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Total Pages : 5

**1787/M**

**M-35/2051**

**MODERN SYNTHETIC REACTIONS AND  
REARRANGEMENTS**

Paper-423

Semester-IV

Time allowed : 3 Hours] [Maximum Marks : 55

**Note:** Attempt five questions selecting two questions each from sections A carrying 8 marks and B carrying 8½ marks each. Section C consisting of 11 short answer type questions carrying 2 marks each.

**SECTION-A**

1. (a) Discuss the Hofmann-Löffler-Freytag reaction for the formation of piperidines and outline the mechanism. 4
- (b) Write the product and mechanism of

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reaction between 1-octanol and lead tetraacetate. 4

2. (a) How crown ethers are used as phase transfer reagents? 4
- (b) Explain the formation of cyclobutanol from photolysis of ketones. 4
3. (a) What are the advantages of Ruthenium oxide in organic synthesis. 4
- (b) Discuss Peterson alkenylation reaction for the synthesis of  $\alpha$ -hydroxysilane. 4
4. (a) Give two synthetic applications of lithium organocuprates. 4
- (b) Discuss photocyclisation reaction of acyclic conjugate triene (2E, 4Z, 6E-octatriene). 4

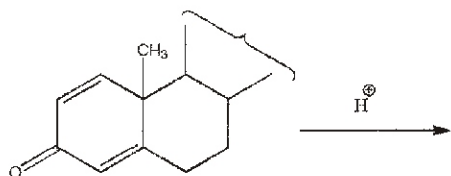
**SECTION-B**

- 5 (a) Discuss the base catalysed rearrangement involving carbanion in cyclopropane derivatives. 4

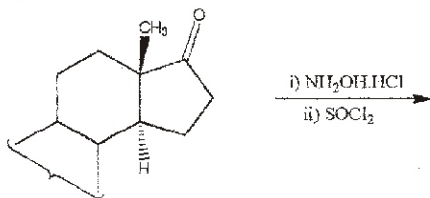
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- (b) Provide a reaction that involves rearrangement having free radical intermediate in cyclobutene derivative. 4½
6. (a) Outline the mechanism of conversion of isoboreneol to camphene. 4
- (b) Explain the reaction condition where phenyl vs methyl migration finds importance in pinacol rearrangement. 4½
7. (a) Explain with an example the Retro-Aldol phenomenon in steroid. 4
- (b) Write the product(s) and mechanism in the following: 4½



7. (a) Write the product(s) and mechanism in the following: 4



- (b) Giving example discuss acyl group migration in steroids. 4½

### SECTION-C

9. (i) Discuss the significance of Barton reaction.
- (ii) Write the photolysis product(s) of acetonitrile.
- (iii) Provide the uses of thallium(III)oxide in organic synthesis.
- (iv) Give an example of protection of hydroxyl group using organosilicon compound.
- (v) Differentiate between carbenes and carbenoids.
- (vi) How to establish the intermediacy of carbene in a rearrangement?
- (vii) Discuss the simplest way to produce radicals for initiation process.
- (viii) Define and explain migratory aptitude.

- (ix) Give an example of ring expansion of A in steroids.
- (x) Differentiate between carbonium ion and carbocation.
- (xi) Discuss a reaction involving allylic disposition.

$$11 \times 2 = 22$$