PEARSON EDEXCEL A-LEVEL BIOLOGY B · 9BI0

BIOLOGY



EXAM QUESTION PACK

TOPIC 4: EXCHANGE AND TRANSPORT

TRANSFER OF MATERIALS BETWEEN THE CIRCULATORY SYSTEM AND CELLS

SCORE	PERCENTAGE
/22	%

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Q1.

Water is the major component of tissue fluid in mammals.

In humans, left side heart failure can cause symptoms such as breathlessness, palpitations and a rapid pulse.

The table shows the mean blood pressure in the lung capillaries of patients with left side heart failure compared with healthy individuals.

Group	Mean blood pressure in the lung capillaries / arbitrary units
Healthy individuals	0.90
Left side heart failure	2.75

(i) Calculate the percentage increase in the mean blood pressure in the lung capillaries due to left side heart failure.

(1)

Answer ..... %

(ii) This increased blood pressure in the capillary will cause more tissue fluid to be formed.

Analyse this information to explain the symptom of breathlessness.

(2)

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(iii) In healthy individuals, only 80% of excess tissue fluid is reabsorbed directly into the blood stream.

Describe how the remaining 20% is reabsorbed.

(2)

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Q2.

The table shows two differences between blood plasma and tissue fluid.

Blood plasma	Tissue fluid
Has a higher protein content	Has a lower protein content
Contains more dissolved oxygen	Contains less dissolved oxygen

Explain the differences between blood plasma and tissue fluids shown in the table.

(2)

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(Total for question = 2 marks)

Q3.

The table shows two differences between blood plasma and tissue fluid.

Blood plasma	Tissue fluid
Has a higher protein content	Has a lower protein content
Contains more dissolved oxygen	Contains less dissolved oxygen

State how tissue fluid is formed.

(1)

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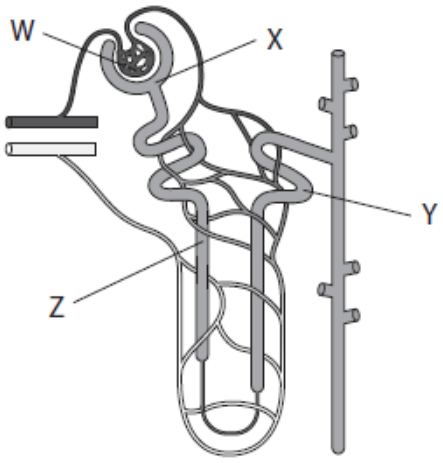
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(Total for question = 1 mark)

Q4.

The diagram shows a nephron.



Oedema is an accumulation of tissue fluid. This is due to less tissue fluid being returned to the blood capillaries.

(i) Explain how tissue fluid is returned to capillaries.

(3)

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(ii) Furosemides are drugs that are used to reduce oedema. They are diuretics that increase urine production.

Furosemides reduce the active transport of sodium ions by the loop of Henle.

Explain how furosemides cause an increase in urine production.

(4)

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(Total for question = 7 marks)

Q5.

The table shows two differences between blood plasma and tissue fluid.

Blood plasma	Tissue fluid
Has a higher protein content	Has a lower protein content
Contains more dissolved oxygen	Contains less dissolved oxygen

Some of the tissue fluid is not reabsorbed into the blood capillary.

Describe what happens to the tissue fluid that is not reabsorbed into the blood capillary.

(2)

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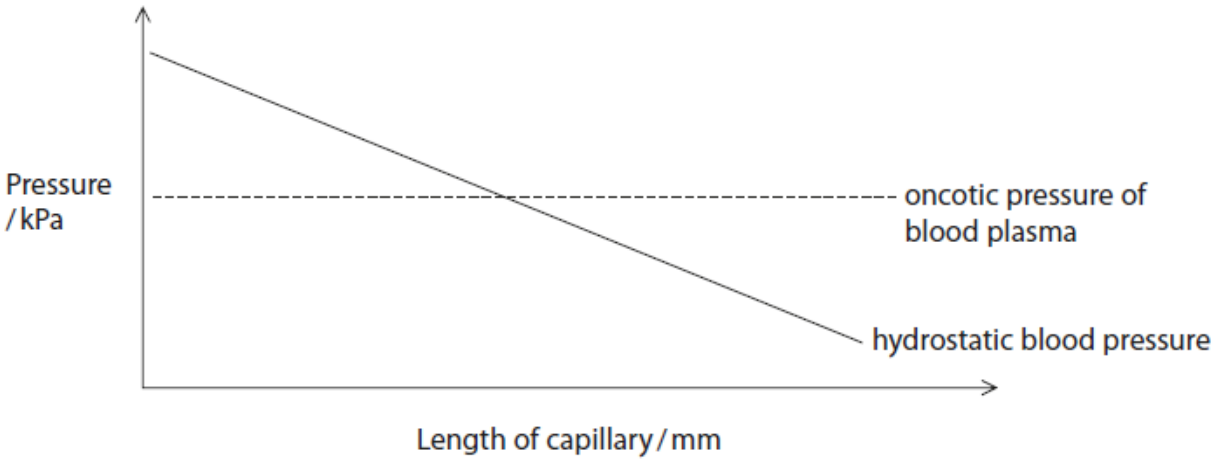
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(Total for question = 2 marks)

Q6.

The graph shows the hydrostatic pressure and oncotic pressure of the blood along a capillary.



(i) Explain how tissue fluid is formed by the capillary. Use the information in the graph to help your answer.

(3)

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(ii) Kwashiorkor is a condition caused by a lack of dietary protein. One symptom is accumulation of tissue fluid.

Explain why children suffering from kwashiorkor often suffer from an excess of tissue fluid. Use the graph to support your answer.

(2)

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(Total for question = 5 marks)