

M.Sc. II (Chemistry) (CBCS Pattern) Sem-III  
**PSCHT10.2 - SPE- I : Organic Chemistry-I**

P. Pages : 2

Time : Three Hours



**GUG/W/22/11334**

Max. Marks : 80

- Notes : 1. All questions are compulsory & carry equal marks.  
2. Draw suitable diagram wherever necessary.

1. a) Give various electronic transitions and reaction when molecule absorbs visible and UV – Light. **8**

b) Discuss in brief Jablonski diagram with suitable diagram. **8**

**OR**

c) Define and explain Quantum Yield / Quantum Efficiency. **4**

d) Define photosensitization and give characteristics of good photosensitizer. **4**

e) Define phosphorescence and give its application. **4**

f) Give the mechanism of Norrish type – 1 process with example. **4**

2. a) Describe Frontier Orbital method to predict the course of Diel's – Alder reaction. **8**

b) Discuss stereochemistry of Electrocyclic rearrangement for the ring closing and ring opening reaction. **8**

**OR**

c) Give classification of pericyclic reaction with one example each. **4**

d) Give the reaction mechanism of Claisen rearrangement. **4**

e) Give Sommelet – Hauser rearrangement with its mechanism. **4**

f) What is relationship between HOMO and LUMO and symmetric and asymmetric of 1,3,5 – hexatriene. **4**

3. a) Define Oxidation and epoxidation. Give epoxidation of allylic alcohols by sharpless method. **8**

b) Define reduction. Discuss homogeneous hydrogenation using Wilkinson's catalyst. **8**

**OR**

c) Give Baeyer – Villiger oxidation reaction with example. **4**

d) Explain conversion of ketenes to  $\alpha, \beta$  - unsaturated ketene. **4**

- e) Discuss Meerwein – Ponndorf – Verley reduction with suitable reaction. 4
- f) Write a note on : Buch Reduction. 4
4. a) Define Umpolung. Discuss epoxides and cyanides as an umpolung reagent in retrosynthetic analysis. 8
- b) Write a note on 9 – BBN. Discuss its preparation and applications. 8

**OR**

- c) Write a note on mechanism of Hydroboration. 4
- d) Give preparation of Sulphur Ylide. 4
- e) Discuss the role of Mensilt in organic synthesis. 4
- f) Discuss synthetic methodology based on titanium compounds. 4
5. a) Write photo fries rearrangement reaction. 2
- b) Explain Paterno – Buchi reaction in short. 2
- c) Explain cope reaction. 2
- d) Give an example of [1, 5] Sigmatropic rearrangement. 2
- e) What is Oppenauer Oxidation? 2
- f) What is Hydrogenolysis? 2
- g) Give structure of thexyl borane. 2
- h) What is ZZ dienes? 2

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