

thebiotutor

AS Biology OCR

Unit F211: Cells, Exchange & Transport

Module 1.2 Cell Membranes

Answers

1. partially / selectively;

DO NOT ACCEPT semi
ACCEPT differentially

(facilitated) diffusion **OR** osmosis;

plasma;

phospholipids;

cholesterol;

ACCEPT plasma cell

[5]

2. (a) (i) **D** cholesterol;

E protein / glycoprotein / intrinsic protein / protein channel /
protein pump / transport protein / carrier protein;

F phospholipid (bilayer) / phospholipid head;

ACCEPT polypeptide chain
DO NOT ACCEPT amino acid chain
DO NOT ACCEPT extrinsic protein
DO NOT ACCEPT lipids / bilayer

3

(ii) **D** stabilise the membrane **OR** maintain / affect / control / AW,
fluidity **OR** reduces permeability to, polar / charged, particles;

E allow communication across membrane **OR** allow, polar /
charged, particles to pass through membrane;

F to act as a barrier (to, polar / charged, particles) / select
what enters or leaves cell;

mark independently of (a)(i) i.e. NO ecf

DO NOT ACCEPT refs to rigidity / support / strength
ACCEPT reduces / affects, lateral movement of phospholipids

ACCEPT cell recognition / receptor site / cell signalling /
cell attachment

ACCEPT (acts as) selectively permeable or partially
permeable membrane

ACCEPT allows small / fat soluble molecules to pass
through

DO NOT ACCEPT separates inside from outside

3

- (b) (i) communication between cells / AW;

cell, recognition / identification;
 cells work together / coordination between action of different cells;
 to trigger, response / reaction (inside the cell);

*ACCEPT example to illustrate the point, e.g. action of
 hormone / cytokines*

2 max

- (ii) (receptor) specific shape / described;

complementary to (shape of), trigger / named trigger /
 communicating;

molecule;

(trigger / AW) binds / attaches to receptor;

ACCEPT tertiary structure
DO NOT ACCEPT ref to active site
ACCEPT fits / idea of lock & key in correct context
DO NOT ACCEPT 'matches'
DO NOT ALLOW joins / bonds / links / combines / fits

2 max

[10]

3. *at surface*

S1 separate cell from environment;

S2 control, entry/exit (of molecules/ions/suitable substance);
A *selective/partial* **R** *semi-permeable*

S3 use of phospholipid layer (in allowing or preventing passage) of
 suitable example;

S4 reference to facilitated diffusion;

S5 reference to active uptake; **R** *channel protein*

S6 reference phagocytosis/pinocytosis/endocytosis/exocytosis;

S7 cell recognition/cell surface antigens;

S8 cell to cell attachment;

S9 receptor (for hormones/neurotransmitters etc.);

S10 AVP; microvilli increase surface area of cell
 enzyme attachment
 further role *max 6*

within

- W1 compartmentalise/surrounds organelles;
- W2 prevents disruption of, reactions/process; **A** *reaction more efficient*
- W3 e.g. reaction/process, and organelle;
- W4 reactions take place on membranes; **A** *named example of membrane*
- W5 enzymes attached to membranes; **A** *named example*
- W6 isolates/separates, DNA/nucleus;
- W7 (nuclear pore) permits RNA to leave nucleus;
- W8 (forms) ER/(Golgi) vesicles/lysosomes/other named organelle;
(*not the same e.g. as W3 or W6*)
- W9 attachment of ribosomes;
- W10 intracellular transport;
- W11 protects cells from contents of lysosomes;
- W12 (tonoplast) surrounds/controls content of, vacuole;
- W13 AVP; increases (internal) surface area of organelle
 attachment of pigments
 formation of mesosomes
 further role *max 6*

max

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QWC – legible text with accurate punctuation, spelling and grammar

1

[10]

4. *small, non-polar substances*
diffuse (through membrane / **phospholipid bilayer**);

ACCEPT diffusion / diffuses

large substances
 (using), **transport / carrier**, proteins;

endocytosis / phagocytosis / described;

ACCEPT protein pump

DO NOT ACCEPT channel proteins here

ACCEPT pinocytosis

polar substances
 through, pore / **channel**, proteins;
 (using), transport / carrier, proteins;

*general – must be used in correct context, each **once only***
 ref to **facilitated diffusion**;

ref to **active transport** / use of ATP;

apply only to large / polar substances

apply only to large / polar substances

*DO NOT ACCEPT ref to active transport with
 channel proteins*

4 max

QWC – technical terms spelled **AND** used in correct context;

*(three from: phospholipid / bilayer / diffusion /
 facilitated diffusion / active transport / transport
 protein / carrier protein / channel protein /
 pinocytosis / endocytosis / phagocytosis)*

*if protein spelled incorrectly throughout, only
 penalise once*

1

[5]

- | | | | | |
|----|-----|-------|----------------------|---|
| 5. | (a) | (i) | fructose; | 1 |
| | | (ii) | glucose; | 1 |
| | | (iii) | (passive) diffusion; | 1 |

(iv) *ignore ref to, movement of sugars / solute potential*

- | | | |
|---|---|---|
| 1 | surrounding solution higher concentration (of solutes) than cell contents; <i>ora</i> | |
| 2 | cell has higher <u>water potential</u> ; <i>ora</i> | |
| 3 | water moves out of cell; | |
| 4 | (so) volume decreases; | |
| 5 | (water has moved) by osmosis; <i>only award in relation to water</i> | |
| 6 | down <u>water potential</u> gradient / from high Ψ to low Ψ ;
max | 4 |

- | | | |
|-----|---|---|
| (b) | active transport / facilitated diffusion / bulk transport / endocytosis / etc.;
A using channel proteins, etc
NOT osmosis | 1 |
|-----|---|---|

[8]