UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program : First Semester – Fall 2021

Roll No. .....

Paper: Inorganic Chemistry **Course Code: CHEM-105** **Time: 3 Hrs.** **Marks: 60**

Q.1. Give short answers of the following: **(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 PF_5 molecule on the basis of hybridization.

iv. Predict shape of H_2O 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

Give brief answers the following questions. **(3x10=30)**

Q.2 Describe the structures of following compounds/complexes on the basis of VBT and MOT

i. $[Fe(CN)_6]^{4-}$ ii. $[Fe(H_2O)_6]^{2+}$

Q.3 What is diagonal relationship? Discuss it with suitable examples

Q.4 What is SHAB (soft and hard acid base) concept? Discuss its applications in various fields of chemistry.