AQA, OCR, Edexcel

A Level

A Level Biology

Biological Membrane Answers

Name:

M M E

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Total Marks: /28

Answer	Marks
1. a) i) Use of Glycoproteins/glycolipids identify self cells (our own cells) so white blood cells don't attack them. Allows identification of foreign cells/ pathogens via their antigens. ii) Any one from: - cell communication – chemical detection via receptors - barrier between internal and external environment - controls/maintains the two environments iii) Any one from: - Mitochondria – contains enzymes for respiration/increases surface area for these reactions -Nucleus – allows the RNA to leave in transcription/ protects DNA. -Lysosomes – keeps the lytic enzymes separate from the cell interior -Endoplasmic reticulum – keep products separate from cell interior/allows ribosomes to attach in RER. b) i) – the membrane is a bilayer (two layers) of phospholipid molecules. -A phospholipid is a glycerol molecule attached to a phosphate group and two fatty acid tails - Arranged so that hydrophilic phosphate head face the interior and exterior environments of the cell -Hydrophilic fatty acid tails face inwards. -the membrane surface is called a mosaic because it is embedded with proteins. -Fluids: Phospholipids are flexible, can move to facilitate movement of substances across the membrane.	3 marks 2 marks 2 marks 6 marks

ii) – Too much cholesterol will make the membrane too rigid/less fluid and make exchange less efficient. -Too little cholesterol will mean that the membrane is too fluid and breaks up/doesn't provide necessary structure	2 marks
c) i) Channel Protein – transports large/charged molecules across the membrane	2 marks
ii) glycolipid/glycoprotein – stabilise the membrane by forming hydrogen bonds with water molecules.	2 marks
2. a) i) <u>Any two from:</u> O_2, CO_2, Uncharged, Small	2 marks
ii)-Large molecules e.g proteins, glucose -Charged molecule e.g. Na^+ Cl^- , K^+	2 marks
b) i) -Arrangement of the phospholipids make it difficult for water-soluble substance to pass though. - Hydrophilic heads face out and hydrophobic tails face in	2 marks
ii) – initially the membrane would become more rigid so decreased permeability. - Proteins could be denatured which would increase permeability - ice crystals could pierce the membrane further increasing permeability	3 marks