**

- i) Atomic radius depends upon -----
- a) number of shell    b) effective nuclear charge    c) screening effect    d) all of these
- ii) wave nature of an electron was first given by .....
- a) Debroglie            b) Heisenberg            c) Bohr            d) Stark
- iii) Ionic compounds are .....
- a) Conductor of electricity    b) Liquid    c) Hard and brittle    d) soluble in non polar solvent.
- iv) Fajans rules are applicable to account covalent character of -----
- a) Covalent            b) Ionic            c) Mettalic            d) Network.
- v) Geometry of a molecule depends upon -----
- a) Overlap    b) Hybridisation    c) Nature of overlap            d) type of overlap
- vi) Geometry of  $IF_7$  is -----
- a) Octahedral    b) Square planer    c) Trigonal bipyramidal            d) Pentagonal bypyramidal
- vii) In  $PCl_5$  hybridisation is -----
- a)  $Sp^3d$             b)  $Sp^3$             c)  $Sp^2$             d)  $Sp^2d^2$

viii) In homonuclear diatomic molecule exchange energy is -----

a) Maximum    b) Minimum    c) Intermediate    d) Less.

ix) The Bond order of  $O_2$  is-----

a) 1                    b) 2                    c) 3                    d) 4

x) Carbon monoxide is isoelectronic to.....

a)  $O_2$                     b)  $N_2$                     c) NO                    d)  $C_2$

**2. Attempt any TWO of the following (10x2)**

**(20 Marks)**

a) Define Hybridisation and different types of hybridization .give one example each ?

b) Give the significance of bond order .calculate bond order in  $N_2$ ?

c) Explain the factors affecting stability of half filled and completely filled orbitals?

**3. Attempt any Four of the following (5x4)**

**(20 Marks)**

A) Explain wave particle duality ?

B) Difference between Atomic orbital and Molecular orbital ?

C) Give the characteristics of Antibonding molecular orbital ?

D) Write short notes on VBT?

E) Write short note on characteristics of ionic compounds ?.

F) Explain the structure and hybridization in  $PCl_5$ ?