Sessional Exam – I (July-December 2025)

BSC-102 Chemistry

B.Tech (Robotics & Artificial Intelligence) Semester – I

Time: 1 hr 30 min   Maximum Marks: 15

Instructions: All questions are compulsory

1. (a) Explain the hybridization and geometry of the following molecules: [2]
   (i) XeF_6 (ii) Cl_2O (iii) XeF_3^+ (iv) IOF_4^-

   (b) Describe the shape of each molecule and justify your answer using   [2]
   VSEPR theory.

2. Define HSAB principle. Illustrate with an example how this principle   [3]
   determines the stability of a chemical reaction.

3. What is ionization energy and describe the factors affecting the ionization   [3]
   energy of an element.

4. Under what conditions the ideal gas deviates from ideality and explain   [5]
   the correction factors in the ideal gas equation given by van der waals.