

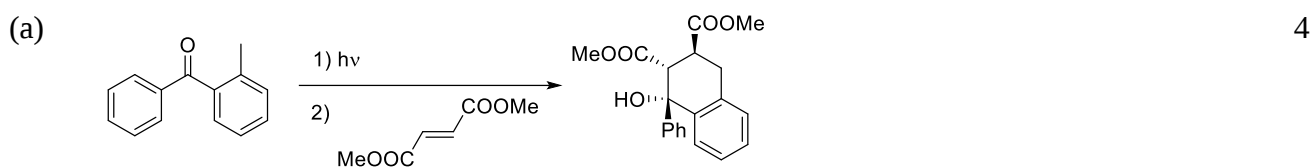
Time: Three Hours

Max. marks: 60

N. B.: (1) All questions are compulsory.

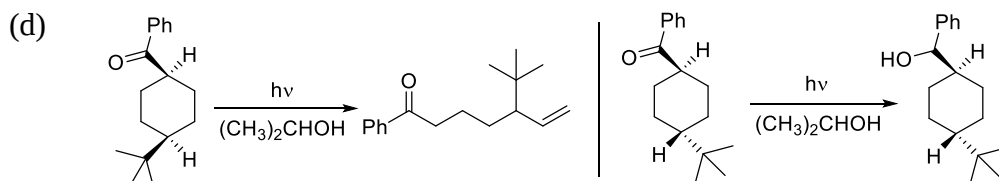
(2) All questions carry equal marks.

Q. 1 Indicate the type of the reaction and mechanism involved in each step of the following transformations.



OR

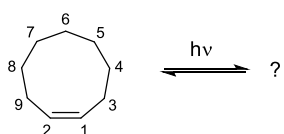
Q. 1 Explain the difference in the photoreaction of the two stereoisomers in isopropanol. 4



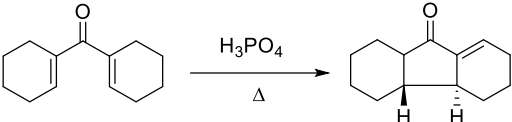
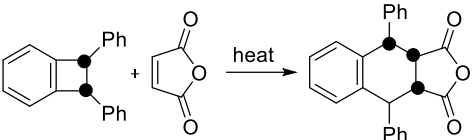
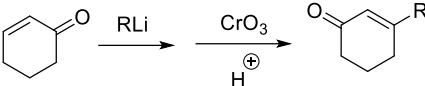
(e) Identify the products **P** and **Q** in the following reactions with suitable mechanism. 4



(f) What is cis-trans photoisomerization? Give mechanism involved in the isomerization of alkenes. Predict the equilibrium product in the following reaction: 4

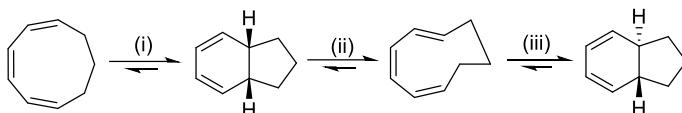


Q. 2 Propose a mechanism for the following reactions.

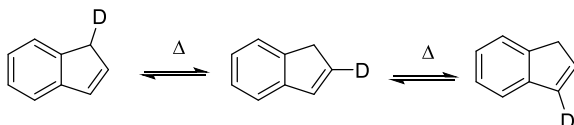
- (a)  4
- (b)  4
- (c)  4

OR

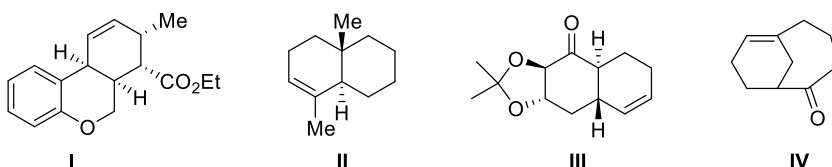
- (d) Which of the reactions shown below will occur under the influence of heat? Light? 4



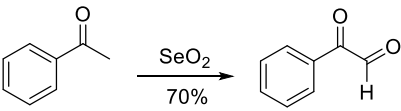
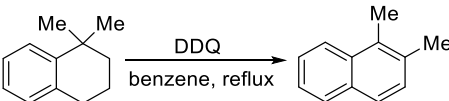
- (e) Propose a mechanism to account for the following deuterium scrambling experiment. 4

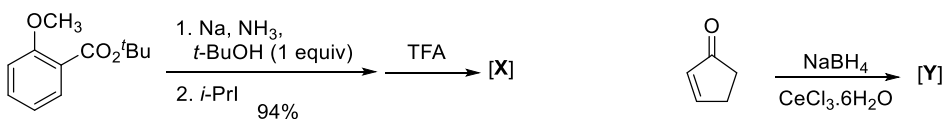


- (f) Write a substrate for the formation of following target molecules using intra-molecular Diels-Alder reaction. 4



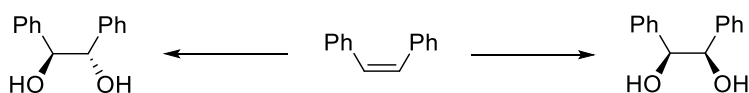
Q. 3 Write a suitable mechanism for the following transformations. 4

- (a)  4
- (b)  4
- (c) Identify major products [X] and [Y] formed in the following reactions. 4

