Practice Question Set For A-Level
Subject : Chemistry
Paper-2 Topic: Organic Synthesis

Merit Minds
www.merit-minds.com
Exam Preparation and Free Resources

Name of the Student:_____
Max. Marks : 26 Marks **Time : 26 Minutes**

Q1.

(a) Describe how propanal, CH_3CH_2CHO, and propanone, CH_3COCH_3, can be distinguished using

(i) a chemical test and

_____

_____

_____

_____

_____

_____

(3)

(ii) the number of peaks in their proton n.m.r. spectra.

_____

_____

_____

_____

_____

_____

_____

_____

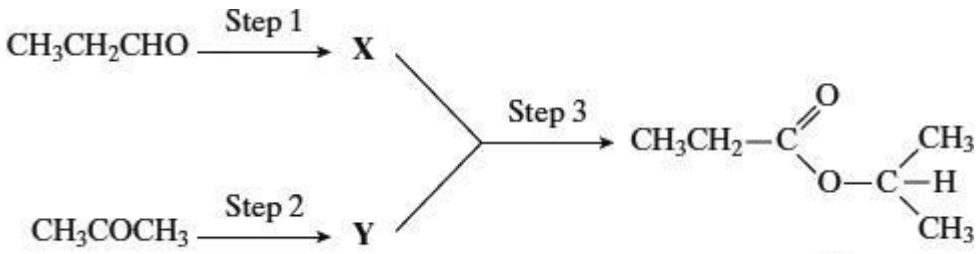
_____

_____

(2)

(b) Compound **Z** can be produced by the reaction of compound **X** with compound **Y** as shown in the synthesis outlined below.

Downloaded from www.merit-minds.com



Identify compounds **X** and **Y**.
For each of the three steps in the synthesis, name the type of reaction involved and give reagents and conditions. Equations are **not** required.

(10)
(Total 15 marks)

Downloaded from www.merit-minds.com

Q2.

Which one of the following pairs reacts to form an organic product with only 2 singlets in its proton n.m.r. spectrum?

A ethene and bromine

B propan-2-ol and acidified potassium dichromate(VI)

C ethanol and concentrated sulphuric acid

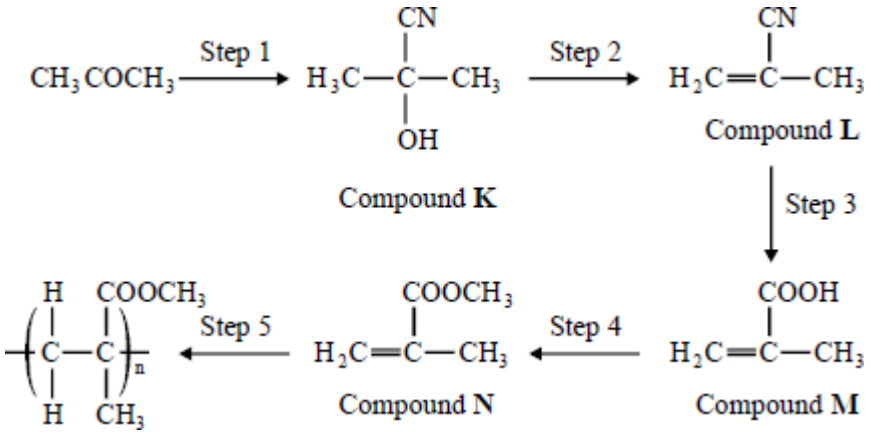
D epoxyethane and water in the presence of dilute sulphuric acid

(Total 1 mark)

Downloaded from www.merit-minds.com

Q3.

This question concerns the preparation of the plastic poly(methyl 2-methylpropenoate) (*Perspex*), starting from propanone.



Which one of the following sets of reagents is **not** suitable for the step indicated?

A Step 1 HCN (NaCN then dilute HCl)

B Step 2 hot ethanolic KOH

C Step 3 warm aqueous H_2SO_4

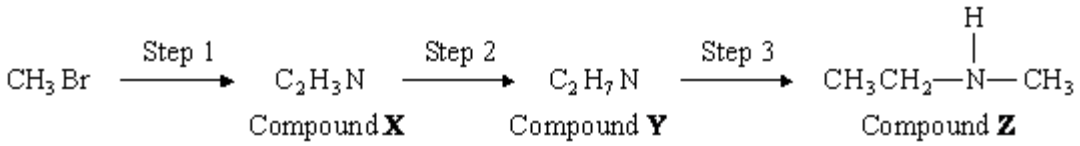
D Step 4 CH_3OH with an acid catalyst

(Total 1 mark)

Downloaded from www.merit-minds.com

Q4.

Compound **Z** can be formed via compounds **X** and **Y** in the three step synthesis shown below.



Identify compounds **X** and **Y** and give reagents and conditions for Steps 1 and 2.

State the **type** of compound of which **Z** is an example.

Compound **Z** reacts with a large excess of bromomethane to form a solid product. Draw the structure of this product and name the type of mechanism for this reaction.

(Total 9 marks)

Downloaded from www.merit-minds.com