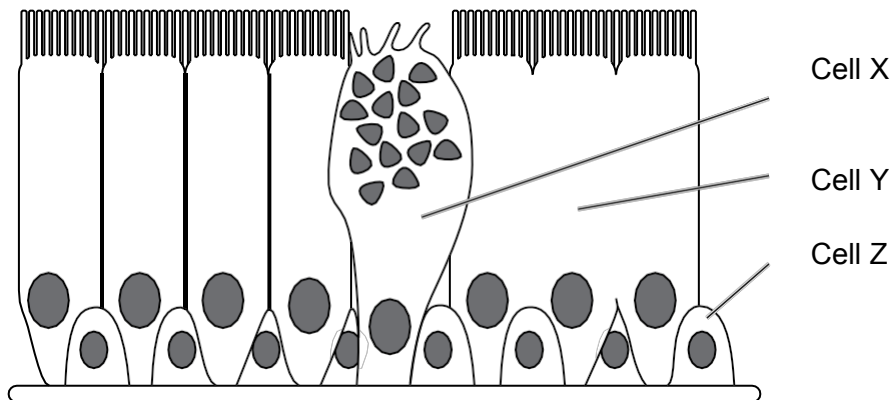


AS Level Biology A
H020/01 Breadth in Biology

Question Set 3

Multiple Choice Questions

1. Air moves in and out of human lungs through the trachea, which is lined with cells. The diagram below shows a section containing these cells.



Which of the following statements about tracheal cells is correct?

- A Cells X, Y and Z are all columnar epithelial cells.
- B Cells X and Y move mucus and trapped bacteria out of the trachea.
- C Cell X releases mucus into the trachea.
- D Cell Z is a goblet cell.

Your answer

C

[1]

2. Which of the options, **A** to **D**, is a reason why plants require specialised transport tissue?

- A to allow osmosis to take place
- B because they all have a large surface area to volume ratio
- C to carry sucrose to their leaves
- D to overcome the limitations of diffusion over large distances

Your answer

D

[1]

3. Many plants are adapted to the availability of water in their environment; one group of these plants is the xerophytes.

Which one of the following statements correctly describes a xerophyte?

- A Smooth cordgrass grows in highly saline marine estuary environments.
- B The water lily has aerenchyma tissue to allow the movement of gases to submerged roots.
- C The poison tree has leafless branches covered in thorns to reduce water loss.
- D Water lobelia completes its entire life cycle submerged in shallow ponds.

Your answer

C

[1]

4. Which of the options, **A** to **D**, is a correct statement about tissue fluid?

- A Tissue fluid carries carbon dioxide to muscle cells.
- B Oncotic pressure in the capillary causes tissue fluid formation from plasma.
- C Hydrostatic pressure in the capillary causes tissue fluid formation from plasma.
- D Tissue fluid is reabsorbed into the capillary by active transport.

Your answer

C

[1]

5. In the graph below, the top electrocardiogram (ECG) trace shows normal heart activity and the ECG trace below shows abnormal heart activity.



What is the heart condition represented by the bottom ECG trace?

- A fibrillation
- B tachycardia
- C ectopic heartbeat
- D bradycardia

Your answer

A

[1]

6. A student studied the structure of a blood vessel and found:
- an outer layer of collagen fibres,
 - a thick middle layer of smooth muscle and elastic tissue,
 - an innermost layer of endothelial cells.

Which of the options, **A** to **D**, identifies the type of blood vessel the student studied?

- A artery
- B capillary
- C venule
- D vein

Your answer

A

[1]

7. The aquatic crustacean *Daphnia magna* has a heart that pumps a blood-like liquid called haemolymph around the body cavity.

Which of the statements, **A** to **D**, describes the circulatory system of *Daphnia magna*?

- A** single closed
- B** single open
- C** double open
- D** double closed

Your answer

B

[1]

8. Which of the following, **A** to **D**, is **not** an adaptation to reduce water loss in plants?

- A** an extensive root system that extends far from the plant
- B** leaves that are reduced to spines that prevent damage from animals
- C** the ability to store carbon dioxide so stomata only need to open at night
- D** the surface covered in reflective hairs

Your answer

A

[1]

9. Carbon dioxide release during respiration can affect the % oxygen saturation of haemoglobin.

The tertiary structure of haemoglobin is affected when carbon dioxide reacts with water to form carbonic acid. This reaction releases hydrogen ions.

