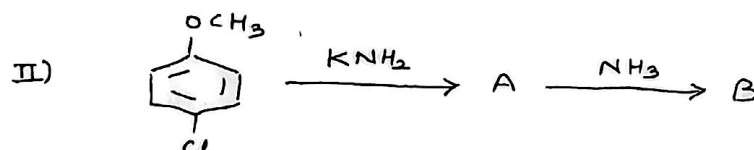
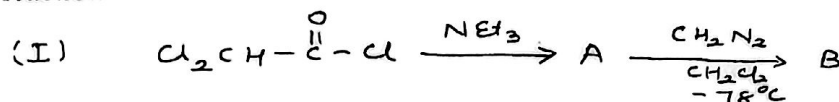


- N.B. : (1) Attempt all questions.
(2) Figures to the right indicate full marks.

1. a) Attempt any two of the following :

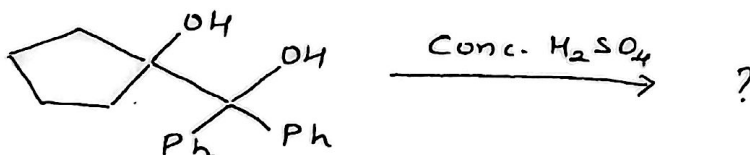
- i) Give stereochemical evidence for neighbouring group participation reactions. 04
ii) Complete the following reactions and identify the reactive species generated in each of the reaction - 04



- iii) Write mechanism of any rearrangement which involves nitrene intermediate. 04
iv) What are pericyclic reactions? Explain symmetry properties of molecular orbitals of buta-1, 3-diene. 04

b) Attempt any one of the following :

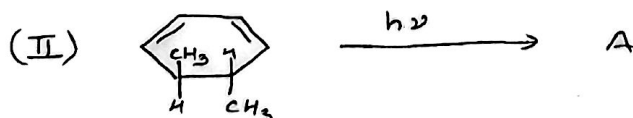
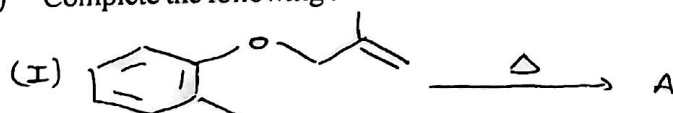
- i) Complete the following reaction and explain its mechanism - 04



- ii) Explain molecular orbital basis for the α -effect. 04

2. a) Attempt any two of the following :

- i) Discuss the Huckel Mobius method for $2\pi + 2\pi$ and $4\pi + 4\pi$ cycloaddition reactions. 04
ii) Draw correlation diagram for disrotatory and conrotatory interconversion of cyclobutene-butadiene system. 04
iii) Discuss FMO approach for Diels-Alder reaction. 04
iv) Complete the following : 04



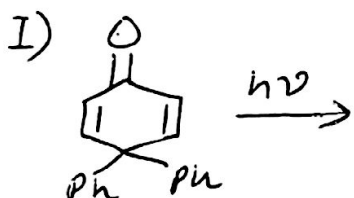
b) Attempt any one of the following :

- i) Explain mechanism of Claisen rearrangement with stereochemistry. 04
ii) Give synthesis of Vitamin D from 7-dehydrocholesterol. 04

[TURN OVER

3. a) Attempt any **two** of the following :
- Discuss the stereochemistry of bicyclo [4.3.0] nonane. 04
 - Illustrate Curtin-Hammett principle with a suitable example. 04
 - Draw all the possible conformers of decalin. cis-decalin, though dissymmetric, cannot be resolved. Explain the statement. 04
 - Explain, with any two examples, the selection of substrate for the study of conformation in reactivity correlation. 04
- b) Attempt any **one** of the following :
- Explain the influence of conformation in the deamination of 2-aminocyclohexanol. 04
 - 'Neomenthyl chloride undergoes E₂ elimination at much faster rate compared to menthyl chloride.' Explain the observation. 04

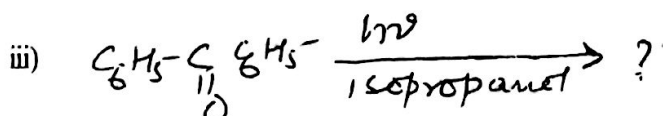
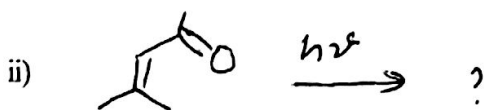
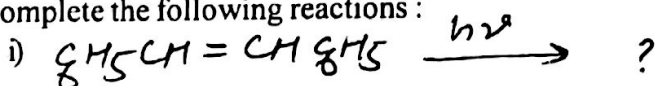
4. a) Attempt any **two** of the following :
- What are photochemical quenchers ? Discuss the principle involved in photoquenching process. 04
 - Predict the products in the following reactions and give their mechanism. : 04



- Draw and explain Jablonski diagram. 04
- Discuss Paterno-Buchi reaction and give its mechanism. 04

- b) Attempt any **one** of the following :
- Discuss the cleavage of a bond β to the carbonyl group in photochemical reactions of ketones with its mechanism. 04
 - Explain the photochemistry of Barton reaction. 04

5. Attempt any **four** of the following :
- What happens when phenol is treated with chloroform in the presence of NaOH ? Explain its mechanism. 03
 - Explain the concept of non-classical carbocation with two examples. 03
 - Give an account of 1, 3-dipolar reactions. 03
 - What are cheletropic reactions ? Explain with one example. 03
 - Explain I-strain concept. 03
 - Give any two examples of trans-annular reactions. 03
 - Complete the following reactions : 03



- h) Explain PhotoFries rearrangement reaction with the mechanism. 03