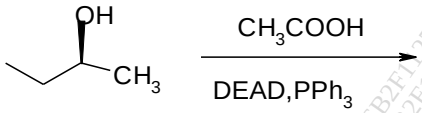
Duration : 21/2 hrs

Max. Marks :60

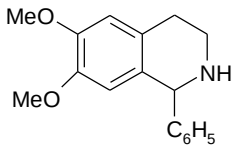
N.B. i) All questions are compulsory.
ii) Figures to the right indicate full marks.

Q1a) Attempt any **TWO** of the following.

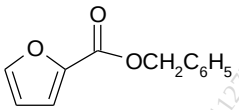
i) Give the product (with correct stereochemistry) , name and mechanism of the following reaction. 4



ii) How will you prepare the following 4

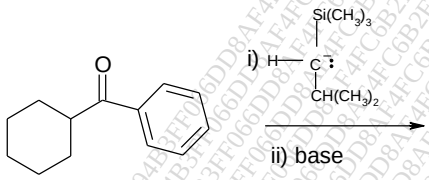


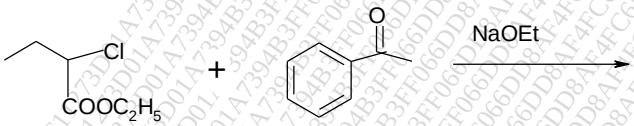
by the Pictet -Spengler synthesis



by Mukaiyama esterification

iii) Give the product and name of the following reactions. 4





Iv) Give an example of 4

RItter reaction
Click reaction
Yamaguchi esterification
Biginelli reaction

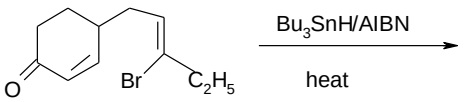
b) Give the product, name and mechanism of the following reaction (any **ONE**) 4

i) CH_3COCH_2COOMe + C_6H_5CHO + NH_3 ⟶
(two equiv.)

ii) CH_3COOH + $C_2H_5NH_2$ + C_6H_5CHO + $CH_3-\overset{+}{N}\equiv C^{-}:$ ⟶

Q2a) Attempt any **TWO** of the following.

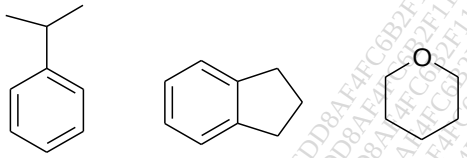
i) Give the product and mechanism of the following reaction 4



ii) Complete the following reaction. Give the name and mechanism.. 4

$$C_6H_5CH_2COO^-Ag^+ \quad + \quad Br_2 \rightarrow$$

iii) What is autooxidaton? Give the products of autooxidation of the following compounds. 4



iv) Discuss with examples, intramolecular C-C bond formation using mercury hydrides. 4

b) Attempt any **ONE** of the following.

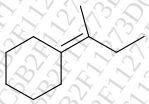
i) Give the product, name and mechanism of the following reaction. 4

ii) Give the product and mechanism of the following reaction.

1-mehyl cyclohexene $\xrightarrow[\text{Heat}]{\text{HBr,ROOR}}$

Q3a) Attempt any **TWO** of the following.

i) Using phosphorous ylide, suggest a synthesis of the following compound. Name the reaction involved and provide a mechanism for the same. 4



ii) With suitable examples, explain how alkenes are obtained from phenyl sulfones and aldehydes? Name the reaction involved. 4

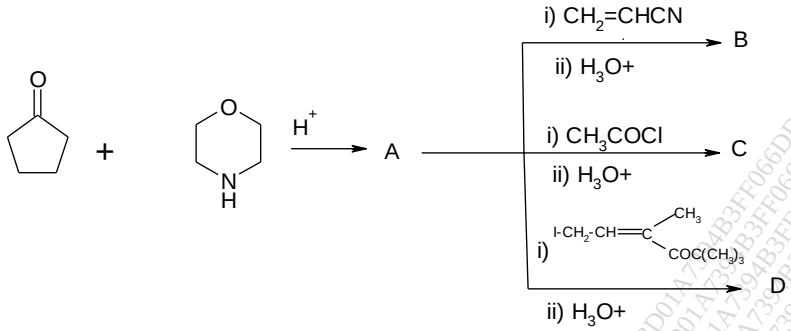
iii) How are alkenes prepared by coupling reaction between diazo compounds and thioketones. Name the reaction involved. 4

