

Total No. of Printed Pages—8

3 SEM TDC CHMH (CBCS) C 6

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(Nov/Dec)

CHEMISTRY

(Core)

Paper : C-6

(**Organic Chemistry**)

Full Marks : 53

Pass Marks : 21

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

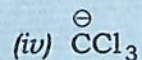
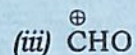
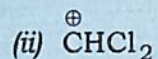
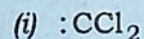
1. Select the correct answer : 1×5=5

(a) Tertiary alkyl halides are practically inert to substitution by S_N2 mechanism due to

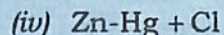
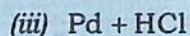
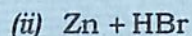
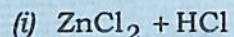
- (i) insolubility
- (ii) unstability
- (iii) steric hindrance
- (iv) inductive effect

(2)

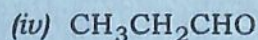
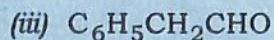
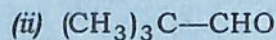
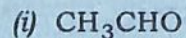
(b) The electrophile involved in the Reimer-Tiemann reaction is



(c) Lucas reagent is a mixture of

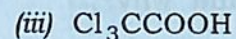
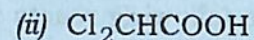


(d) Which of the following compounds will give Cannizzaro's reaction?



(3)

(e) Arrange the following in order of increasing acidity :



UNIT—I

2. Answer any five of the following questions :

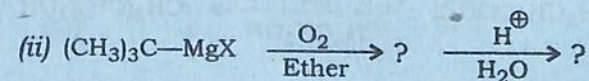
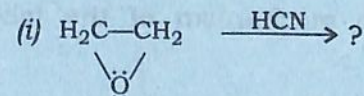
2×5=10

(a) What is $\text{S}_{\text{N}}\text{i}$ mechanism? Explain with the help of an example.

(b) Give the elimination-addition mechanism of conversion of chlorobenzene into aniline.

(c) Why are the aryl halides less reactive towards nucleophilic substitution reaction than alkyl halides?

(d) Complete the following reactions :



(4)

- (e) Discuss the relative reactivity of alkyl, allyl and aryl halides towards nucleophilic substitution reactions.
- (f) Which one of the following reacts faster in S_N1 reaction and why?



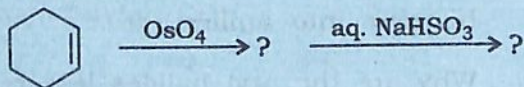
UNIT—II

3. Answer any *three* of the following questions :

2×3=6

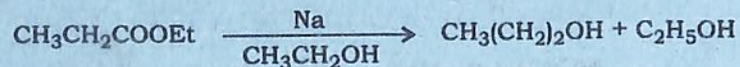
- (a) How will you distinguish between 1°, 2° and 3° alcohols by Lucas test?

- (b) Complete the following reaction :



- (c) How would you synthesize α , β -unsaturated aldehyde from glycerol?

- (d) Give the mechanism of the following reaction :

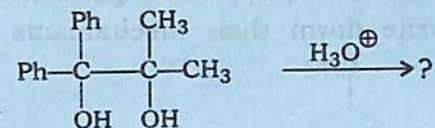


(5)

4. Answer any *two* of the following questions :

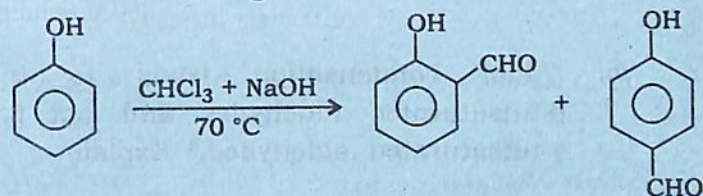
3×2=6

- (a) Complete the following reaction and write down the possible mechanism :

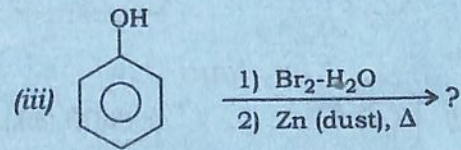
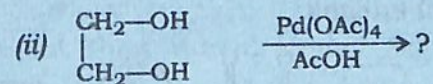
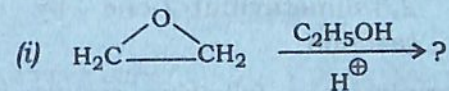


- (b) (i) How can you prepare phenol from cumene? Give the mechanism.

