

APRIL/MAY 2019

MCH32 — INORGANIC CHEMISTRY — III

Time : Three hours

Maximum : 75 marks

SECTION A — (5 × 6 = 30 marks)

Answer ALL questions.



1. (a) Write short notes on “cyclic donors”.

Or

- (b) Explain the fluxional behaviour of organo metallic compounds.

2. (a) Write short notes on polymer-bound catalysts.

Or

- (b) Outline the mechanism of Wacker process for the synthesis of aldehyde from alkenes.

3. (a) Give an account on factors affecting the rates of direct-electron transfer reaction.

Or

- (b) Is atom transfer necessary in redox reactions that are known to follow inner sphere mechanism? Substantiate your answer with suitable example.

4. (a) Discuss any two theories of trans effect.

Or

- (b) Discuss the influences of entering groups for substitution reactions in square planar complexes.
5. (a) Explain the structural and photophysical features of $\text{Ru}[\text{bpy}]^{2+}$ that make it suitable in solar energy conversion.

Or

- (b) Explain briefly the applications of solvolytic reaction in synthesis of platinum and cobalt complexes.

SECTION B — ($3 \times 15 = 45$ marks)

Answer any THREE questions.

6. (a) Discuss the structure and bonding of ferrocene. (7)
- (b) What is meant by oxidative addition? Explain its mechanism with an example. (8)
7. (a) What is Wilkinson's catalyst? Explain the role of this catalyst in hydrogenation reaction. (8)
- (b) Describe the mechanism of hydroformylation of olefins using Cobalt catalyst. (7)

8. (a) Give a comparative account of inner sphere and outer sphere mechanism. Explain with suitable examples. (8)
- (b) Describe Marcus theory. (7)
9. (a) Explain the substitution reactions in square planar complexes. (10)
- (b) How the leaving groups influences the reactivity of platinum complexes? (5)
10. Explain in detail the photosubstitution, Photoredox and isomerization processes. (15)