Iv) Compare the reactivity of enolates and enamines . Justify your answer with suitable examples.

b) Attempt any **ONE** of the following

i) Give four reactions of phosphonates in C-C bond formation via carbanion generation. 4

ii) Complete the following reactions 4

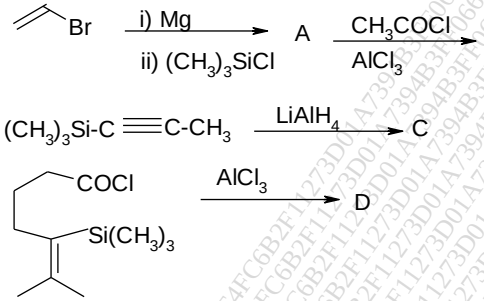


Q4a) Attempt any **TWO** of the following

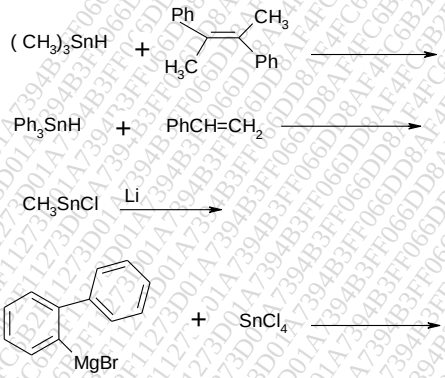
i) Give the synthesis of 1,3-butadiene using $PhSeCH_3$. 4

ii) Explain hydroboration of 3-methyl-1-butyne with mechanism and selectivity. 4

iii) Identify A,B,C & D. 4

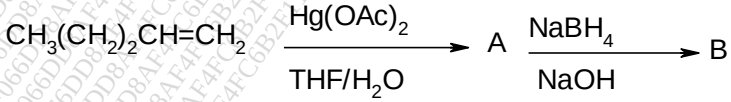


iv) Predict the products of the following reactions. 4

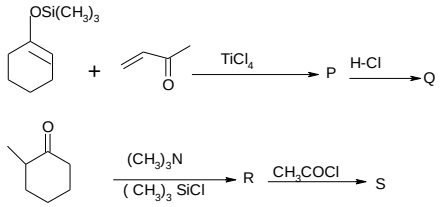


4b) Attempt any **ONE** of the following. 4

i) Complete the following reaction. Name the reaction and give its mechanism. 4

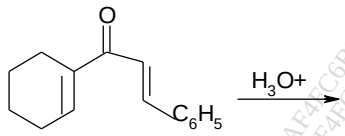


ii) Identify P,Q,R & S. 4

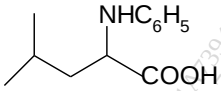


Q5) Attempt any **FOUR** of the following.

a) What are domino reactions. Give the product and name of the following reaction. 3

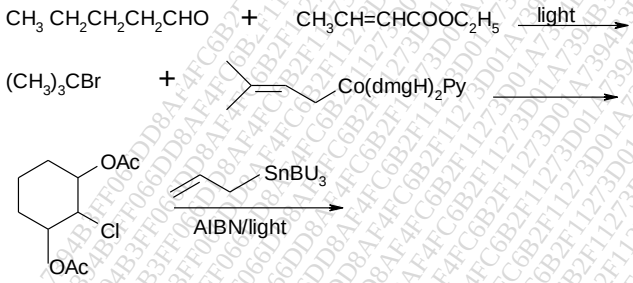


b) What are multicomponent reactions. How will you prepare the following compound by the Strecker synthesis? 3



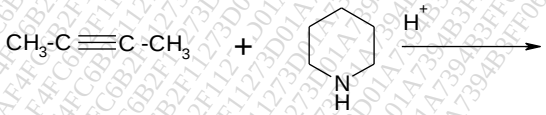
c) Give an example of persistent radical, electrophilic radical and nucleophilic radical. 3

d) Complete the following reactions. 3

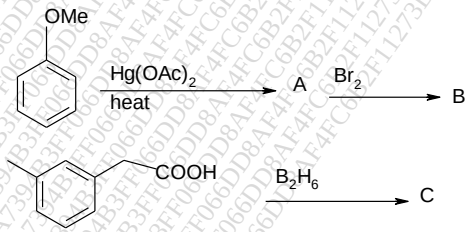


e) How is the following compound prepared using S-ylide? 3

f) Complete the following reaction and give its mechanism 3



g) Complete the following reactions. 3



h) Give one method of preparation and two applications of aryl silanes in organic synthesis. 3

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