Carboxylic acids and derivatives – 2022 Nov AS Chemistry 9701

1. Nov/2022/Paper_11/No.31

Three colourless liquids with the following formulae are contained in separate unlabelled bottles.

$CH_3CH_2CO_2H$ $CH_3CH(OH)CO_2H$ CH_3COCO_2H

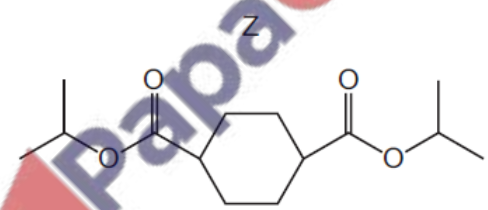
Which two tests, carried out on separate samples of each liquid, will successfully identify each liquid?

	test 1	test 2
A	$NaHCO_3$	2,4-DNPH reagent
B	$NaHCO_3$	Tollens' reagent
C	warm acidified dichromate	2,4-DNPH reagent
D	warm acidified dichromate	Tollens' reagent

2. Nov/2022/Paper_11/No.32

An alcohol, X, reacts with a dicarboxylic acid, Y, to form a double ester, Z.

The diagram shows the structure of the ester.

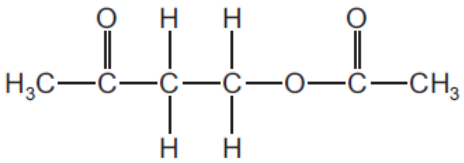


Which row about the reactants forming ester Z is correct?

	the class of alcohol X	the shape of the ring in Y
A	secondary	non-planar
B	secondary	planar
C	tertiary	non-planar
D	tertiary	planar

3. Nov/2022/Paper_11/No.36

Compound X reacts with ethanoic acid in the presence of an H^+ catalyst to produce the compound shown.



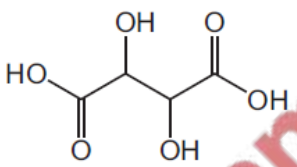
What is the molecular formula of compound X?

A C_2H_4O **B** $C_2H_6O_2$ **C** C_4H_8O **D** $C_4H_8O_2$

4. Nov/2022/Paper_12/No.26

The structure of tartaric acid is shown.

tartaric acid



Which statements about tartaric acid are correct?

1 A molecule of tartaric acid has more than one chiral centre.

2 The molecular formula of tartaric acid is $C_4H_4O_6$.

3 One molecule of tartaric acid produces four hydrogen ions in aqueous solution.

A 1, 2 and 3 **B** 1 and 2 only **C** 2 and 3 only **D** 1 only

5. Nov/2022/Paper_12/No.27

A carboxylic acid, P, has no chain isomers. It reacts with an alcohol, Q, that has only one positional isomer.

What could be the ester formed from a reaction between P and Q?

A butyl propanoate

B ethyl butanoate

C pentyl ethanoate

D propyl pentanoate