

B.A./B.Sc. - 3rd Sem. (Old Syllabus 2017)

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Paper: Chemistry
(Organic Chemistry-II)

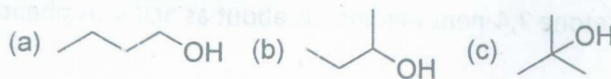
Time allowed: 3 hrs.

Max. Marks: 35

Part-A

Attempt all questions in this section. Each question carries 1 mark

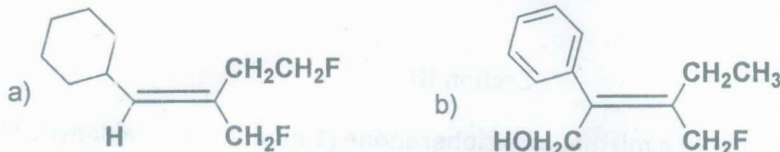
- 1 Give two methods of preparation of dihydric alcohols?
- 2 Sketch the mechanism Perkin condensation?
- 3 How do threo and dl-pair differ?
- 4 Arrange the following in terms of increasing boiling point:



- 5 Provide mechanism for following conversion:



- 6 Determine the configuration of the following alkenes?



- 7 Draw different conformational isomers of butane?
- 8 Enlist different elements of symmetry?

Part B

Attempt two questions from each section. Each question carries 4.5 marks.

Section-I

- 9 a) Enlist various differences between enantiomers and diastereomers b) Draw more stable conformation of methylcyclohexane? Give reasons for your choice? c) What is the difference between relative and absolute configuration? 1.5,2,1
- 10 a) What is the difference between dissymmetry and asymmetric centres? Out of these two which one is essential for optical activity? b) Solution of chiral compound may not show any optical activity. Justify the statement? 3, 1.5

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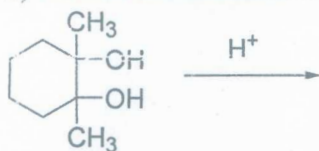
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- 11 a) Draw Newman projection formula for most stable isomer of cyclohexanol? Give reasons for its stability b) Discuss different approaches for resolution of enantiomers?

2,2,5

Section II

- 12 a) Provide the structure of the product along with the mechanism:



3, 1.5

- b) Discuss the synthetic applications of Pb(OAc)₄?

- 13 a) Benzene diazonium chloride couples with phenol but not with anisole whereas 2,4-Dinitrobenzene diazonium chloride couples with anisole? Account for this difference? Would you expect *p*-toluenediazonium chloride to couple with anisole? b) Account for the fact that the diketone 2,4-pentanedione is about as acidic as phenol.

3, 1.5

- 14 a) Discuss the mechanism of Claisen rearrangement taking two examples? Provide evidences in support of mechanism?

- b) Arrange the following in terms of increasing acidity:



3.5, 1

Section III

- 15 a) Semicarbazide (1mol) is added to a mixture of cyclohexanone (1 mol) and benzaldehyde (1 mol). If the product is isolated immediately, it contains almost entirely semicarbazone of cyclohexanone; if product is isolated after several hours, it consists almost entirely of the semicarbazone of benzaldehyde. Give reasons? b) How will you convert formaldehyde to acetone by application of 1,3 dithiane?

3,1.5

- 16 a) Discuss the mechanism of formation of benzaldehyde diethyl acetal from benzaldehyde and ethanol?

- b) Write structural formulas for enol forms of 2-methylcyclohexanone and 1-phenyl-1,3-butanedione? Identify the most stable enol forms among them?

3, 1.5

- 17 a) Arrange them in order of increasing acidic strength. Give reasons?

3,4 hexanedione, 2,5 hexanedione, 2,4 hexanedione, hexanedial

- b) What is Baeyer-Villiger oxidation? Explain the mechanism with example.

2.5, 2

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