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SUBJECT CODE NO: -BB-2301

FACULTY OF SCIENCE AND TECHNOLOGY

B.Sc. (CBCGS)(Pattern 2022) F.Y SEM I

Examination November / December 2025

Chemistry Paper-I Inorganic Chemistry

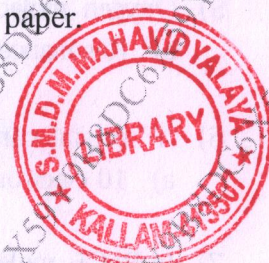
[Time: 1:30 Hours]

[Max. Marks:40]

N. B

Please check whether you have got the right question paper.

- 1) All questions are compulsory.
- 2) All questions carries equal marks
- 3) Illustrate your answer with suitable labeled diagram.



Q1 What are quantum numbers? Explain principle and azimuthal quantum numbers 10

OR

- a) Explain dipole moment and percentage ionic character
- b) Explain concept of lattice energy

Q2 Explain sp^3 d hybridisation. Discuss the geometry of PCl_5 molecule on the basis of hybridisation 10

OR

- a) What is bond order? Calculate the bond order of B_2 molecule on the basis of MOT
- b) Explain types of overlapping

Q3 Write short notes on (any two) 10

- 1) Hund's rule of maximum multiplicity
- 2) Born Lande equation
- 3) Geometry of ClF_3 on the basis of VSEPER theory
- 4) Molecular orbital diagram of He_2 molecule

Q4 Choose the correct option from the given multiple choice questions 10

- 1) Shape of 'd' orbital is
 - a) Dumb bell
 - b) Double dumb bell
 - c) Spherical
 - d) None of these
- 2) Born -Haber cycle is an energy cycle for
 - a) Solid compound
 - b) Ionic compound
 - c) Molecular compound
 - d) Aqueous solution

- 3) A chemical bond formation that involves the complete transfer of electrons between atoms is
a) Partial covalent bond b) Metallic bond c) Covalent bond d) Ionic bond
- 4) Which one of the following has the highest bond order
a) N_2 b) O_2 c) C_2 d) F_2
- 5) Oxygen molecule is paramagnetic. It can be explained by
a) Resonance b) VBT c) MOT d) Hybridisation
- 6) 'P' orbital can accommodate -----
a) 10 electron b) 6 electron c) 2 electron d) 14 electron
- 7) In $BeCl_2$ molecule bond angle is equal to
a) 120° b) 180° c) 109° d) 90°
- 8) Irregular geometry is shown by
a) $BeCl_2$ b) BF_3 c) SF_6 d) SF_4
- 9) Which of the following is a correct relation according to Heisenberg's Uncertainty principle?
a) $\Delta x \times \Delta P \leq \frac{h}{4\pi}$ b) $\Delta x \times \Delta V \leq \frac{h}{4\pi}$
c) $\Delta x \times \Delta P \geq \frac{h}{4\pi}$ d) $\Delta x \times \Delta V \geq \frac{h}{4\pi}$
- 10) Shape and hybridisation of SF_6 molecule respectively are
a) Linear, sp b) Tetrahedral, sp^3
c) Octahedral, sp^3d^2 d) Trigonal bipyramidal, sp^3d