

22 Fig. 22 shows a triglyceride molecule found in sunflower oil.

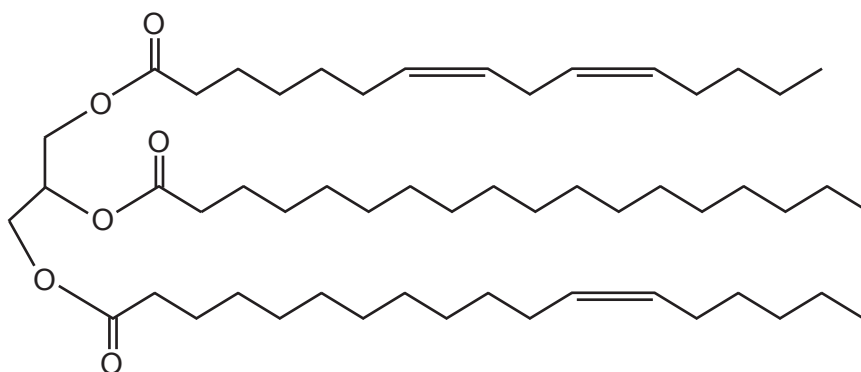


Fig. 22

(a) On Fig. 22 circle an ester bond.

[Answer on Fig. 22]

[1]

(b) Sunflower oil is used to make biodiesel, which contains methyl esters. The fatty acids in the triglyceride molecule are reacted with methanol in a process called transesterification.

After the reaction, two liquid products form which naturally separate from each other. The methyl esters float on top of a more dense liquid.

Name the part of the molecule seen in Fig. 22 that forms this more dense liquid.

..... [1]

(c) Living organisms have many uses for triglycerides, one of which is the production of phospholipids.

(i) Name three **other** functions of triglycerides in living organisms.

1

2

3

[3]

- (ii) Table 22 shows the melting points of some of the methyl esters made from the transesterification of sunflower oil fatty acids.

Methyl ester	Formula	Melting point (°C)
Methyl stearate	$C_{19}H_{38}O_2$	39.1
Methyl oleate	$C_{19}H_{36}O_2$	-19.9
Methyl linoleate	$C_{19}H_{34}O_2$	-35.0

Table 22

Describe and explain the pattern of the melting points of these three methyl esters.

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..... [2]

- (d) Phospholipid molecules also contain fatty acids.

Explain how the fatty acids in phospholipids allow the formation of membranes.

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..... [2]