

**PARUL UNIVERSITY**  
**FACULTY OF APPLIED SCIENCE**  
**M.Sc., Winter 2017-18 Examination**

**Semester: 3****Subject Code: 11205202****Subject Name: Redox reactions and Organometallics.****Date: 21/12/2017****Time: 10:30am to 1:00pm****Total Marks: 60****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

- Q.1. A) Write a Brief note on:** (08)
- (a) Describe the role of Chromium oxide as oxidizing agent in the oxidation of Alcohols with reactions.
  - (b) Explain the Catalytic Cycle of Heck Reaction and give two examples of it.
- Q.1. B) Answer the following questions (Any two)**
- (a) Write a brief note on: (04)
    1. Differentiate Oxidation & Reduction reactions by four points each. (Reactions necessary).
    2. Mention the name & structure of DMSO and TEMPO reagents.
  - (b) Explain Oppenauer oxidation with mechanism. (04)
  - (c) Explain the role of catalyst in the catalytic hydrogenation reductions. (04)
- Q.2. A) Answer the following questions.**
- (a) Write a Brief note on: (04)
    1. Complete the oxidation reaction of Ethene and 1-propene with Ozone.
    2. Complete the reduction reaction of Benzoic acid and Acetophenone with  $\text{LiAlH}_4$ .
  - (b) Explain the Reduction of Epoxides with two examples. (04)
- Q.2. B) Answer the following questions (Any two)**
- (a) Describe the Prevost method. (03)
  - (b) Explain Swern oxidation using DMSO. (03)
  - (c) Explain Cannizzaro reduction with two examples. (03)
- Q.3. A) Write a Brief note on:** (08)
- (a) Explain Suzuki coupling reaction with mechanism.
  - (b) Explain Michael addition reaction with mechanism.
- Q.3. B) Answer the following questions (Any two)**
- (a) Answer the following questions. (04)
    1. Give the name and formula of Ziegler-Natta catalyst.
    2. Mention the use of Pd-catalyst in organic reactions with examples.
  - (b) Write a note on the reaction mechanism of Darzen's condensation reaction. (04)
  - (c) Describe the Pauson-Khand reaction for the synthesis of Cyclopentanone compounds. (04)
- Q.4. A) Answer the following questions.**
- (a) Answer the following questions. (04)
    1. State and explain "The 18-Electron Rule".
    2. Define the Terms: Metal, Ligand and Complex compounds with examples.
  - (b) Write a note on Stork Enamine synthesis. (04)
- Q.4. B) Answer the following questions (Any two)**
- (a) Explain the Reaction mechanism of Knoevenagel condensation. (03)
  - (b) Explain the Reaction mechanism of  $\text{SeO}_2$  and explain selectivity rules. (03)
  - (c) Write a role of Wilkinson's catalyst giving its formula and one reaction. (03)