

BIOLOGY

Mark Scheme

LM8 - THE FLUID MOSAIC MODEL

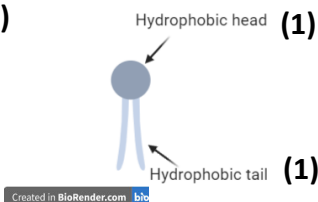
Q1)

- a) The fluid mosaic model describes the structure of the plasma membrane as a mosaic of different molecules **(1)** which give the cell membrane a fluid character **(1)**
- b) C - Triglycerides **(1)**
- c) a - Glycolipid **(1)** b - Glycoprotein **(1)** c - Phospholipid Bilayer **(1)** d - Cholesterol **(1)** e - Phospholipid **(1)**

Q2)

a) Hydrophobic is when molecules repel water away from itself/ 'water hating'. **(1)** Hydrophilic is when molecules are attracted towards water molecules/ 'water loving' **(1)**

b)



c) Hydrophilic heads form intermolecular forces between each other to form the phospholipid bilayer. **(1)** This forms a physical barrier **(1)** and allows the cell membrane to be partially permeable. **(1)** The bilayer can do this as the hydrophobic tails of phospholipids face inwards **(1)** and will repel any water molecules and ions. **(1)**

Q3)

- a) Cholesterol maintains the stability of the cell membrane. **(1)** Also maintains fluidity of the cell membrane **(1)** by changing fluidity of phospholipids depending on the temperature. **(1)**
- b) D - Cholesterol decreases the fluidity of phospholipids at low temperatures **(1)**

Q4)

- a) The cell membrane is impermeable to water and ions. **(1)** However, channel proteins allow for water and ions to pass through the cell membrane which are required by cell. **(1)**
- b) B - It is specific to the molecule it is transporting **(1)**

Q5)

- a) They can stabilise the cell membrane as they can form hydrogen bonds with water molecules around the cell **(1)**
- b) They act as surface receptors. **(1)** This allows the cell to interact with its environment **(1)** OR They can also act as antigens **(1)** for cell recognition in the immune system **(1)**
- c) Outside of the cell **(1)** (as they are extrinsic molecules)