

B.Sc. 3rd Semester (Honours) Examination, 2022 (CBCS)

Subject : Chemistry

Paper : CC-VII

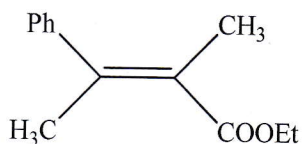
(Organic Chemistry)

Time: 2 Hours

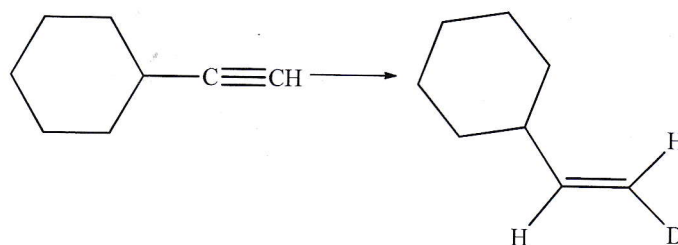
Full Marks: 40

*The figures in the margin indicate full marks.**Candidates are required to give their answers in their own words as far as practicable.*1. Answer any five questions from the following: 2×5=10

- (a) Convert E-2-butene to Z-2-butene.
- (b) Why Zn amalgam is used in Clemenson's reduction instead of Zn metal?
- (c) What happens when Meso-2, 3-dibromobutane is treated with metallic Zn in methanol?
- (d) Allene reacts with hydrogen bromide to afford two isomeric bromopropanes of which one is obtained as major product. Explain.
- (e) Use Reformatsky reaction to synthesise



- (f) Use Diels Alder reaction to synthesise α -naphthol.
- (g) Why Red P is used in HVZ reaction of carboxylic acid?
- (h) Convert

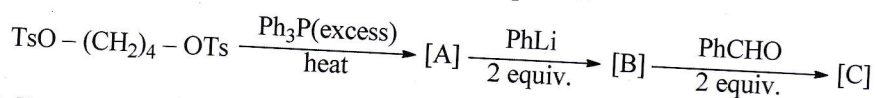
2. Answer any two questions from the following: 5×2=10

- (a) (i) Convert Benzoic acid to acetophenone.
- (ii) What is the full form of PCC? How it can be used to oxidise alcohol to carbonyl compound? Show mechanism. 2+3

(b) (i) What happens when benzaldehyde is treated with Ethyl methyl ketone in (i) acidic medium? (ii) In basic medium?

(ii) Identify [A] to [C] in the given reaction sequence.

2+3



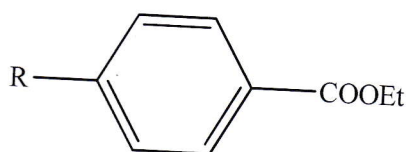
(c) (i) Para-nitro benzaldehyde and para-dimethylaminobenzaldehyde fail to undergo Benzoin Condensation but a mixture of these two aromatic aldehydes undergo the reaction. Explain.

(ii) Treatment of para-bromophenol with sodamide in liq. NH_3 at -33°C furnishes para-aminophenol. Explain with mechanism.

3+2

(d) (i) Illustrate the use of diazomethane for conversion to higher homologues of both cyclic and acyclic ketones. Show possibilities of formation of any other product.

(ii) Write the B Ac2 mechanism of hydrolysis of the following ester:



Compare the rate of hydrolysis of esters when $\text{R} = -\text{OMe}$ and $-\text{NO}_2$ with proper explanation.

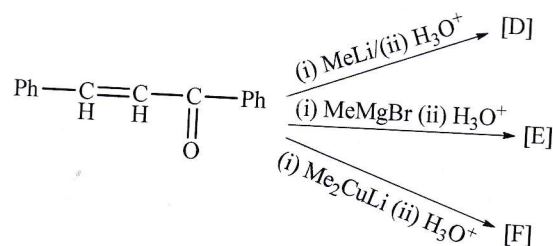
2+3

3. Answer any two questions from the following:

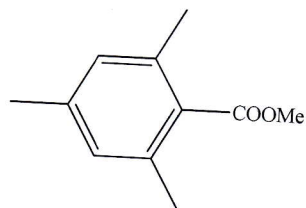
2×10=20

(a) (i) Acetals and ketals regenerate the corresponding carbonyl compounds upon treatment with an aq. acid but 1,3-dithianes are stable in acid. However 1,3-dithianes are cleaved upon treatment with HgCl_2 solution. Explain.

(ii) Draw the structure of the products [D] to [F].



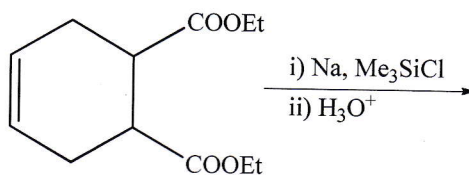
(iii) When



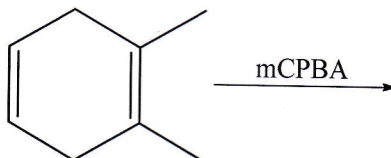
is dissolved in conc. H_2SO_4 and then poured into ice water quantitative yield of mesitoic acid is obtained. Write the mechanism and explain.

4+3+3

(b) (i) Explain the following reaction with mechanism.

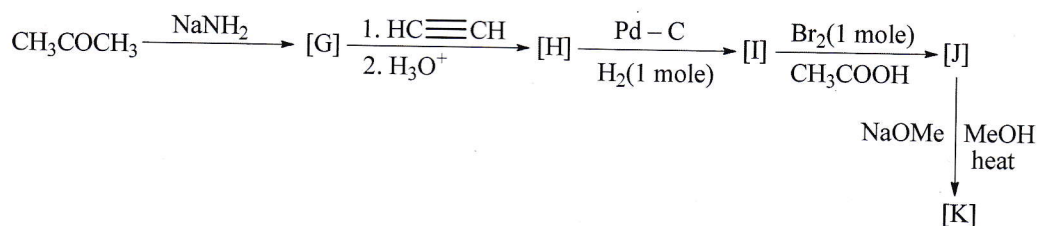


(ii) Give the product and explain.

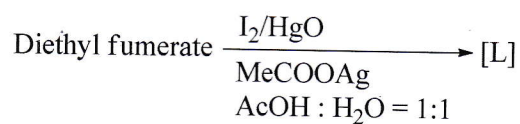


(iii) Identify the products:

3+2+5



(c) (i) Comment about the optical activity of the product.



(ii) Synthesise the following compound from EAA:

