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Total No. of Pages : 2

B.Sc. (Part - III) (Semester - V) Examination, January - 2023

CHEMISTRY

Inorganic Chemistry (Paper-IX)

Sub. Code: 79682

Day and Date : Tuesday, 03 - 01 - 2023

Total Marks : 40

Time : 2.30 p.m. to 4.30 p.m.

- Instructions :
- 1) All questions are compulsory.
 - 2) Figures to the right indicate full marks.
 - 3) Neat diagrams should be drawn wherever necessary.

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

- a) Define Lewis acid.
- b) What are semiconductors?
- c) Define organometallic compounds?
- d) What is homogeneous catalysis?

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

- a) Arrhenius concept is called as _____
 - i) Water Ion system
 - ii) Proton donor acceptor system
 - iii) Electron donor acceptor system.
 - iv) Oxide Ion theory
- b) In octahedral complexes eg electrons are destabilized by _____
 - i) $-4Dq$
 - ii) $-6Dq$
 - iii) $+6Dq$
 - iv) $+4Dq$

P.T.O.

c) Asymmetric filling of eg orbitals, with _____ electronic configuration Jahn-Teller distortion takes place.

- d^4 (low spin), d^7 (low spin), and d^9 (both low and high spin)
- d^4 (high spin), d^7 (high spin), and d^9 (both low and high spin)
- d^4 (high spin), d^7 (low spin), and d^9 (both low and high spin)
- d^4 (high spin), d^7 (low spin), and d^8 (both low and high spin)

d) Superconductors shows _____

- Resonance effect
- Trans effect
- Raman effect
- Meissner effect

Q2) Attempt any TWO of the following. [20]

- Explain in brief the classification or types of solvent in detail.
- Describe crystal field splitting of d orbitals in octahedral complexes.
- Explain the semiconducting action in silicon caused due to the addition of penta-valent and tri-valent atoms.

Q3) Attempt any THREE of the following. [12]

- Mention the factors affecting the magnitude of crystal field splitting parameters and explain any one in detail.
- Nature of Bonding in metal carbonyls
- Geometry of $\text{Cr}(\text{CO})_6$
- Mechanisms of catalysis on the basis of Adsorption theory
- Explain homogeneous catalytic reactions?

