



DBX-003-1102002

Seat No. \_\_\_\_\_

M. Sc. (Sem. II) (CBCS) Examination

July - 2022

Organic Chemistry : Paper : C-202

Faculty Code : 003

Subject Code : 1102002

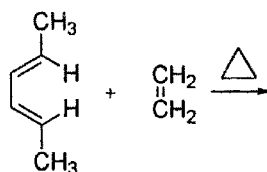
Time :  $2\frac{1}{2}$  Hours]

[Total Marks : 70

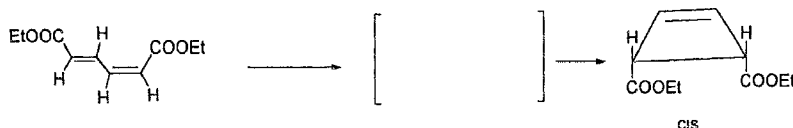
- Instructions :** (1) All the questions carry equal marks.  
(2) Attempt all five questions.

1 Answer any seven of the following briefly : 14

- (a) Justify aromaticity of cyclobutadiene and cyclohexatriene based on Huckel rule.
- (b) Differentiate: Nonaromatic and antiaromatic compounds with a suitable example.
- (c) Account for the aromaticity of cyclopentadiene system and its cation and anion.
- (d) Write name and show stereochemical feature of product for the following.



- (e) 2+2 cycloaddition is forbidden in ground state. Justify giving MOs.
- (f) Write formation process of intermediate and show induction for the following pericyclic change.



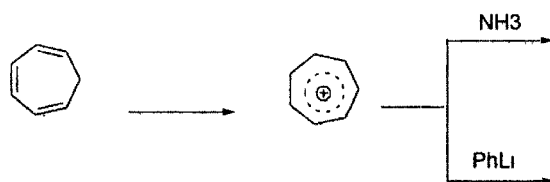
- (g) Explain Supra-Supra and Supra-Antara cycloaddition drawing appropriate orbitals.
- (h) Differentiate: Photo sensitization and quenching.
- (i) Give the statements for Grotthurs-Drapper Law and Einstein's law of photochemical equivalence.
- (j) What is Quantum yield? Give one reason each for Low and High Quantum yields.

2 Answer any two of the following : 14

- (a) Write a note on Cope and Aza Cope rearrangement.
- (b) Discuss aromaticity of [ 10] Annulene and [ 14] Annulene.
- (c) Explain by giving example, Photo-isomerisation and photo-oxidation reactions.

3 Answer the following : 14

- (a) Write a note on Claisen and Claisen-cope rearrangement.
- (b) Answer the following :
  - (1) Give preparation and discuss aromaticity of tropolone.
  - (2) Complete the following reactions giving reaction condition and or products.



**OR**

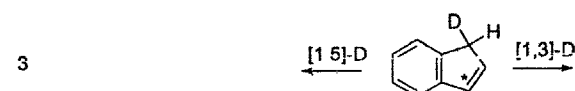
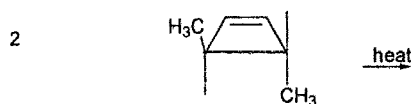
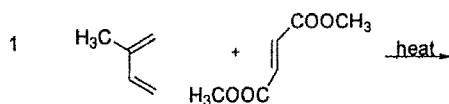
3 Answer the following : 14

- (a) Write a note on Paterno Buchi reaction.
- (b) Explain aromaticity of [ 18] Annulene and azlilenes.

4 Answer the following : 14

- (a) Draw the Jablonski diagram and explain all radiative and non-radiative processes in detail.

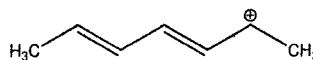
(b) Complete the following reactions



5 Answer any two of the following :

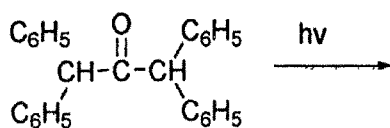
14

(a) Identify the conjugated system and sketch pi MO energy level diagram giving symmetry of HOMO-LUMO of ground and excited states, the electron configuration and the number of nodes present in this molecule.



(b) The [1,3]sigmatropic shift of Hydrogen is thermally forbidden but photochemically allowed whereas [1,5]sigmatropic shift of Hydrogen is thermally allowed. Justify.

(c) What is Norrish Type-1 or  $\alpha$ -Cleavage? Explain Primary and various secondary photochemical processes. Complete Norrish Type I reaction for the following molecule.



(d) Justify aromaticity of the following compounds.

