BIOLOGY
Mark Scheme

LM1 - LIPIDS OVERVIEW AND TRIGLYCERIDES (PART 1)

Q1) a) Carbon, Hydrogen and Oxygen **(1)**

b) They contain carbon **(1)**

Q2) Lipids are very non-polar **(1)**

Therefore they cannot overcome the hydrogen bonds between water molecules **(1)**

So water molecules cannot surround the lipid molecules to dissolve them **(1)**

Q3) a) Monoglyceride **(1)**

b) Ester bond **(1)**

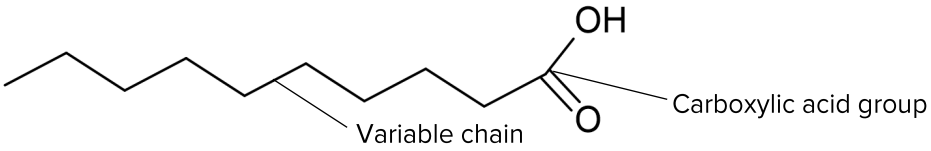
c) 2 water molecules produced **(1)** as 2 condensation reactions needed to add the remaining fatty acid chains **(1)**

Q4) Water cannot diffuse through the lipid layer **(1)**

So less water is lost from the plant **(1)**

Q5) Includes drawn and labelled carboxylic acid group **(1)** and variable chain **(1)**

E.g.



Q6) a) Each glycerol molecule has 3 OH groups **(1)**

Therefore 3 ester bonds can be formed with fatty acid molecules **(1)**

So 3 fatty acid chains can bond via condensation reactions to form a triglyceride **(1)**

b) OH on fatty acid molecule is removed **(1)**

H on glycerol is removed **(1)**

Covalent bond forms between exposed carbon and oxygen **(1)**

Repeat with other fatty acid chains **(1)**

Water molecules also formed **(1)**

Q7) a) Splitting of molecules into smaller constituents using water **(1)**

Used to break down particularly large molecules like triglycerides into smaller parts **(1)**

b) Water is added in a series of hydrolysis reactions that break ester bonds **(1)**

Which produce a glycerol molecule and 3 fatty acid chains **(1)**