

Term 2 Level 4/5 Revision Questions

1.

The shortened structural formula for an organic compound is:

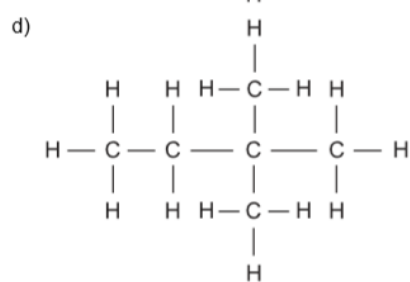
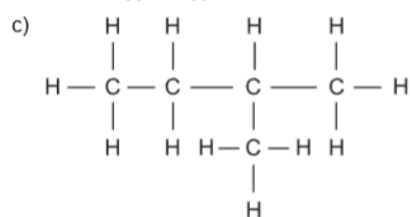
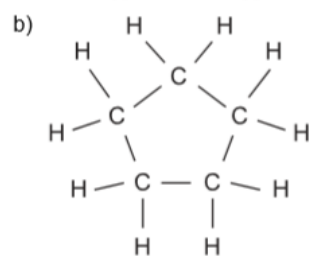
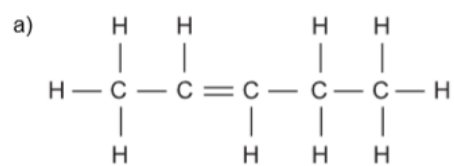
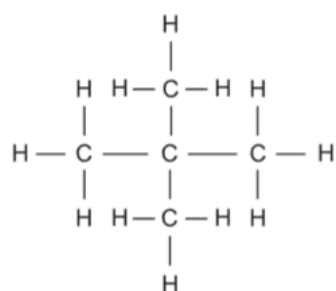


Which of the following is another way of representing this structure?

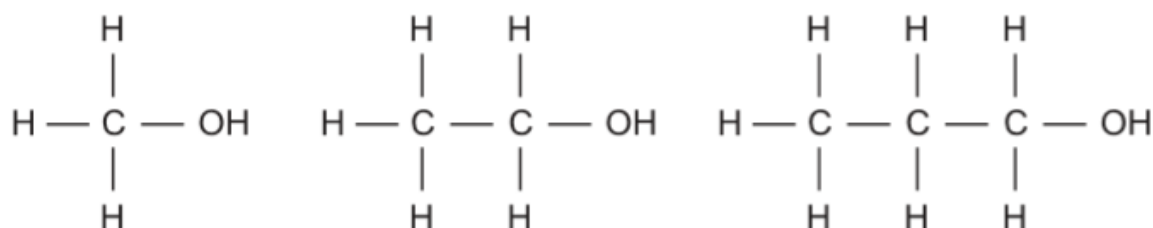
- a)
- $$\begin{array}{ccccccc} & \text{H} & & \text{H} & & \text{OH} & & \text{CH}_3 \\ & | & & | & & | & & | \\ \text{H} & - \text{C} & - & \text{C} & - & \text{C} & - & \text{C} & - \text{CH}_3 \\ & | & & | & & | & & | \\ & \text{H} & & \text{CH}_3 & & \text{H} & & \text{CH}_3 \end{array}$$
- b)
- $$\begin{array}{ccccccc} & \text{H} & & \text{H} & & \text{H} & & \text{OH} & & \text{CH}_3 \\ & | & & | & & | & & | & & | \\ \text{H} & - \text{C} & - & \text{C} & - & \text{C} & - & \text{C} & - & \text{C} & - \text{CH}_3 \\ & | & & | & & | & & | & & | \\ & \text{H} & & \text{H} & & \text{H} & & \text{H} & & \text{CH}_3 \end{array}$$
- c)
- $$\begin{array}{ccccccc} & \text{H} & & \text{H} & & \text{H} & & \text{CH}_3 & & \text{CH}_3 \\ & | & & | & & | & & | & & | \\ \text{H} & - \text{C} & - & \text{C} & - & \text{C} & - & \text{C} & - & \text{C} & - \text{H} \\ & | & & | & & | & & | & & | \\ & \text{H} & & \text{CH}_3 & & \text{OH} & & \text{H} & & \text{H} \end{array}$$
- d)
- $$\begin{array}{ccccccc} & \text{H} & & \text{H} & & \text{H} & & \text{H} & & \text{H} & & \text{H} \\ & | & & | & & | & & | & & | & & | \\ \text{H} & - \text{C} & - & \text{C} & - & \text{C} & - & \text{C} & - & \text{C} & - & \text{C} & - \text{CH}_3 \\ & | & & | & & | & & | & & | & & | \\ & \text{H} & & \text{CH}_3 & & \text{OH} & & \text{H} & & \text{H} & & \text{H} \end{array}$$
-

2.

: Which of the following compounds is an isomer of the one shown?



3



The first three alcohols

Q5: What is the general formula for the alcohol series in the form $\text{C}_x\text{H}_y\text{OH}$?

