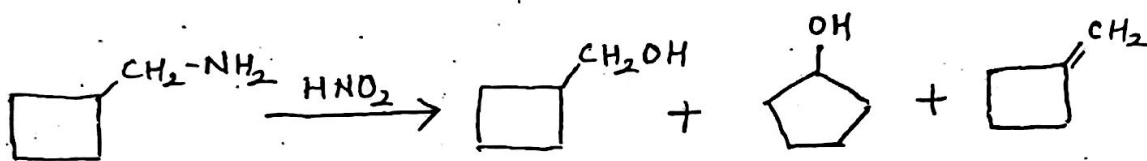


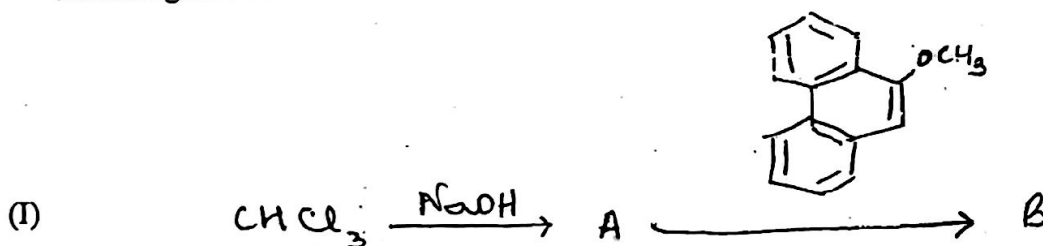
- N.B. : (1) Attempt all questions.  
 (2) Figures to the right indicate full marks.

1. a) Attempt any two of the following : 04
- i) How is benzyne generated from 04
- (I) Anthranilic acid  
 (II) Aryl halide ?  
 What is the action of the following on benzyne ?
- (I) Anthracene  
 (II) benzoic acid ?

- ii) Explain the mechanism for the following reaction : 04



- iii) Complete the following reactions and identify the reactive species generated in each of the following reactions - 04

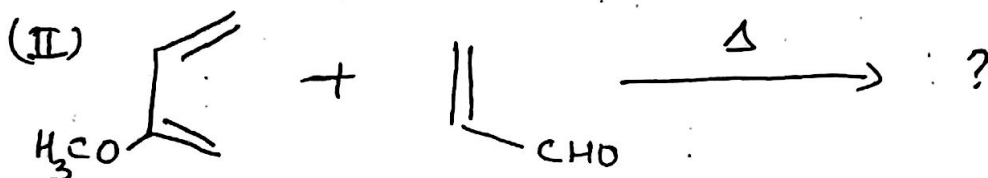
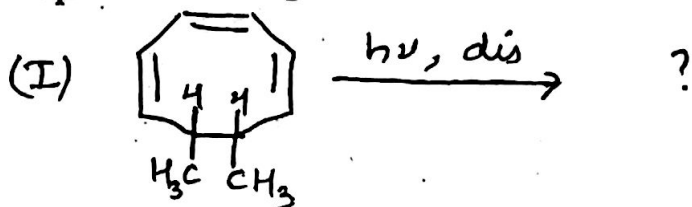


- iv) Explain symmetry properties of molecular orbitals of hexa-1, 3, 5-triene. 04

- b) Attempt any one of the following : 04
- i) What is neighbouring group participation ? 04  
 Explain its mechanism, giving two examples.
- ii) Explain the following on the basis of FMO approach : 04
- (I) The  $\alpha$ -effect.  
 (II) Ambident nucleophiles.

2. a) Attempt any two of the following : 04
- i) What are electrocyclic reactions ? 04  
 Draw correlation diagram for disrotatory interconversion of cyclobutene-butadiene system.
- ii) With the help of FMO method show that  $2\pi + 2\pi$  cycloaddition is photochemically allowed 04  
 process.
- iii) Explain mechanism of aza-Cope rearrangement. 04

iv) Complete the following reactions.



b) Attempt any one of the following :

- i) Give synthesis of citral using pericyclic reactions.
- ii) Give a brief account of sigmatropic rearrangement.