- (ii) Give the mechanism of the following reaction :



- (c) Complete the following reactions :

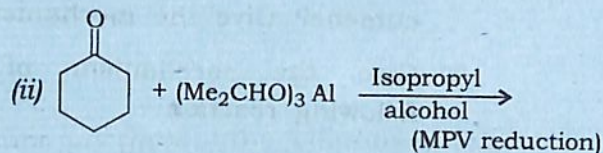
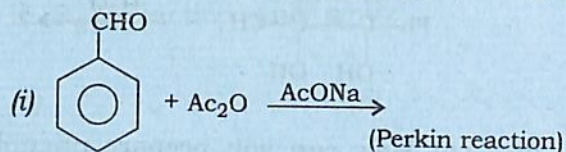


(6)

UNIT—III

Answer either Q. No. 5 or Q. No. 6

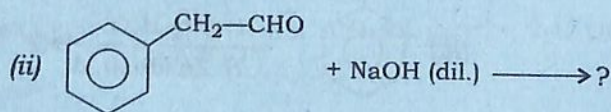
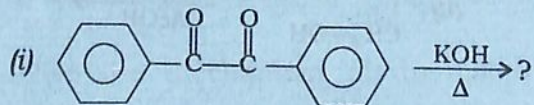
5. (a) Complete the following reactions and write down their mechanisms : $3 \times 2 = 6$



- (b) "Aldol condensation leads to α , β -unsaturated aldehydes and not β , γ -unsaturated aldehydes." Explain. 2

6. (a) Synthesize the following : 2
2,3-dimethylbut-2-ene by Wittig reaction

- (b) Complete the following reactions with mechanisms : $3 \times 2 = 6$



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(Continued)

(7)

7. Answer any two of the following questions :

 $2 \times 2 = 4$

- (a) Mention the synthetic applications of the following reagents (any two) : $1 \times 2 = 2$

(i) HIO_4 (ii) LiAlH_4 (iii) SeO_2

- (b) What is active methylene compound? Show the keto-enol tautomerism in ethyl acetoacetate. $1 + 1 = 2$

- (c) What is Michael reaction? Explain with a suitable reaction. 2

8. Synthesize methyl vinyl ketone from acetone. 1

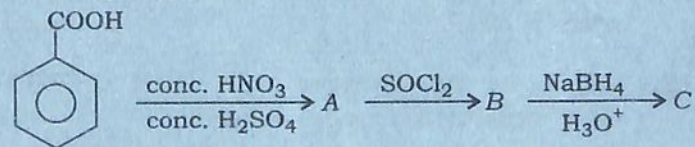
Or

How is barbituric acid prepared using malonic ester?

UNIT—IV

Answer either Q. No. 9 or Q. No. 10

9. (a) "Carboxylic acids have higher boiling point than the alcohols." Explain. 2
- (b) Identify A, B and C in the following reactions : 3



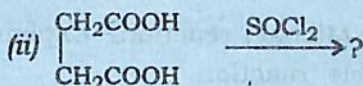
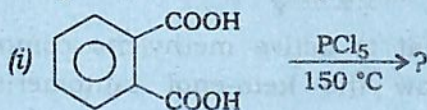
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(Turn Over)

(c) Synthesize the following : $2 \times 2 = 4$

- (i) Cinnamic acid from benzaldehyde by using Knoevenagel reaction
- (ii) Propanoic acid to ethanoic acid by Hofmann degradation

10. (a) Complete the following reactions : $1 \times 2 = 2$



(b) Discuss the mechanism of acid-catalyzed hydrolysis of ester. 3

(c) (i) How would you synthesize lactic acid from propene? 2

(ii) Justify the observation that *o*-hydroxybenzoic acid is a stronger acid than a methoxybenzoic acid. 2

UNIT—V

11. What are thioethers? How do you obtain diethyl thioether from ethyl mercaptan? What happens when a thioether is oxidized with H_2O_2 ? $\frac{1}{2} + \frac{1}{2} + 1 = 2$

12. Which is the stronger acid, ROH or RSH? Give reason for your answer. $1 + 1 = 2$

★★★