4 There are two straight chain alcohols with four carbon atoms. Draw full structural formulae for both and name them.

5 There are two branched chain alcohols with four carbon atoms. Draw full structural formulae for both and name them.

6: Which alcohol is the most miscible in water?

- a) Methanol
- b) Ethanol
- c) Propan-1-ol
- d) Butan-1-ol

7: Which alcohol is the least miscible in water?

- a) Methanol
- b) Ethanol
- c) Propan-1-ol
- d) Butan-1-ol

8

The shortened structural formula for an organic compound is:



Which of the following is another way of representing this structure?

- a)
- ```

 H H OH CH3
 | | | |
H — C — C — C — C — CH3
 | | | |
 H CH3 H CH3

```
- b)
- ```

      H   H   H   OH  CH3
      |   |   |   |   |
H — C — C — C — C — C — CH3
      |   |   |   |   |
      H   H   H   H   CH3
  
```
- c)
- ```

 H H H CH3 CH3
 | | | | |
H — C — C — C — C — C — H
 | | | | |
 H CH3 OH H H

```
- d)
- ```

      H   H   H   H   H   H
      |   |   |   |   |   |
H — C — C — C — C — C — C — CH3
      |   |   |   |   |   |
      H   CH3 OH  H   H   H
  
```

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9 Propan-2-ol is member of the alcohol homologous series.

Name a straight chain isomer of Propan-2-ol.

.....

10 Which of the following is *not* a common use for alcohols?

- a) Fuels
- b) Solvents
- c) Limescale remover
- d) Alcoholic drinks

11 Complete the table using the names and formulae of some alkanes.

Name	Molecular formula	Full structural formula	Shortened structural formula
		$\begin{array}{c} \text{O} \\ \\ \text{H} - \text{C} - \text{OH} \end{array}$	
		$\begin{array}{c} \text{H} \quad \text{O} \\ \quad \\ \text{H} - \text{C} - \text{C} - \text{OH} \\ \\ \text{H} \end{array}$	
		$\begin{array}{c} \text{H} \quad \text{H} \quad \text{O} \\ \quad \quad \\ \text{H} - \text{C} - \text{C} - \text{C} - \text{OH} \\ \quad \\ \text{H} \quad \text{H} \end{array}$	
		$\begin{array}{c} \text{H} \quad \text{H} \quad \text{H} \quad \text{O} \\ \quad \quad \quad \\ \text{H} - \text{C} - \text{C} - \text{C} - \text{C} - \text{OH} \\ \quad \quad \\ \text{H} \quad \text{H} \quad \text{H} \end{array}$	

Names and formulae: butanoic acid, ethanoic acid, methanoic acid, propanoic acid, CH_2O_2 , CH_3COOH , $\text{C}_2\text{H}_4\text{O}_2$, $\text{C}_2\text{H}_5\text{COOH}$, $\text{C}_3\text{H}_6\text{O}_2$, $\text{C}_3\text{H}_7\text{COOH}$, $\text{C}_4\text{H}_8\text{O}_2$, HCOOH .

12 Name the salt produced in a reaction where propanoic acid reacts with lithium hydroxide.

.....

13 Name the salt produced in a reaction where ethanoic acid reacts with ammonium carbonate.

.....

14 Name the salt produced in a reaction where calcium carbonate reacts with methanoic acid.

.....

15 Which acid has been neutralised when the salt lead (II) pentanoate is produced?

.....

16 Name the salt produced in a reaction where calcium oxide reacts with ethanoic acid.

17 Complete the word equation to show the reaction.

propanoic acid + copper (II) oxide $\rightarrow$? + ?

18 Complete the word equation

ethanoic acid + sodium hydroxide $\rightarrow$? + ?

19 Complete the word equation

ethanoic acid + calcium carbonate $\rightarrow$? + ?

20 Which carboxylic acid is the most miscible in water?

- a) Methanoic acid
- b) Propanoic acid
- c) Pentanoic acid
- d) Heptanoic acid

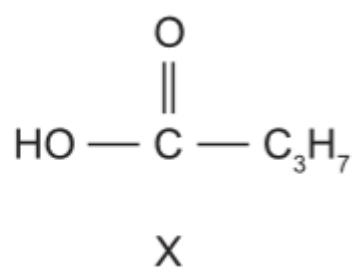
21 Which carboxylic acid is the least miscible in water?

- a) Methanoic acid
- b) Propanoic acid
- c) Pentanoic acid
- d) Heptanoic acid

22 Which functional group is present in all carboxylic acids?

- a) Hydroxide (OH^-)
- b) Carbon to Carbon double bond ($\text{C}=\text{C}$)
- c) Hydroxyl (OH)
- d) Carboxyl (COOH)

23



Name compound X.

24

Which of the following carboxylic acids has the highest boiling point?

You may wish to use your data booklet to help you.

- a) Methanoic acid
- b) Ethanoic acid
- c) Propanoic acid
- d) Butanoic acid