04

04

3. a) Attempt any two of the following :

- i) Discuss the conformational analysis of decalins with respect to their geometry and symmetry.
- ii) Illustrate Curtin-Hammett principle with one example.
- iii) "Dehydrochlorination of menthyl chloride is slower than neomenthyl chloride." Explain the statement.
- iv) Explain with any two examples the selection of substrate for the study of conformation reactivity correlation.

04

04

04

04

b) Attempt any one of the following :

- i) Give any two examples of trans annular reactions.
- ii) Discuss the structural features of cis and trans hydrindane.

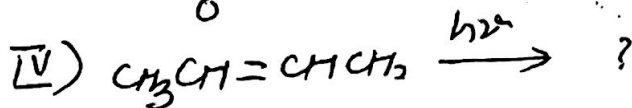
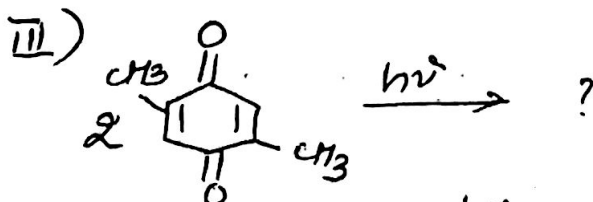
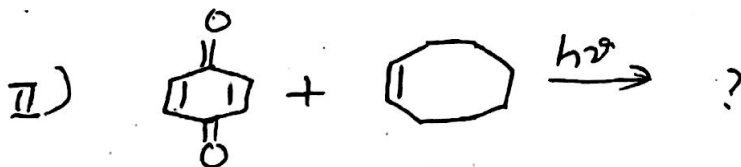
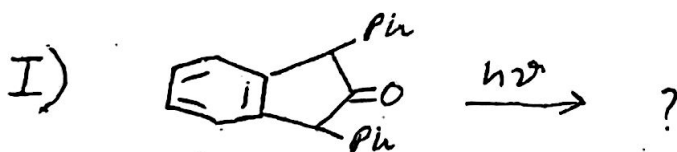
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4. a) Attempt any two of the following :

- i) Predict the products in the following reactions :

04



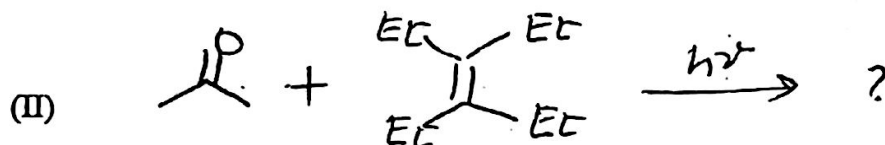
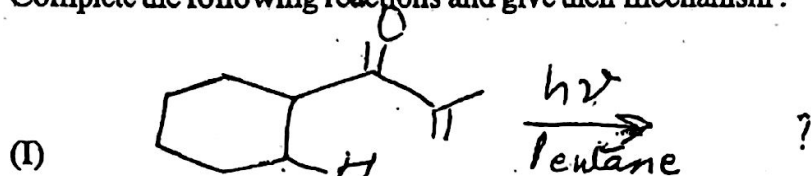
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- ii) Explain with the help of a diagram the modes of dissipation of energy during photochemical reactions.
- iii) Discuss the mechanism of di- $\pi$ -methane rearrangement reactions with a suitable example.
- iv) Give mechanism of Barton reaction.

b) Attempt any one of the following :

- i) Complete the following reactions and give their mechanism :

04



- ii) Discuss the mechanism of Paterno-Buchi reaction with a suitable example.

04

5. Attempt any four of the following :

- a) Acetolysis of optically active erythro-3-phenyl-2-butyl tosylate proceeds with retention of configuration. Explain. 03
- b) What happens when  $\alpha$ -diazoketone is heated with 03
- i) Alcohol. ii) Primary amine.
- iii) Water.
- c) Write a note on cheletropic reactions.
- d) What are 'ene' reactions ? Explain with two suitable examples. 03
- e) State Bredt's rule. Explain why bicyclo [3.2.2] non-7-ene does not follow Bredt's rule. 03
- f) Explain the influence of conformation in the deamination of 2-aminocyclohexanol. 03
- g) Give any two examples of photooxygenation reaction. 03
- h) Explain photo-Fries rearrangement with its mechanism. 03

03