

**SECTION—B**

5. Discuss method for determining magnetic susceptibility.
6. Discuss application of magnetic moment data for first row transition metal compounds.
7. Discuss selection rules for electronic spectra and discuss spectra of  $[\text{Ti}(\text{H}_2\text{O})_6]^{3+}$ .
8. Discuss utility of Orgel energy level diagram. 2×4=8

**SECTION—C**

9.
  - (a) What is pairing energy ?
  - (b) Describe the splitting of d-orbitals in a tetrahedral complex.
  - (c) What are inert and labile complexes ?
  - (d) Explain antiferromagnetism.
  - (e) Discuss L-S coupling. 5×2=10

Roll No. ....

Total No. of Pages : 2

**PC 11471-NH**

**CS/2111**

**INORGANIC CHEMISTRY—I**

**Semester—V**

Time Allowed : Three Hours]

[Maximum Marks : 26

**Note :-** Candidates are required to attempt *two* questions (4 marks each) each from Sections A and B. Section C is compulsory (2 marks each question).

**SECTION—A**

1.
  - (a) Calculate the CFSE for the following system :
    - (i)  $d^5$  low spin octahedral
    - (ii)  $d^7$  high spin octahedral.
  - (b) What are limitations of valence bond theory ?
2. Discuss salient features and short-comings of crystal field theory. Elaborate your answer.
3. Discuss substitution reactions in square planar complexes.
4.
  - (a) Discuss trans effect.
  - (b) How chelation increases the stability of a complex ? 2×4=8