

APRIL/MAY 2019

MCH32 — INORGANIC CHEMISTRY — III

Time : Three hours

Maximum : 75 marks

SECTION A — (5 × 6 = 30 marks)

Answer ALL questions.

(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 × 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)

