

Name of the Student: _____

Max. Marks :19 Marks

Time :19 Minutes

Q1.

Which one of the following reactions will produce an organic compound that has optical isomers?

- A** dehydration of butan-2-ol by heating with concentrated sulphuric acid
- B** reduction of pentan-3-one by warming with NaBH_4
- C** addition of Br_2 to 3-bromopropene
- D** reduction of 2,3-dimethylpent-2-ene with H_2 in the presence of a nickel catalyst

(Total 1 mark)

Q2.

- (a) Addition reactions to both alkenes and carbonyl compounds can result in the formation of isomeric compounds.

Outline a mechanism for the formation of the major product.

[illegible]

(7)

- (ii) Using HCN and a suitable carbonyl compound with molecular formula C_3H_6O , outline a mechanism for an addition reaction in which two isomers are produced. Give the structures of the two isomers formed and state the type of isomerism shown.

[illegible]

(7)

- (b) Explain why ethanoyl chloride reacts readily with nucleophiles.
Write an equation for one nucleophilic addition–elimination reaction of ethanoyl chloride.
(A mechanism is not required.)

(4)

(Total 18 marks)