This question paper contains **5** printed pages]

NY—124—2023

FACULTY OF SCIENCE

M.Sc. (First Year) (Second Semester) EXAMINATION

NOVEMBER/DECEMBER, 2023

(New/CBCS Pattern)

CHEMISTRY

Paper–CH–422

(Organic Chemistry–II)

(Friday, 8-12-2023) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

N.B. :— (*i*) Attempt *all* questions.

(*ii*) Figures to the right indicate full marks.

1. Attempt any *three* of the following : 15

(*a*) What is Jablonski diagram ? Explain in detail with suitable example.

(*b*) Cis-Butene on addition of bromine gives dl mixture of 2, 3 dibromobutane.

(*c*) Explain cis-trans phenomena in Wittig reaction with example.

(*d*) Define the sigmatropic rearrangement. Explain aza cope rearrangement with mechanism.

(*e*) Explain arenium ion mechanism with example.

P.T.O.

2. Answer any *three* of the following : 15

(*a*) Explain sharpless asymmetric epoxidation.

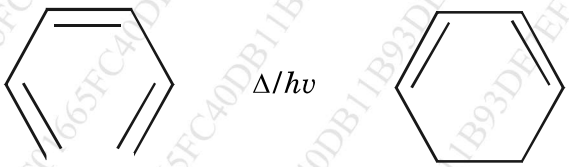
(*b*) With the help of correlation diagram method, show that Diels Alder reaction is a thermally allowed process.

(*c*) Carbon dioxide reacts with Grignard reagent to form carboxylic acid but on treatment with Organolithium compound yields ketone.

(*d*) Explain photochemistry of cis-trans isomerism in olefins.

(*e*) What is photofries reaction ? Explain the photofries reaction of anilides with suitable example.

3. (*a*) Construct correlation diagram and FMO method for the following transformations. Predict whether these transformations are thermally or photochemically allowed : 7



Or

What are Norrish type I and II reaction ? Explain its mechanism with suitable example.

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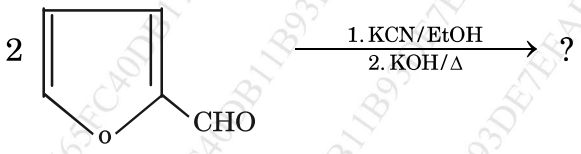
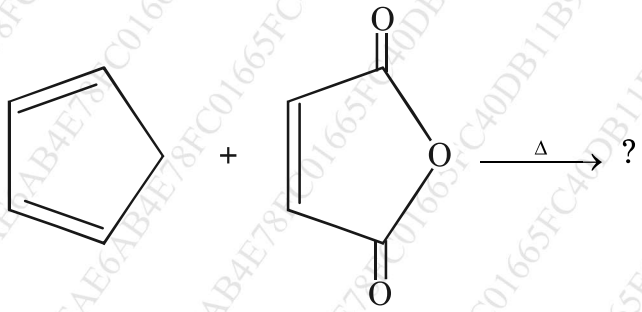
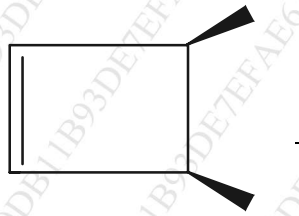
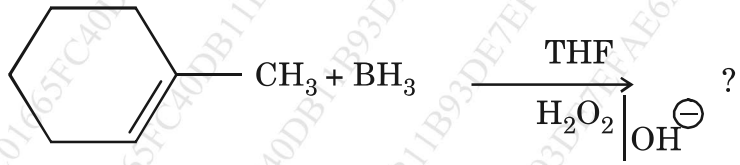
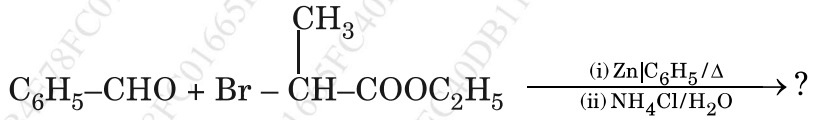
(*b*) Predict the product with mechanism of the following (any *four*) : 8

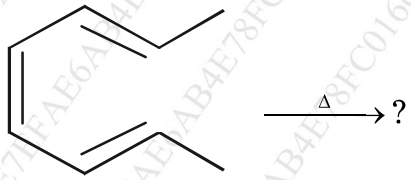
(*i*) 

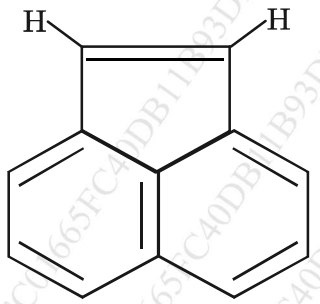
(*ii*) 

(*iii*) 

(*iv*) 

(*v*) 

(*vi*) 

(*vii*) 

4. (*a*) What is photochemistry ? Explain $n\pi - p\pi$ rearrangement with suitable example. 7

Or

(*i*) Reduction of ketone with $LiAlH_4$ is a hybride transfer reaction.

(*ii*) Explain hydroboration.

(*b*) With the help of FMO and correlation diagram method explain interconversion of 1, 3 butadiene into cyclobutene under thermal and photochemical condition. 8

Or

Explain with mechanism :

(*i*) IPSO substitution reaction

(*ii*) Vilsmeir reaction.

5. Write short notes on (any *three*) : 15

(*a*) Cheleotropic reaction

(*b*) Stobbe reaction

(*c*) Photochemical formulation of smog

(*d*) Perkins reaction

(*e*) Photochemistry of olefins.

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