

M.Sc.(Chem.) Semester - 3 (CBCS) Examination

Oct/Nov. -2019 - [NEW COURSE]

Advanced Organic Chemistry (Core (New))

Time: 2:30 Hours

Marks: 70

Instructions:

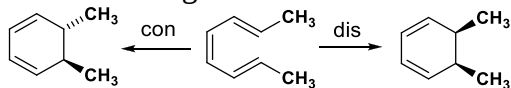
1. All questions are compulsory.
2. Figures to the right indicate marks.

UNIT-1 (14 marks)Answer **ALL** questions**Q.1 (a) Answer the following****4 Marks**

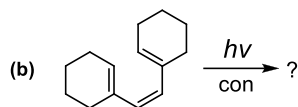
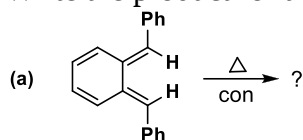
- (1) Give classification pericyclic reaction with examples.
- (2) Explain HOMO and LUMO of : (a) 1,3-butadiene (b) Allylic carbocation.

Q.1 (b) Answer any two question out of three.**10 Marks**

- (1) Find appropriate reaction condition (thermal/photochemical) for following reactions using conservation of molecular orbital symmetry diagram.



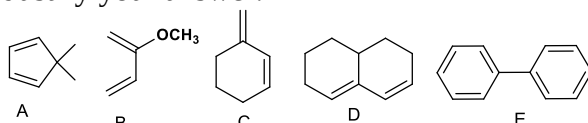
- (2) Write the product for the following reaction and explain its mechanism.



- (3) Write a note on Mobius-huckel approach for electrocyclicization.

UNIT-2 (14 marks)Answer **ALL** questions**Q.2 (a) Answer the following****4 Marks**

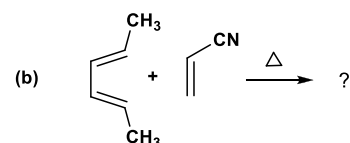
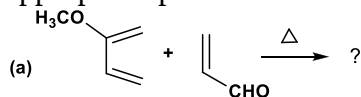
- (1) Which of the following dienes are not substrate of the Diels-alder reaction? Justify your answer.



- (2) Why [2+2] cycloaddition reaction is photochemically allowed but thermally disallowed? Explain with example.

Q.2 (b) Answer any two question out of three.**10 Marks**

- (1) Explain regioselectivity of Following Diels-alder reactions and write appropriate products.



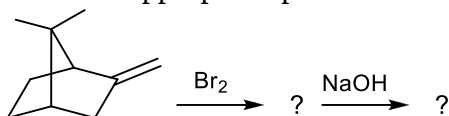
- (2) Write a note on [3,3] sigmatropic cope rearrangement.
- (3) Describe suprafacial and antarafacial [1,5] Sigmatropic Hydrogen shift with suitable examples.

UNIT-3 (14 marks)
Answer ALL questions

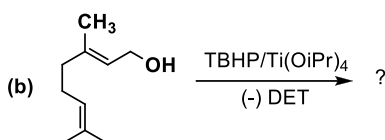
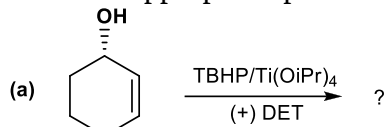
Q.3 (a) Answer the following

4 Marks

- (1) Write the appropriate product of following reaction sequence:



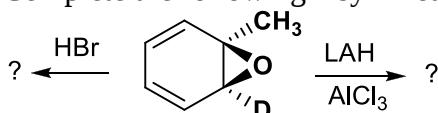
- (2) Write the appropriate product of following reaction:



Q.3 (b) Answer any two question out of three.

10 Marks

- What is epoxidation ? Explain asymmetric epoxidation using *m*-CPBA and Henbest effect
- Complete the following Asymmetric reaction sequence and discuss mechanism.



- What is chiral auxiliary? Describe application of Evans oxazolidinones auxiliary.

UNIT-4 (14 marks)
Answer ALL questions

Q.4 (a) Answer the following

4 Marks

- Give definition of True alkaloids and Pseudoalkaloids.
- Give synthesis of Tropic Acid.

Q.4 (b) Answer any two question out of three.

10 Marks

Describe the total synthesis of following natural product:

- Morphine.
- Reserpine.
- Nicotine.

UNIT-5 (14 marks)
Answer ALL questions

Q.5 (a) Answer the following

4 Marks

- Provide the structure and name of RNA bases.
- Which sugars are present in DNA and RNA? Write its structure.

Q.5 (b) Answer any two question out of three.

10 Marks

Describe the total synthesis of following natural product:

- 2'-deoxyadenosine.
- Uric acid.
- Theobromine.