

Q1.

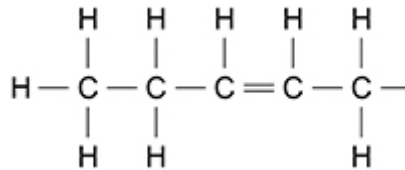
(a) The general structure of a fatty acid is RCOOH.

Name the group represented by COOH.

(1)

(b) **Figure 1** shows the structure of a fatty acid R group.

Figure 1



Name the type of R group shown in **Figure 1**.

Explain your answer.

Type of R group _____

Explanation _____

(2)

(c) Describe how you would test for the presence of a lipid in a liquid sample of food.

(2)

Q2.

- (a) Describe how a triglyceride molecule is formed.

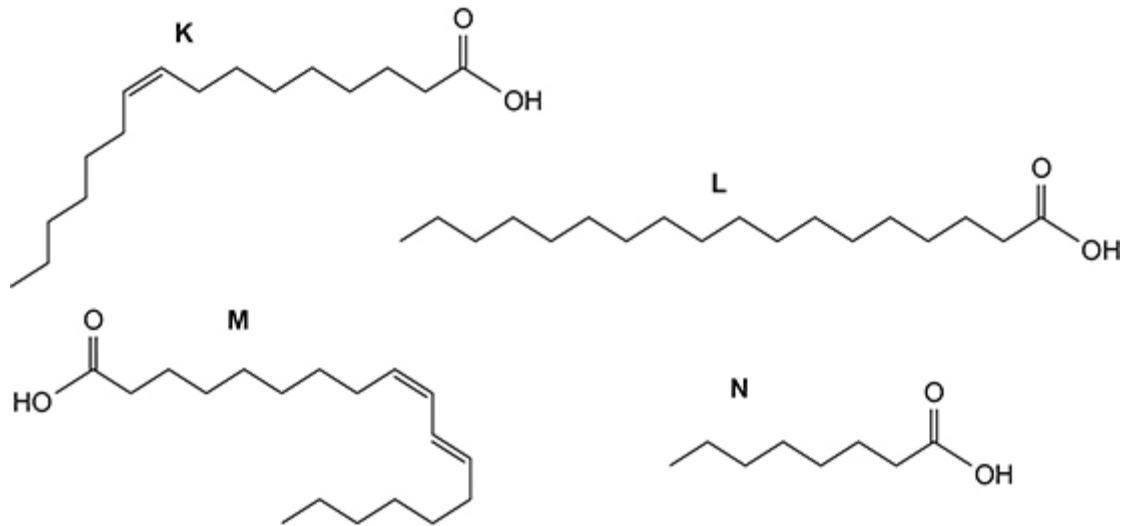
(3)

- (b) **Table 1** shows some properties of four fatty acids.

Table 1

Fatty acid	Number of carbon atoms in the R group	Number of double bonds in the R group
Caprylic acid	8	0
Palmitoleic acid	16	1
Stearic acid	18	0
Linoleic acid	18	2

The figure below shows diagrams of these fatty acids.



Put a tick (✓) in **one** box that contains correct information about one of these fatty acids.

- Caprylic acid is an unsaturated fatty acid represented by diagram **L**.
- Linoleic acid is a saturated fatty acid represented by diagram **N**.
- Palmitoleic acid is an unsaturated fatty acid represented by diagram **K**.
- Stearic acid is a saturated fatty acid represented by diagram **M**.

(1)

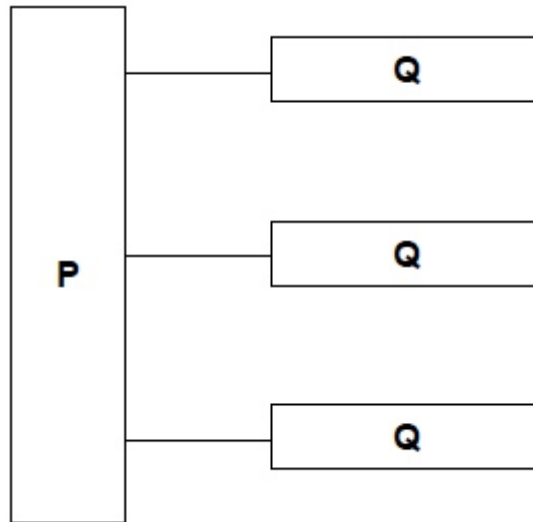
Q3.

(b) Describe how an ester bond is formed in a phospholipid molecule.

(2)

Q4.

The diagram represents a triglyceride.



(a) Name the molecules represented in the diagram by:

Box **P** _____

Box **Q** _____

(2)

(b) Name the type of bond between **P** and **Q** in the diagram.

(1)

(c) Describe how you would test a liquid sample for the presence of lipid **and** how you would recognise a positive result.

(2)

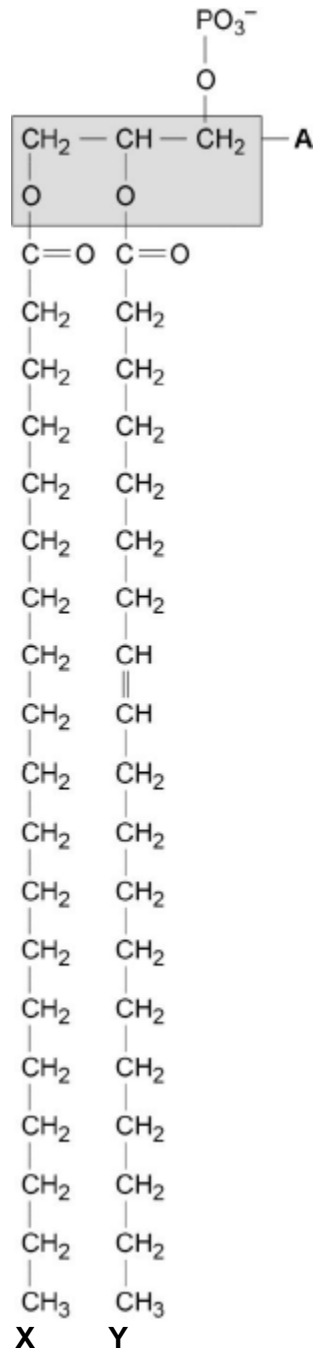
(Total 5 marks)

Q5.

- (a) Describe how you would test a piece of food for the presence of lipid.

(2)

The figure below shows a phospholipid.



- (b) The part of the phospholipid labelled **A** is formed from a particular molecule. Name this molecule.

_____ (1)

- (c) Name the type of bond between **A** and fatty acid **X**.

_____ (1)

- (d) Which of the fatty acids, **X** or **Y**, in the figure above is unsaturated? Explain your answer.

 _____ (1)

Scientists investigated the percentages of different types of lipid in plasma membranes from different types of cell. The table shows some of their results.

Type of lipid	Percentage of lipid in plasma membrane by mass		
	Cell lining ileum of mammal	Red blood cell of mammal	The bacterium <i>Escherichia coli</i>
Cholesterol	17	23	0
Glycolipid	7	3	0
Phospholipid	54	60	70
Others	22	14	30

- (e) The scientists expressed their results as **Percentage of lipid in plasma membrane by mass**. Explain how they would find these values.

 _____ (2)