

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) Addition of HBr to 2-methylpropene in presence of benzoyl peroxide mainly forms

- (i) 1-bromobutane
- (ii) 2-bromobutane
- (iii) 2-bromo-2-methylpropane
- (iv) 1-bromo-2-methylpropane

(2)

- (b) Lucas reagent is a mixture of
- $\text{ZnCl}_2 + \text{HCl}$
 - $\text{Zn} + \text{HBr}$
 - $\text{Pd} + \text{HCl}$
 - $\text{Zn}(\text{Hg}) + \text{Cl}$
- (c) Malaprade reagent used to detect vicinal diol is
- OsO_4
 - H_5IO_6
 - $\text{Pd}(\text{OAc})_4$
 - Peracetic acid
- (d) The intermediate in the acid-catalyzed dehydration of alcohol is
- carbene
 - carbanion
 - carbocation
 - free radical
- (e) Which of the following compounds has the highest acid strength?
- ClCH_2COOH
 - Cl_2CHCOOH
 - Cl_3CCOOH
 - HCOOH

(3)

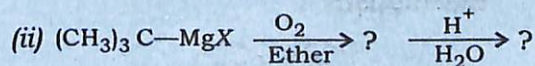
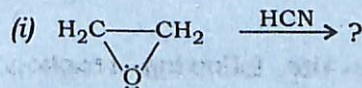
UNIT—I

2. Answer any *five* of the following questions :
2×5=10

- (a) What is $\text{S}_{\text{N}}1$ mechanism? Explain with a suitable example. 1+1=2
- (b) Discuss the benzyne mechanism for nucleophilic aromatic substitution reaction. 2
- (c) Which one of the following reacts faster in $\text{S}_{\text{N}}1$ reaction and why? 2



- (d) Synthesize the following (any one) : 2
- Ethyl bromide by Hunsdiecker reaction
 - Fluorobenzene through diazonium salt
- (e) Complete the following reactions : 1×2=2



- (f) Why are the aryl halides less reactive towards nucleophilic substitution reactions than alkyl halides? 2

(4)

UNIT—II

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

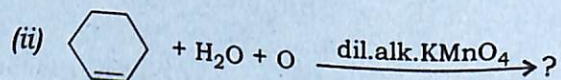
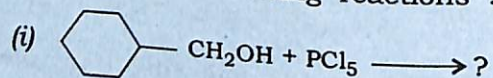
2×3=6

(a) How will you distinguish between 1°, 2°- and 3°-alcohols by Victor-Meyer method?

(b) Prepare acrolein from glycerol.

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

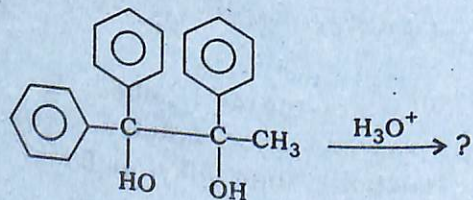
(d) Complete the following reactions : 1×2=2



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

3×2=6

(a) Complete the following reaction with mechanism :



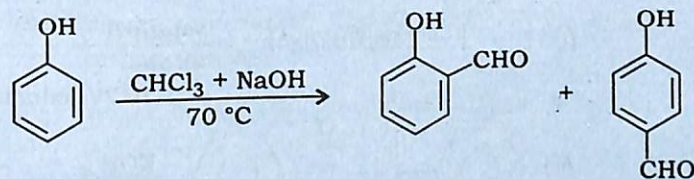
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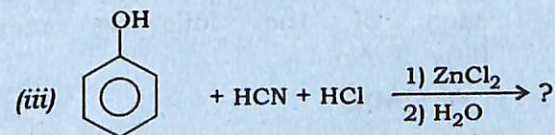
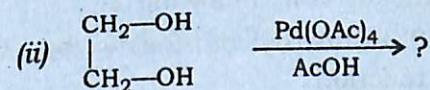
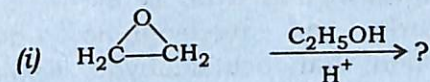
(5)

(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 :



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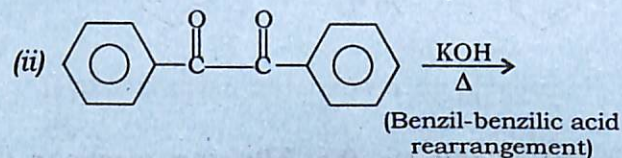
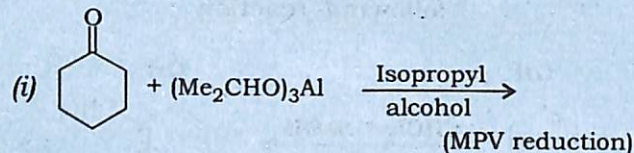
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UNIT—III

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

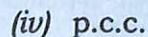
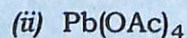
5. (a) Complete the following reactions and write down the mechanisms : $3 \times 2 = 6$



- (b) Trichloroacetaldehyde is more reactive towards the nucleophilic addition reaction than acetaldehyde. Explain. 2

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

- (b) Write one synthetic application of each of the following reagents (any three) : $1 \times 3 = 3$



- (c) Write the Rosenmund's reaction for synthesis of acid chlorides. 2

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(7)

7. Answer any two of the following questions :

$2 \times 2 = 4$

- (a) Synthesize the following (any one) :

(i) Methyl vinyl ketone from acetone

(ii) Crotonaldehyde from acetaldehyde

- (b) Write a short note on keto-enol tautomerism.

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

8. How is barbutaric acid prepared using malonic ester? 1

Or

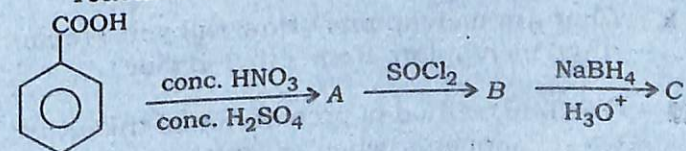
Write any one preparation method of acetoacetic ester.

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 reaction : 3



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

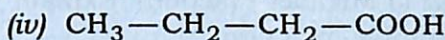
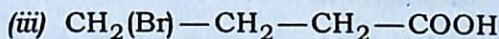
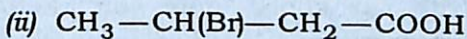
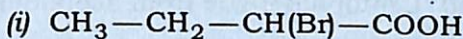
(i) Butanoyl chloride to propanoic acid by Curtius rearrangement

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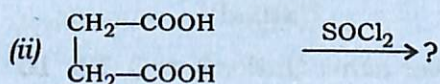
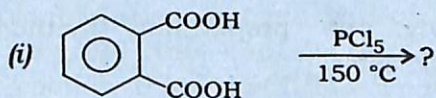
(ii) Cinnamic acid from benzaldehyde
by using Knoevenagel reaction

10. (a) Arrange the following acids in increasing order of their relative acid strengths with proper explanations : 2



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

(c) Complete the following reactions : $1 \times 2 = 2$



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

UNIT—V

11. What are mercaptans? How will you prepare ethyl mercaptan from ethyl halide? $1+1=2$

12. Give one method of preparation of thio-ether. What happens when a thiol reacts with an aldehyde in presence of HCl? $1+1=2$

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