4/32

1204E015

Candidate's Seat No :_____

M.Sc. Sem-4 Examination

507

Chemistry (Org.)

April 2022

Time : 2-00 Hours] [Max. Marks : 50

Instructions: All questions in section I carry equal marks.

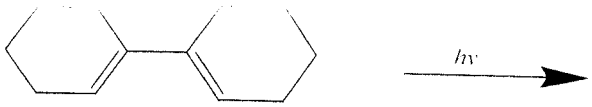
Attempt any 3 questions in section I

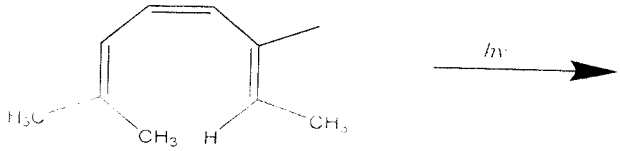
Questions in section II is COMPULSORY

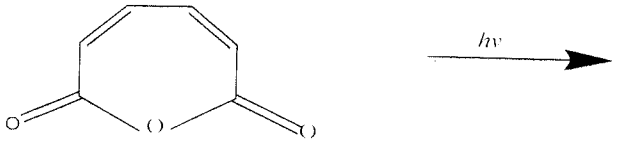
Section I

Que 1 A Draw projections and discuss various conformational analysis of heterocyclic compounds with carbocylic compounds. 7

B A. Predict the product of given reactions 7

1 

2 

3 

Que 2 A (i) Discuss the oxidation of aromatic ring of phenol. 7

(ii) Discuss the application of $PdCl_2$ as an oxidizing agent.

B Discuss the conformations analysis and stability of 1,2 and 1,3 di methylcyclohexane. 7

Que 3 A Give evidence, discuss the mechanism for the reduction of esters to alcohols and amides to amines. 7

B Define the term Conrotatory and Disrotatory system with Correlation diagram of conrotatory system. Explain Cyclisation of 1,3,5-Hexatriazine to Cyclohexadiene. 7

Que 4 A Giving the mechanism of reaction and discuss the application of Osmium tetroxide and Manganese dioxide as oxidizing agent in organic synthesis. 7

B Discuss the reduction of naphthalene and aromatic nitro compounds under different conditions. 7

Que 5 A Giving the mechanism of reaction and discuss oxidation of alkenes to corresponding diols and carbonyl compounds. 7

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E 15-2

B What is Dewar's rule of aromaticity? Discuss its application to predict electrocyclic and sigmatropic reactions. Derive selection Rule. 7

Que 6 A Give evidence, discuss the mechanism for the reduction of alkenes. 7

B Discuss the application of periodic acid an Mn (VII) as oxidizing agent in organic synthesis. 7

Que 7 A Giving the mechanism of the following reactions with one application each: 7

i) Staudinger Reduction

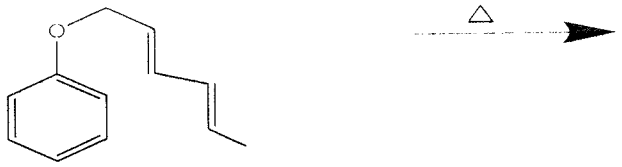
ii) Luche Reduction

B Discuss the conformations of perhydro phenanthrene and discuss its stability 7

Que 8 A What is Dewar's rule of aromaticity? Discuss its application to predict electrocyclic and sigmatropic reactions. Derive selection Rule. 7

1

2



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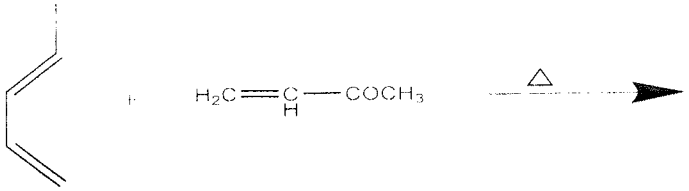


B Define anomeric effect. Give and account on the factors that affects the stability of conformation. 7

CH-15-3

Section II

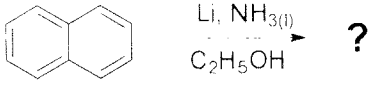
Que 1 Which type of fused rings of decalin cannot undergoes ring flip 1

A Cis-Fused rings

B In which one substituent is in the equatorial position and one substituent is in the axial position

C In which both the substituents in the equatorial position

D Both B and C

Que 2 
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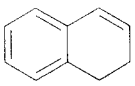
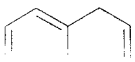
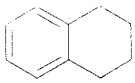
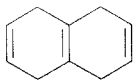
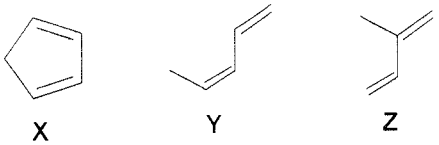
A 

B 

C 

D 

Que 3 Order of reactivity of the following dienes, X,Y and Z in the Diel Alder Reaction is 1

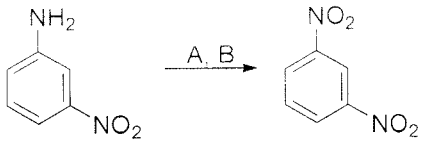


A X > Z > Y

B Y > X > Z

C Y > Z > X

D X > Y > Z

Que 4 
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A $CaCO_3$; HNO_3

B $NaNO_3$; H_2O

C CF_3COOOH; CH_2Cl_2

D AcOH; HCl

Que 5 Thermally reaction of cis-3,4-dimethyl cyclobutene gives 1

A Cis-Cis-2,4-hexadiene

B Cis-Cis-2,4-hexatriene

C Trans-Trans-2,4-hexadiene

D Cis-Trans-2,4-hexadiene

Que 6 α,β-unsaturated ketone could be selectively converted to allylic alcohols by using a mixture of lanthanide chlorides and sodium borohydride 1

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E15-4

A Clemmensen reduction
B Luche reduction
C Meerwein-Ponndorf-Verley reduction
D Staudinger reaction

Que 7 Maximum stable conformation of 1,2-dimethyl cyclohexane is 1

A Cis(1a,2e)
B Cis(1e,2a)
C Trans(1a,2a)
D Trans(1e,2e)

Que 8 Epoxidation of alkene with peracid results in epoxide is 1

A Syn addition and stereospecific
B Anti addition and stereoselective
C Anti addition and stereospecific
D Syn addition and stereoselective