

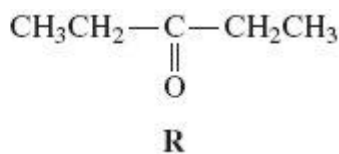
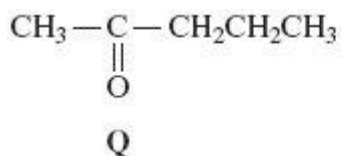
Name of the Student: _____

Max. Marks :20 Marks

Time :20 Minutes

Q1.

Two isomeric ketones are shown below.



- (a) Name and outline a mechanism for the reaction of compound **Q** with HCN and name the product formed.

Name of mechanism _____

Mechanism

Name of product _____

(6)

- (b) Some students were asked to suggest methods to distinguish between isomers **Q** and **R**.

One student suggested testing the optical activity of the products formed when **Q** and **R** were reacted separately with HCN.

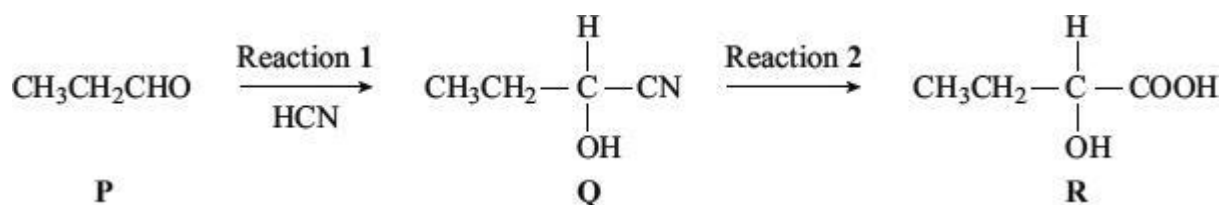
By considering the optical activity of these products formed from **Q** and **R**, explain why this method would **not** distinguish between **Q** and **R**.

(3)

(Total 9 marks)

Q2.

Consider the sequence of reactions below.



- (a) Name and outline a mechanism for Reaction 1.

Name of mechanism _____

Mechanism

(5)

- (b) (i) Name compound **Q**

- (ii) The molecular formula of **Q** is $\text{C}_4\text{H}_7\text{NO}$. Draw the structure of the isomer of **Q** which shows geometrical isomerism and is formed by the reaction of ammonia with an acyl chloride.

(3)

- (c) Draw the structure of the main organic product formed in each case when **R** reacts separately with the following substances:

- (i) methanol in the presence of a few drops of concentrated sulphuric acid;

- (ii) acidified potassium dichromate(VI);

(iii) concentrated sulphuric acid in an elimination reaction.

(3)

(Total 11 marks)