

2016

Time : 3 hours

Full Marks : 80

The figures in the right-hand margin indicate marks.

Answer from both the Sections as directed.

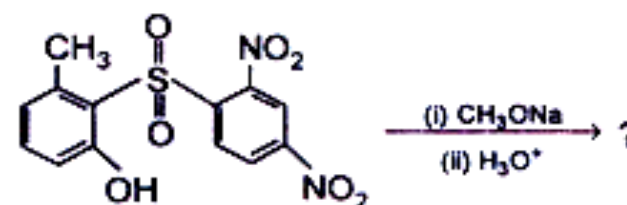
(ORGANIC CHEMISTRY – II)

Section – A

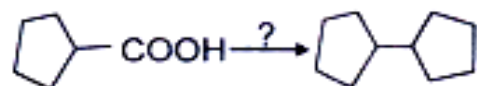
1. Answer any four of the following : $4 \times 4 = 16$

(a) What is SE_2 reaction ? Explain it with suitable examples.

(b) Write the product of the following reaction with mechanism :

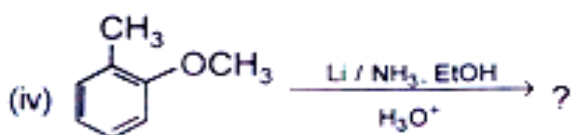
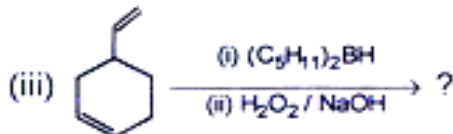
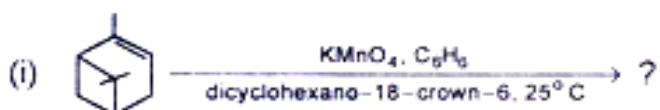


- (c) How will you bring about the following conversion in three steps ?

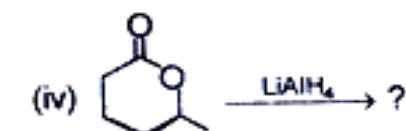
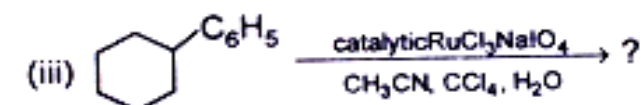
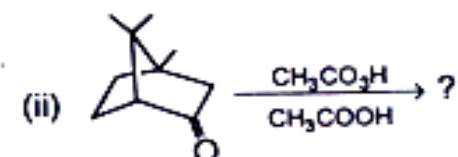
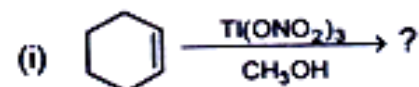


- (d) 1-bromobicyclo [2, 2, 1] heptane does not undergo E_1 elimination when heated with a base. Explain it.

- (e) Write the product of the following reactions :



- (f) Write the product formed in the following reaction ?



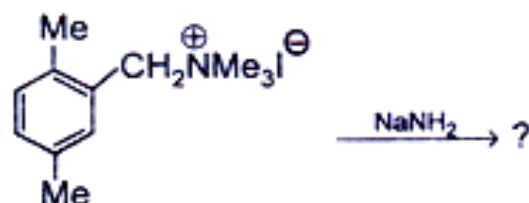
OR

2. Answer all questions from the following :

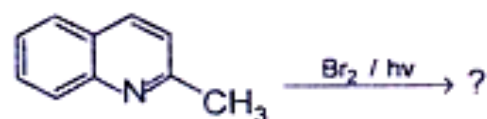
2×8 = 16

- (a) Explain Reimer-Tiemann reaction with mechanism.

