Answer all the questions below then check your answers.

1. Complete the table below to show the names and structures of several alcohols.

alcohol	Displayed formula	Molecular formula
methanol		
Ethanol		
propanol		

2. What functional group is found in all alcohols?

3. Carboxylic acids are a family of weak acids. Complete the table below to show the names and formula for several carboxylic acids.

Carboxylic acid	Displayed formula	Molecular formula
Methanoic acid		
Ethanoic acid		

4. Name the functional group found in all carboxylic acids.

5. Complete the table below to show the displayed formula of several diol.

diol	Displayed formula	Molecular formula
ethane-1,2- diol		
Propane-1,3-diol		

6. How are Diols different from alcohols?

7. Complete the table below to show the displayed formula of several diacids.

diol	Displayed formula	Molecular formula
ethane-1,2- dioic acid		
Propane-1,3-dioic acid		

8. How are dicarboxylic acids different from carboxylic acids?

9. Draw the displayed formula of the functional group found in an ester.

10. Complete the following word equation:

    Carboxylic acid + alcohol ⇌

11. How does condensation polymerisation differ from addition polymerisation?

12. What special feature must the monomers used in condensation polymerisation have?

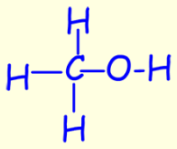
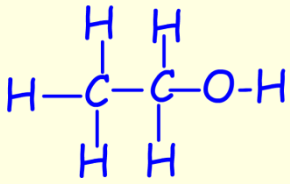
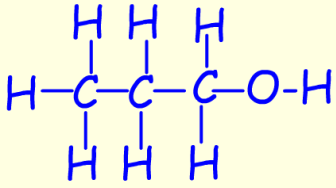
13. Polyester is a condensation polymer. What monomers are used to make polyester?

14. Write an equation showing all the bonds in the polyester made by reacting ethane-1,2-diol and ethane-1,2-dioic acid.

b. Draw the repeating unit in this polymer.

Answers

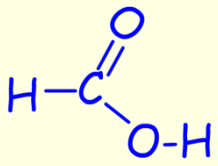
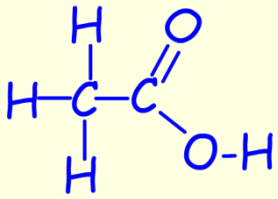
1. Complete the table below to show the names and structures of several alcohols.

alcohol	Displayed formula	Molecular formula
methanol		CH_3OH
Ethanol		C_2H_5OH
propanol		C_3H_7OH

2. What functional group is found in all alcohols?

Hydroxyl group R-OH

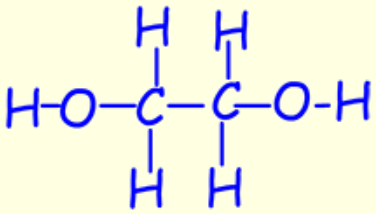
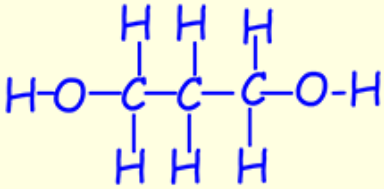
3. Carboxylic acids are a family of weak acids. Complete the table below to show the names and formula for several carboxylic acids.

Carboxylic acid	Displayed formula	Molecular formula
Methanoic acid		HCOOH
Ethanoic acid		CH_3COOH

4. Name the functional group found in all carboxylic acids.

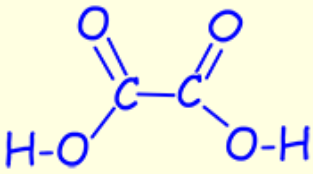
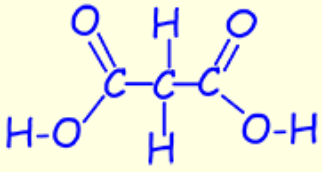
Carboxyl group (-COOH)

5. Complete the table below to show the displayed formula of several diol.

diol	Displayed formula	Molecular formula
ethane-1,2- diol		$HOCH_2CH_2OH$
Propane-1,3-diol		$HOCH_2CH_2CH_2OH$

6. How are Diols different from alcohols? Diols contain 2 hydroxyl groups.

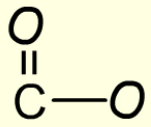
7. Complete the table below to show the displayed formula of several diacids.

diol	Displayed formula	Molecular formula
ethane-1,2- dioic acid		HOOCCOOH
Propane-1,3-dioic acid		$HOOCCH_2COOH$

8. How are dicarboxylic acids different from carboxylic acids?

   They contain 2 carboxyl functional groups.

9. Draw the displayed formula of the functional group found in an ester.

10.  Complete the following word equation:

    Carboxylic acid + alcohol ⇌ ester + water

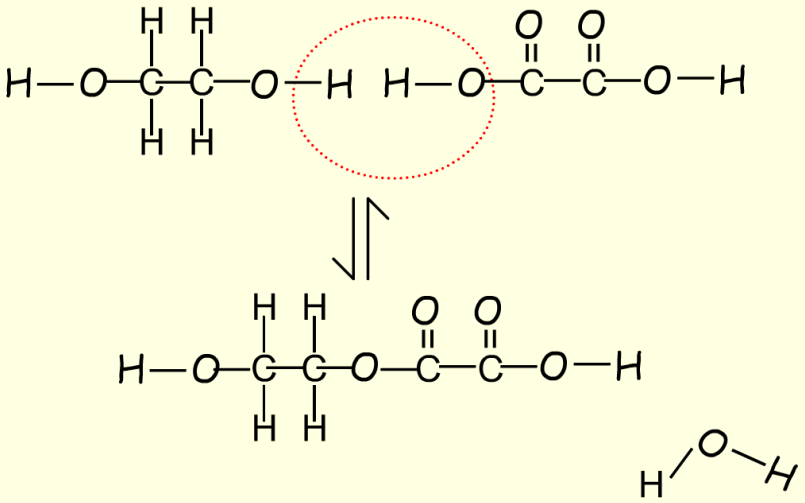
11. How does condensation polymerisation differ from addition polymerisation?

A small molecule usually water is lost during condensation polymerisation, no waste products are produced during addition polymerisation. Addition polymers have a backbone of carbon atoms, condensation polymers do not. Addition polymerisation is fast, condensation polymerisation is a much slower reaction.

12. What special feature must the monomers used in condensation polymerisation have? Monomers must have 2 reactive functional groups on the end of each monomer to maintain the polymerisation reaction.

13. Polyester is a condensation polymer. What monomers are used to make polyester? A dicarboxylic acid and a diol.

14. Write an equation showing all the bonds in the polyester made by reacting ethane-1,2-diol and ethane-1,2-dioic acid.



b. Draw the repeating unit in this polymer.