M-33/2110 **10472/N**

Reaction Mechanism of Transition Metal Complexes-312

(Semester-III)
(SYLL-DEC-2019)

[Time: Two Hours] **[Maximum Marks: 55]**

Note: Attempt any four questions. All questions carry equal marks.

Q.1a) What are Labile and inert complexes. Explain with suitable examples

b) crystal field stabilization energies.

c) Discuss what is the trans effect. Explain its role in the synthesis of metal complexes. (5, 4, 4.75)

Q.2 Briefly discuss with suitable examples i) Outer sphere reactions ii) inner sphere reactions iii) non complementary reactions (5, 4, 4.75)

Q.3a) Briefly discuss with suitable examples associative reactions.

b) Briefly discuss Metal carbonyl scrambling, (6.75,7)

Q.4a) Discuss the fluxionality in organometallic compounds.

b) Discuss the reactions of binuclearcarbonyls.(6.75,7)

Q.5a) Discuss the acid base behavior of metal atom in complexes.

b) Discuss the addition of hydrogen to alkenes.(6.75,7)

Q.6 a) Discuss the HX additions

b) Discuss the additions of organic halides(6.75,7)

Q.7. a) What are the insertion reactions?Explain with suitable examples the insertion of carbon monoxide.

b) Discuss with suitable examples the cyclometallation reactions.(6.75,7)

Q. 8 Discuss the following methods for calculating Stability Constants of Metal complexes (i) Slope ratio method (ii) Job's method of continuous variation (iii) Solubility method (5, 4, 4.75)

Q.9. Discuss the following methods for calculating Stability Constants of Metal complexes a) Bjerrum's potentiometric method (b) Polarographic Lingane's method (6.75,7)