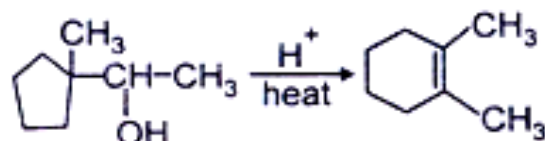
(b) Predict the product with mechanism :



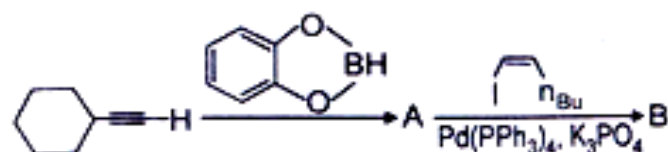
(c) Write the product of the following reaction :



(d) Give a mechanism of the following reaction :

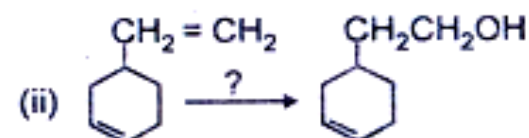
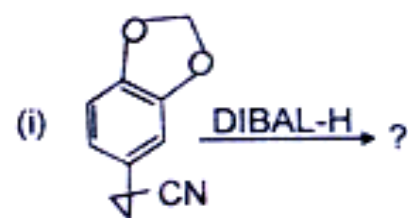


(e) Complete the sequence of the reaction :

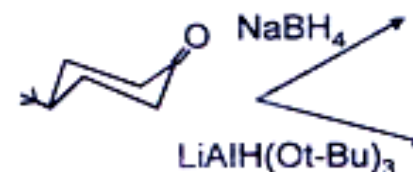


(f) Acid catalysed dehydration of neopentyl alcohol yields 2-methyl-2-butene as the major product. Outline a mechanism showing all steps in its formation.

(g) Complete the following reactions :



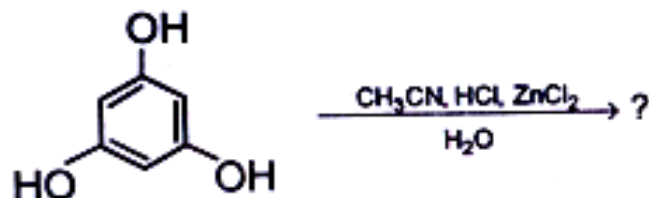
(h) What would be the product of the following compound in NaBH_4 and $\text{LiAlH(O}^t\text{Bu)}_3$ reduction reaction ?



Section – B

Answer all questions :

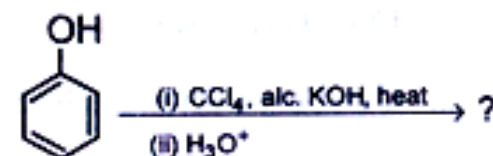
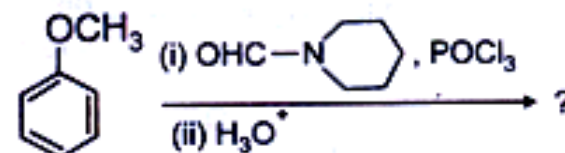
3. (a) (i) What is Vilsmeier-Hack reaction ?
Explain it with mechanism. 8
- (ii) Write the difference between SE_2 and SE_1 reactions. 4
- (iii) Write the product of the following reactions with mechanism : 4



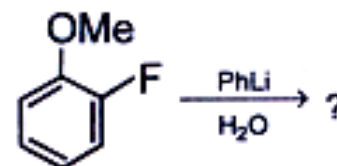
OR

- (b) (i) Explain aiphatic electrophilic substitution reaction in allylic substrates.
Explain with suitable examples. 8

- (ii) Complete the following reactions and give mechanisms ? 4+4 = 8



4. (a) (i) Describe Smiles rearrangement with suitable example. 8
- (ii) Complete the following reaction and outline its mechanism. 4



- (iii) In the following reaction, a mixture of cis and trans-1-bromopropene is formed

but 2-bromopropene is not formed.
Explain. 4



OR

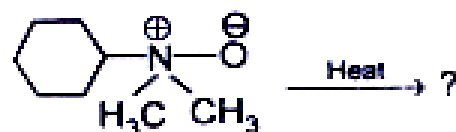
(b) Write notes on the following : 5+5+6 = 16

- (i) Hunsdiecker Reaction
- (ii) Gomberg-Bachmann Reaction
- (iii) Wohl-Ziegler Reaction

5. (a) (i) Explain Peterson elimination reaction in the presence of acid and base. 8

