Practice Question Set For A-Level
Subject : Chemistry
Paper-2 Topic: Carboxylic Acids & Derivatives

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Name of the Student:_____
Max. Marks : 14 Marks **Time : 14 Minutes**

Q1.

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)

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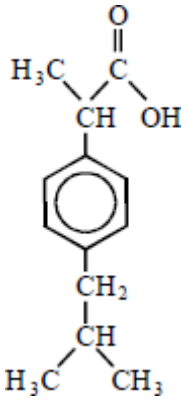
Q2.

Ibuprofen is a drug used as an alternative to aspirin for the relief of pain, fever and inflammation. The structure of ibuprofen is shown below.



Which one of the following statements is **not** correct?

A It has optical isomers.

B It liberates carbon dioxide with sodium carbonate solution.

C It undergoes esterification with ethanol.

D It undergoes oxidation with acidified potassium dichromate(VI).

(Total 1 mark)

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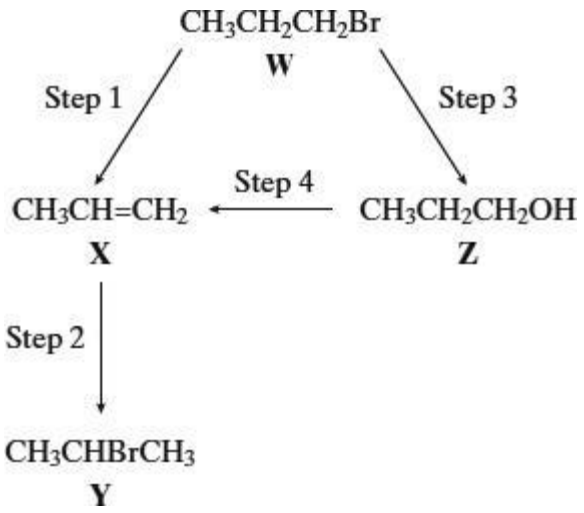
Q3.

For this question refer to the reaction scheme below.



Which one of the following statements is **not** correct?

A Reaction of **W** with sodium cyanide followed by hydrolysis of the resulting product gives propanoic acid.

B Mild oxidation of **Z** produces a compound that reacts with Tollens' reagent, forming a silver mirror.

C **Z** reacts with ethanoic acid to produce the ester propyl ethanoate.

D **W** undergoes addition polymerisation to form poly(propene).

(Total 1 mark)

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Q4.

Butan-1-ol was converted into butyl propanoate by reaction with an excess of propanoic acid. In the reaction, 6.0 g of the alcohol gave 7.4 g of the ester. The percentage yield of ester was

A 57

B 70

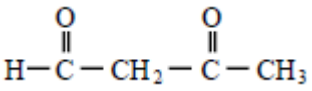
C 75

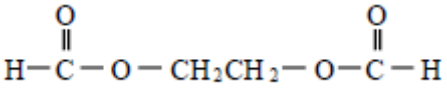
D 81

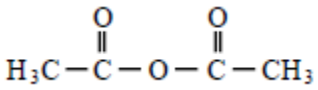
(Total 1 mark)

Q5.

Which compound is formed by the reaction of ethane-1,2-diol with an acid?

A 

B 

C 

D CH_3CH_2 — O — CH_2CH_2OH

(Total 1 mark)

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Q6.

Which one of the following would **not** react with aqueous silver nitrate to produce a precipitate that is soluble in concentrated aqueous ammonia?

A $CaBr_2$

B $[COCl_4]^{2-}$

C $(CH_3)_4N^+I^-$

D CH_3COCl

(Total 1 mark)

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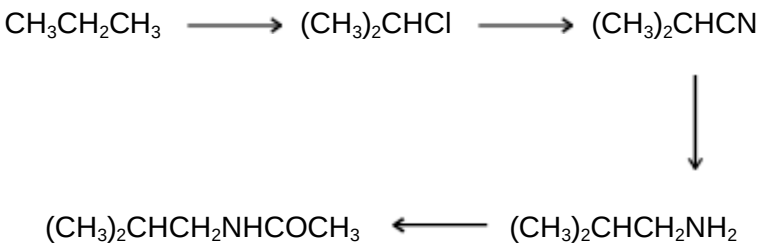
Q7.

Which one of the following types of reaction mechanism is **not** involved in the above sequence?



A free-radical substitution

B nucleophilic substitution

C elimination

D nucleophilic addition-elimination

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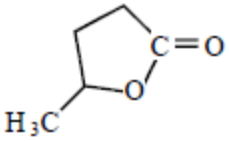
Q8.

Acid hydrolysis of  produces

A $CH_3CH(OH)CH_2CH_2COOH$

B $CH_2(OH)CH_2CH_2CH_2COOH$

C $CH_3CH(OH)CH_2CH_2OCHO$

D $CH_2(OH)CH_2CH_2CH_2OCHO$

(Total 1 mark)

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Q9.

An excess of methanol was mixed with 12 g of ethanoic acid and an acid catalyst. At equilibrium the mixture contained 8 g of methyl ethanoate. The percentage yield of ester present was

A 11

B 20

C 54

D 67

(Total 1 mark)

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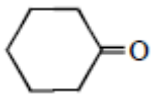
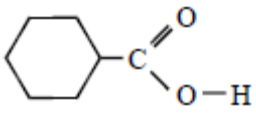
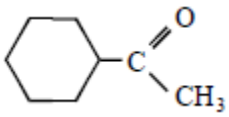
Q10.

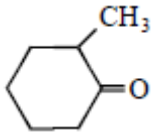
The compound lithium tetrahydridoaluminate(III), $LiAlH_4$, is a useful reducing agent. It behaves in a similar fashion to $NaBH_4$. Carbonyl compounds and carboxylic acids are reduced to alcohols. However, $LiAlH_4$ also reduces water in a violent reaction so that it must be used in an organic solvent.

Which one of the following can be reduced by $LiAlH_4$ to a primary alcohol?

A 

B 

C 

D 

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Q11.

Hydrolysis of the ester, $CH_3COOCH_2CH_2CH_3$, produces ethanoic acid. In an experiment, 2.04 g of the ester was used and 0.90 g of ethanoic acid was produced. The percentage yield of ethanoic acid was:

A 44

B 59

C 75

D 90

(Total 1 mark)

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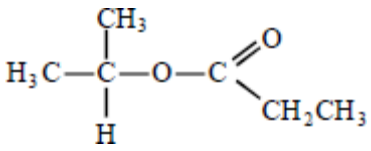
Q12.

The structural formula of ethyl 2-methylpropanoate is

A



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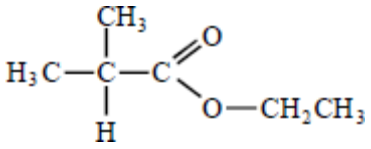
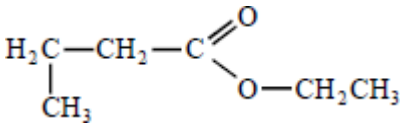
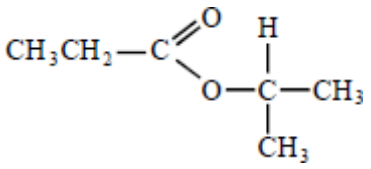


C



D



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Q13.

How many structural isomers, which are esters, have the molecular formula $C_4H_8O_2$?

A 2

B 3

C 4

D 5

(Total 1 mark)

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Q14.

CH_2O is the empirical formula of

A methanol

B methyl methanoate

C ethane-1,2-diol

D butanal

(Total 1 mark)

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