



## EXAM PAPERS PRACTICE

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Level: HL IB in Biology

Subject: Biology

Topic: IB HL Biology

Type: Topic Question

2002

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All International Baccalaureate IB Topic Questions HL Biology

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**BIOLOGY**

**HL - IB**

Key skills

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**\*\*Question 1\*\***

The sentence below describes a cellular process and an associated eukaryotic cellular structure.

Cells which have a high rate of...I... will have many ...II....

Select the terms that best fit the gaps in this sentence.

I	II
A. Facilitated diffusion	Mitochondria
B. DNA replication	Lysosomes
C. Exocytosis	Vesicles
D. Phospholipid production	Ribosomes

[1 mark]

**\*\*Question 2\*\***

Which row correctly matches the molecules found in the cell surface membrane with their function?

	Influences membrane fluidity	Acts as a receptor site for hormones	Binds to neurotransmitters
A. Glycolipids and glycoproteins	Cholesterol	Proteins and glycolipids	Proteins and glycolipids
B. Glycoproteins	Glycolipids and glycoproteins	Cholesterol	Proteins and glycolipids
C. Cholesterol	Proteins and glycolipids	Glycoproteins	Glycoproteins
D. Phospholipids and cholesterol	Proteins and glycolipids	Phospholipids and cholesterol	Glycoproteins

[1 mark]

**\*\*Question 3\*\***

Cystic fibrosis causes a defect in the cell surface membrane of epithelial cells, disrupting the transport of chloride ions out of affected cells.

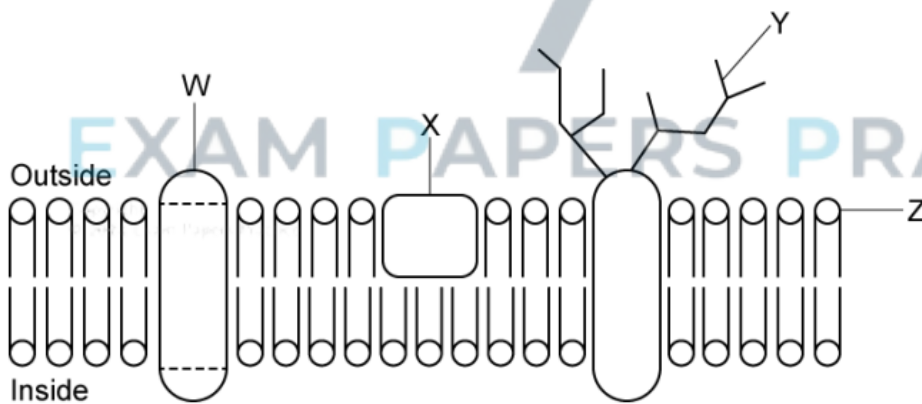
Which membrane component is affected in cystic fibrosis?

- A. Cholesterol
- B. Proteins
- C. Glycolipids
- D. Phospholipids

[1 mark]

**\*\*Question 4\*\***

A student sketches a section of a cell surface membrane to show the fluid mosaic model.



How would they correctly label their sketch?

W	X	Y	Z
A. Integral protein	Peripheral protein	Phospholipid	Glycoprotein
B. Peripheral protein	Integral protein	Glycoprotein	Phospholipid
C. Glycoprotein	Peripheral protein	Integral protein	Phospholipid
D. Integral protein	Integral protein	Glycoprotein	Phospholipid

[1 mark]



**\*\*Question 5\*\***

Select the table row that correctly completes the following sentence:

Cholesterol is a component of animal cell membranes. Most of a cholesterol molecule is ...I.... This means that cholesterol ...II...

	I	II
A.	...hydrophobic, so it is attracted to the hydrocarbon tails at the centre of the membrane.	...reduces the fluidity of the membrane and reduces its permeability to particles such as sodium ions and hydrogen ions.
B.	...hydrophilic, so it is attracted to the hydrocarbon tails at the centre of the membrane.	...increases the fluidity of the membrane and reduces its permeability to particles such as sodium ions and hydrogen ions.
C.	...hydrophobic, so it is attracted to the hydrocarbon tails at the centre of the membrane.	...reduces the fluidity of the membrane and increases its permeability to particles such as sodium ions and hydrogen ions
D.	...hydrophilic, so it is attracted to the phosphate heads on the periphery of the membrane.	...increases the fluidity of the membrane and increases its permeability to particles such as sodium ions and hydrogen ions.

[1 mark]

**\*\*Question 6\*\***

The Davson-Danielli model of cell membrane structure stated that cell membranes consisted of a phospholipid bilayer sandwiched between two layers of protein.

Which piece of evidence would have contributed to the falsification of the Davson-Danielli model and the acceptance of the fluid mosaic model?

- A. The presence and positioning of globular peripheral and integral proteins
- B. The amphipathic properties of phospholipids
- C. The presence of a hydrophobic region on the surface of the membrane
- D. The orientation of the hydrophobic phospholipid tails away from the proteins

[1 mark]



**\*\*Question 7\*\***

What is the difference between simple diffusion and facilitated diffusion?

	Simple diffusion	Facilitated diffusion
A.	Diffusion rate inversely proportional to concentration gradient	Diffusion rate proportional to concentration gradient
B.	Never involves a membrane	Always involves a membrane
C.	Occurs across any part of a membrane	Occurs via channels in the membrane
D.	A passive process that does not require energy from ATP	An active process that requires energy from ATP

[1 mark]