(ii) Explain Chugaev reaction with examples. 5

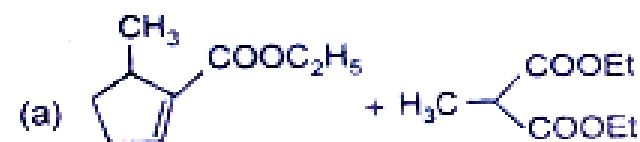
(iii) Write the product with mechanism : 3



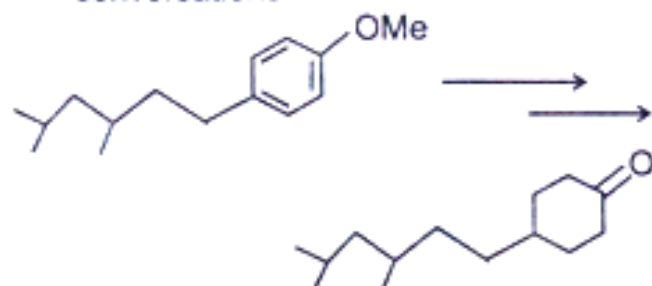
OR

(b) (i) Menthyl chloride reacts with sodium methoxide in ethanol gives a single product while in contrast, neomenthyl chloride treated with same fashion gives additional product which is the major product. Explain these observations mechanistically. 8

(ii) Complete the following reactions. Write the mechanism of the first reaction : 6+2 = 8

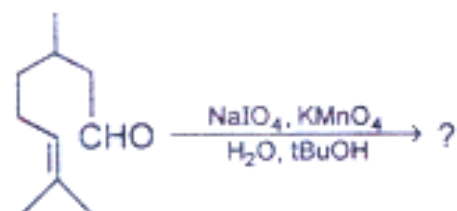
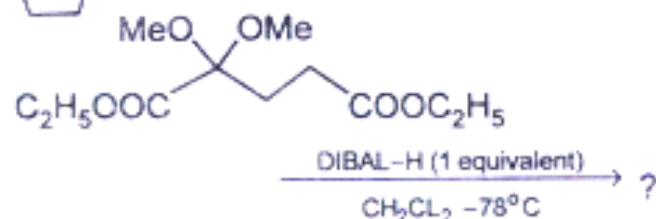
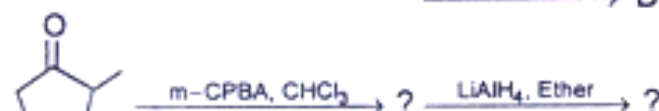
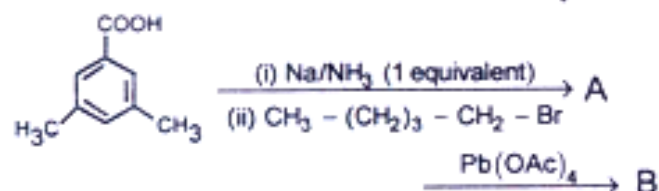


6. (a) (i) Write down the reagent for the following conversions : 4



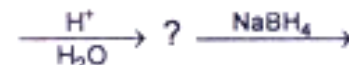
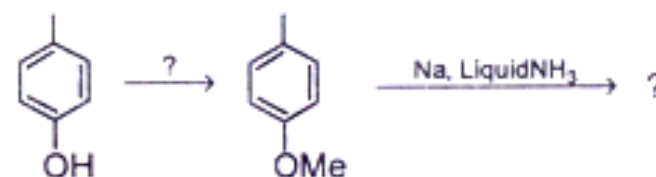
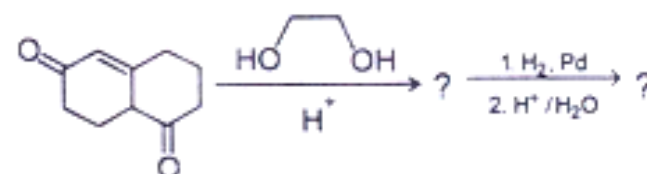
- (ii) Complete the following reactions :

4+4+2+2 = 12



OR

- (b) (i) Complete the following reaction sequences : 4+4 = 8



- (ii) Explain Swern Oxidation with mechanism. 4

- (iii) Write the product of the following reaction with mechanism. 4

