

Q1.

Which statement is **not** correct about the industrial production of ethanol from ethene at 300 °C?



- A The reaction is catalysed by an acid.
- B The reaction has 100% atom economy.
- C An increase in temperature decreases the equilibrium yield of ethanol.
- D An increase in pressure increases the value of K_c .

(Total 1 mark)

Q2.

Which compound is produced when 1-phenylethanol reacts with acidified potassium dichromate(VI)?

- A $\text{C}_6\text{H}_5\text{CH}_2\text{CH}_2\text{OH}$
- B $\text{C}_6\text{H}_5\text{CH}_2\text{CHO}$
- C $\text{C}_6\text{H}_5\text{COCH}_3$
- D $\text{C}_6\text{H}_5\text{CH}(\text{OH})\text{CH}_3$

(Total 1 mark)

Q3.

Which statement is correct about the production and use of ethanol as a biofuel?

- A Biofuel ethanol is produced by the fermentation of glucose in the presence of yeast and air.
- B Biofuel ethanol is purified by fractional distillation.
- C No carbon dioxide is released when biofuel ethanol is burned.
- D Biofuel ethanol burns with a cleaner flame than ethanol made by hydration of ethene.

(Total 1 mark)

Q4.Which compound can be oxidised to form $(\text{CH}_3)_2\text{CHCOCH}_3$?

- A 2-methylpropan-1-ol
- B 2,2-dimethylpropanol
- C 2-methylbutan-2-ol
- D 3-methylbutan-2-ol

(Total 1 mark)**Q5.**

Which alcohol forms a mixture of alkenes when dehydrated?

- A propan-1-ol
- B propan-2-ol
- C pentan-1-ol
- D pentan-2-ol

(Total 1 mark)**Q6.**

Which compound is formed when 1-phenylethanol reacts with acidified potassium dichromate(VI)?

- A $\text{C}_6\text{H}_5\text{CH}_2\text{CH}_2\text{OH}$
- B $\text{C}_6\text{H}_5\text{CH}_2\text{CHO}$
- C $\text{C}_6\text{H}_5\text{COCH}_3$
- D $\text{C}_6\text{H}_5\text{CH}_2\text{COOH}$

(Total 1 mark)

Q7.

In the UK industrial ethanol is now produced by the direct hydration of ethene. This process has largely replaced the fermentation method.

Which is a likely reason for this change of method?

- A The direct hydration route produces purer ethanol.
- B The direct hydration route employs milder conditions.
- C The direct hydration route does NOT use a catalyst.
- D The direct hydration route produces ethanol by a slower reaction.

(Total 1 mark)

Q8.

Which statement is correct about both 2-methylbutan-1-ol and 2-methylbutan-2-ol?

- A They can be formed by alkaline hydrolysis of esters.
- B They can be oxidised by reaction with acidified potassium dichromate(VI).
- C They can be formed by hydration of 2-methylbut-2-ene.
- D They have four peaks in their ^{13}C NMR spectra.

(Total 1 mark)

Q9.

Which alcohol can be oxidised by acidified potassium dichromate(VI) but cannot be dehydrated by heating with concentrated sulfuric acid?

- A 2,3-dimethylbutan-2-ol
- B 2,2-dimethylpropan-1-ol
- C 2-methylpropan-2-ol
- D pentan-3-ol

(Total 1 mark)