Step Academy official

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STUDENT NAME	
PAPER CODE	63300
TIME ALLOWED	40
Paper Date	12-02-2026

CLASS	New 1st Year (FSC/ICS)
SUBJECT	Chemistry
TOTAL MARKS	25
Paper Type	

Q1. Choose the correct answer. **5X1=5**

1. The geometry of sp hybridized atoms is:

(A) Linear **(B)** Bent **(C)** Trigonal planar **(D)** Tetrahedral

2. Molecule has a linear shape:

(A) H_2O **(B)** CO_2 **(C)** SO_2 **(D)** O_3

3. Trigonal planar shape is associated with:

(A) CH_4 **(B)** NH_3 **(C)** BF_3 **(D)** PCl_3

4. In MOT, the total number of molecular orbitals formed from two atomic orbitals is:

(A) One **(B)** Two **(C)** Three **(D)** Four

5. Which of the following molecules has a central atom with sp^3 hybridization and a tetrahedral electron pair geometry?

(A) BF_3 **(B)** SO_2 **(C)** CCl_4 **(D)** PCl_5

Q2. Write short answers of the following questions. **5X2=10**

1 . What does VSEPR theory predict about molecular shape?

2 . How does MOT explain the paramagnetism of O_2?

3 . Draw the Lewis (electron dot) structures for the following species:(i) CO (ii) O_3 (iii) NO_2

4 . The bond between K and Cl is ionic but that between Si and Cl is polar covalent. Explain why

5 . Which of O_2^{2+}, and O_2^{2-} would be paramagnetic? Give reason in the light of MOT.

Q3. Write detailed answers of the following questions. **2X5=10**

1 .
Draw the molecular orbital diagrams of the following molecules. Calculate their bond orders. (i) H_2 (ii) He_2 (iii) N_2 (iv) O_2

2 . Explain the orbital hybridization for CH_4, NH_3, BF_3, and $BeCl_2$.