



# UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Sixth Semester – 2020

Paper: Inorganic Chemistry

Course Code: CHEM-315 Part – I (Compulsory)

Time: 15 Min. Marks: 10

Roll No. in Fig. ....

Roll No. in Words. ....

Signature of Supdt.: .....

**ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.**

**Division of marks is given in front of each question.**

**This Paper will be collected back after expiry of time limit mentioned above.**

**Q.1. Encircle the correct choice.**

**(10x1=10)**

- According to VSEPR theory, the shape of  $\text{SO}_3$  molecule is
  - Pyramidal.
  - Tetrahedral.
  - Plane triangular.
  - Square planar.
- Which of the following is not a representative element
  - Fe
  - K
  - Ba
  - N
- The formula of bauxite is
  - $\text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2 \cdot 2\text{H}_2\text{O}$
  - $\text{Al}_2\text{O}_3 \cdot 2\text{H}_2\text{O}$ .
  - $\text{Na}_3\text{AlF}_6$
  - Both a and b
- The %age of  $\text{U}_{235}$  in naturally occurring uranium is
  - 2.0%
  - 0.5%
  - 5.0%
  - 0.7%
- Which of the following ligand are neutral
  - CO
  - NO
  - water
  - All of these
- Which of the element have  $4s^1.3d^5$  stable electronic configuration
  - Co
  - Cr
  - Cu
  - Cd
- pH of 1N HCl is
  - 1
  - Zero
  - 0.1
  - None of the above
- The element with maximum percentage in monazite mineral is
  - Sm
  - La
  - Ce
  - Gd
- Acetylacetonate is a \_\_\_\_\_ ligand
  - Bidentate
  - Hexadentate
  - Monodentate
  - Quadridentate
- The structure of  $\text{IF}_7$  is
  - Octahedral
  - Pentagonal pyramidal
  - Trigonal prismatic
  - Square pyramidal



**ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED**

**Q.No.2. Short questions: (10x2=20)**

- i. Explain Jahn Teller distortion with example.
- ii. What is the shape of XeF<sub>2</sub> AND XeF<sub>6</sub> molecule?
- iii. How actinides can be separated from lanthanides ?
- iv. Differentiate inner and outer transition elements?
- v. What is Fajjan rule?
- vi. Calculate  $Z_{\text{eff}}$  for 4s electrons in Cobalt (27).
- vii. Differentiate between polarizing power and polarizability?
- viii. Define the term Ferromagnetism?
- ix. What is stability constant?
- x. How CFT is superior to VBT?

**Q.No.3. Long questions: (6x5=30)**

- i. Write a note on four electrons-three centered bonds?
- ii. What are the role of Lanthanides in industry and chemistry?
- iii. How Thorium can be extracted from monazite ore by acid cracking?
- iv. Discuss shapes of AB<sub>2</sub>, AB<sub>2</sub>E and AB<sub>2</sub>E<sub>2</sub> Molecules on the basis of it.
- v. How Uranium is extracted from its ores?
- vi. Explain the differences between Lanthanides and Actinides?