

Seat No.	
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B.Sc. (Part-III) (Semester-V) (CBCS) Examination, October - 2023**CHEMISTRY****Inorganic chemistry (Paper-IX)****Sub. Code : 79682****Day and Date : Monday 23 - 10- 2023****Total Marks : 40****Time : 10.30 a.m. to 12.30 p.m.**

- Instructions :**
- 1) All questions are compulsory.
 - 2) Figures to the right indicate full marks.
 - 3) Neat diagrams should be drawn wherever necessary.
 - 4) Use of scientific calculator and logarithmic table is allowed.

Q1) A) Answer the following questions in one sentence. [4]

- a) What is John-Teller distortion?
- b) Which impurity is doped to silicon crystal to form p-type semiconductor?
- c) What are metal carbonyls?
- d) Define the term Heterogeneous catalysis.

B) Select the most correct alternative among the following and rewrite the sentence. [4]

- a) According to Lux-Flood concept, bases are those species which can ____.
- i) donate oxide ion ii) accept oxide ion
- iii) donate proton iv) accept proton
- b) In enzyme catalysis, for the fermentation of sugar to ethanol ____enzyme is used as a catalyst.
- i) maltase ii) urease
- iii) amylase iv) zymase

P.T.O.

- What is catalysis? Explain types of catalysis with suitable examples.
- State the basic assumptions of crystal field theory (CFT) and elaborate factors affecting the magnitude of crystal field splitting in coordination complexes.
- What is semiconductor? On the basis of Band theory, explain intrinsic and extrinsic semiconductors and give its applications.

- Write a note on structure and bonding in $\text{Ni}(\text{CO})_4$.
- Define and explain with suitable examples Arrhenius acids and bases.
- Write a short note on superconductivity.
- Write a brief account on types of solvents.
- Draw molecular orbital (MO) energy level diagram of $[\text{Co}(\text{NH}_3)_6]^{3+}$ complex.

