

**THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED**

Q.1. Answer the following short questions: (15x2=30)

- i. Why lone pair occupies more space?
- ii. What are the main drawbacks of VSEPR model
- iii. Predict and draw the structure of PF₅ molecule on the basis of hybridization.
- iv. Predict shape of H₂O on the basis of VSEPR model/theory.
- v. Phenolphthalein is a weak acid. How does it change color when medium becomes basic?
- vi. What is leveling effect?
- vii. What are chelates?
- viii. What is crystal field splitting?
- ix. Name any two redox indicators
- x. Differentiate between Lewis acid and base
- xi. What are outer transition elements?
- xii. Why polarizability increases down the group?
- xiii. What is Pauling scale for electronegativity?
- xiv. Name any two electron deficient inorganic compounds
- xv. Which of the following is more soft acid and why
 - i. Na
 - ii. K

Answer the following questions. (3x10=30)

- Q.2** Describe the structures of following compounds/complexes on the basis of VBT and MOT
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|----|--------------------------------------|-----|--|-----------|
| i. | [Fe(CN) ₆] ⁴⁻ | ii. | [Fe(H ₂ O) ₆] ²⁺ | 10 |
|----|--------------------------------------|-----|--|-----------|
- Q.3** What is diagonal relationship? Discuss it with suitable examples **10**
- Q.4** What is SHAB (soft and hard acid base) concept? Discuss its applications in various fields of chemistry. **10**