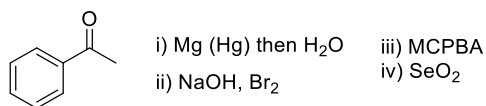


OR

- (d) How will you bring about the following transformations? 4



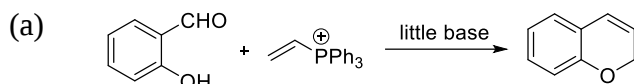
- (e) Write the structure of products formed when acetophenone reacts with each of the following reagents. 4



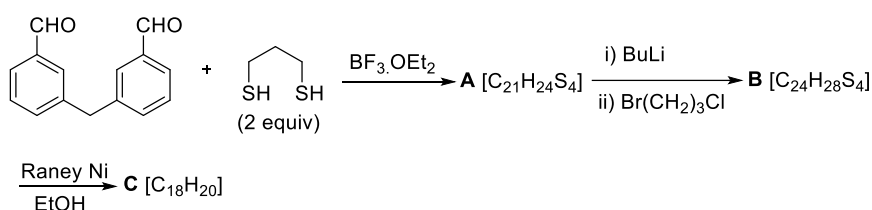
- (f) Predict the product(s) of the following reaction with suitable stereochemistry. 4



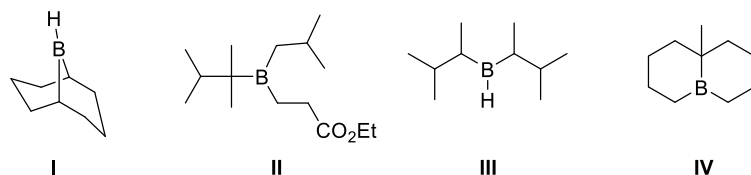
- Q 4. Propose a suitable mechanism for the following transformation. 4



- (b) Complete the following reaction sequence with the structures of intermediates. 4

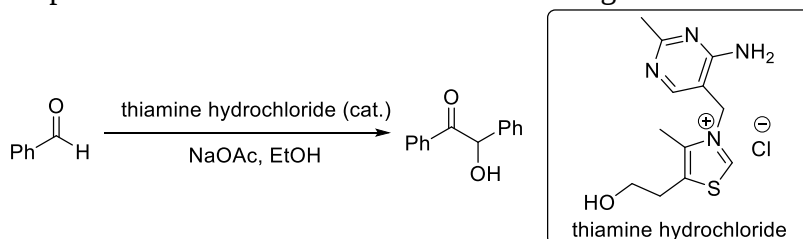


- (c) How will prepare the following organoboranes compounds using hydroboration reaction. 4

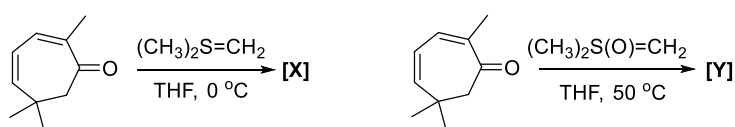


OR

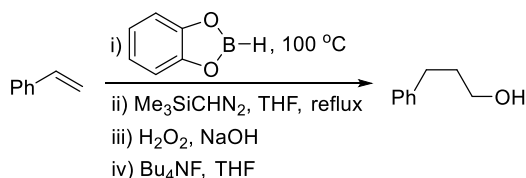
- (d) Propose a suitable mechanism for the following transformation. 4



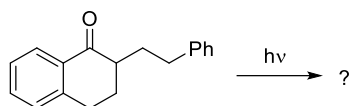
- (e) Explain the outcome of the following reactions by identifying the structures of [X] and [Y]. 4



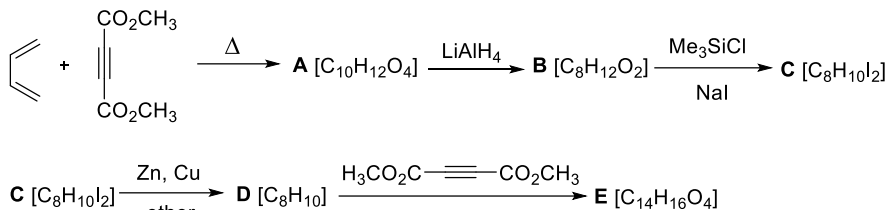
- (f) Propose a suitable mechanism for the following transformation. 4



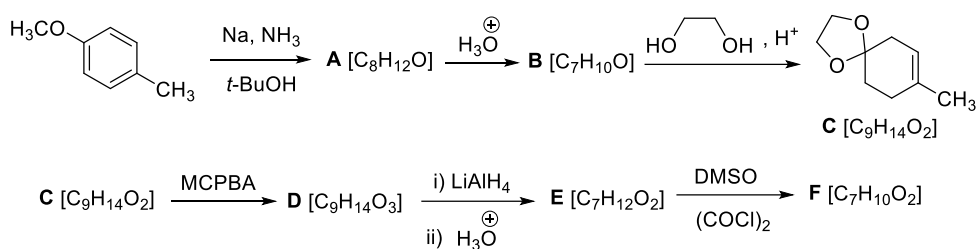
- Q. 5 Give mechanism involved in Norrish type II reaction and predict the products in the following reaction: 4



- (b) Propose structures for the products **A-E** in the following scheme: 4



- (c) Identify the compounds **A-F** formed in the following reaction sequence. 4



- (d) Consider the scheme below and use all the information provided to identify the structures of **A**, **B**, **C** and **D**. 4

