

Name of the Student: _____

Max. Marks :26 Marks

Time :26 Minutes

Q1.

- (a) Describe how propanal, $\text{CH}_3\text{CH}_2\text{CHO}$, and propanone, CH_3COCH_3 , can be distinguished using

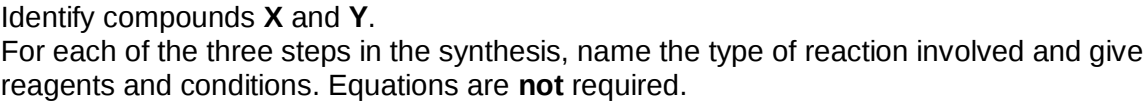
- (i) a chemical test and

(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.



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

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(10)
(Total 15 marks)

Q2.

Propanone can be reduced to form an alcohol. A functional group isomer of the alcohol formed is

- A $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$
- B $\text{CH}_3\text{CH}_2\text{CHO}$
- C $\text{CH}_3\text{OCH}_2\text{CH}_3$
- D CH_3COCH_3

(Total 1 mark)

Q3.

In which one of the following mixtures does a redox reaction occur?

- A ethanal and Tollens' reagent
- B ethanoyl chloride and ethanol
- C ethanal and hydrogen cyanide
- D ethanoic acid and sodium hydroxide

(Total 1 mark)

Q4.

- (a) (i) Give a suitable reagent and state the necessary conditions for the conversion of propan-2-ol into propanone. Name the type of reaction.

Reagent _____

Conditions _____

Type of reaction _____

- (ii) Propanone can be converted back into propan-2-ol. Give a suitable reagent and write an equation for this reaction.
(Use [H] to represent the reagent in your equation.)

Reagent _____

Equation _____

(5)

- (b) Propanal is an isomer of propanone.

- (i) Draw the structure of propanal.

- (ii) A chemical test can be used to distinguish between separate samples of propanone and propanal. Give a suitable reagent for the test and describe what you would observe with propanone and with propanal.

Test reagent _____

Observation with propanone _____

Observation with propanone _____

(4)

(Total 9 marks)