Which of the statements, **A** to **D**, explains this change?

- A** The release of hydrogen ions causes the pH to rise, which reduces haemoglobin's affinity for oxygen.
- B** The release of hydrogen ions causes the pH to rise, which increases haemoglobin's affinity for oxygen.
- C** The release of hydrogen ions causes the pH to fall, which increases haemoglobin's affinity for oxygen.
- D** The release of hydrogen ions causes the pH to fall, which reduces haemoglobin's affinity for oxygen.

Your answer

D

[1]

10. During translocation of photosynthetic products in the phloem sieve tube, hydrogen ions are moved out of companion cells, then sucrose enters the companion cells and moves through plasmodesmata into the sieve tube.

Which of the rows, **A** to **D**, correctly identifies how these substances enter or leave companion cells?

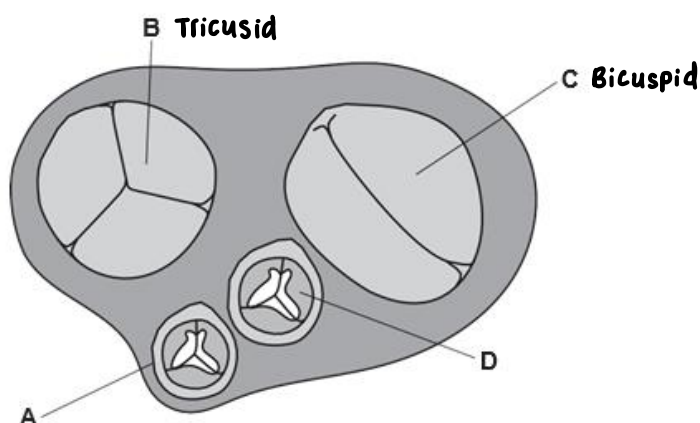
	hydrogen ions out of companion cell	sucrose into companion cell	sucrose out of companion cell
A	diffusion x	facilitated diffusion	diffusion
B	diffusion x	active transport	active transport
C	active transport	facilitated diffusion	diffusion
D	active transport	active transport x	facilitated diffusion

Your answer

C

[1]

11. The diagram below shows an internal view of the mammalian heart with the atria removed so valves can be seen.



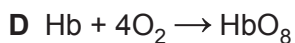
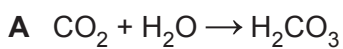
Which of the valves, labelled **A** to **D**, is pushed open by oxygenated blood entering a ventricle?

Your answer

C

[1]

12. Which of the following, **A** to **D**, shows the reaction catalysed by carbonic anhydrase?



Your answer

A

[1]

13. The giant water lily, *Victoria amazonica*, grows in the shallow waters of the Amazon river basin.

Which of the following adaptations, **A** to **D**, enables *Victoria amazonica* to survive in its watery environment?

- A thick waxy cuticle
- B leaves with stomata on upper surface only
- C leaves with sunken stomata
- D extensive shallow root system

Your answer

A

[1]

14. Ventilation is a process that involves various parts of the body.

Which of the following options, **A** to **D**, describes **exhalation** in a mammal?

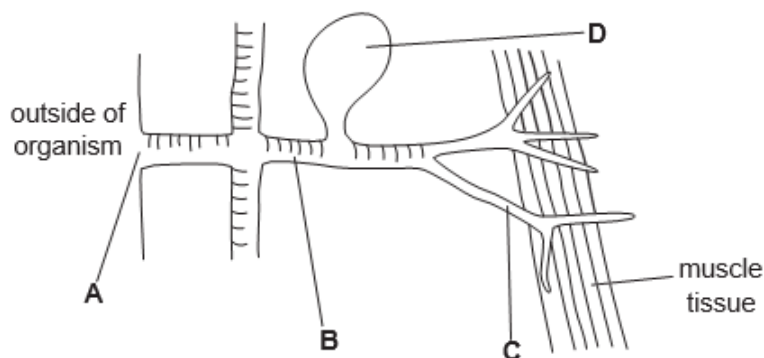
- A ribcage moves upwards and outwards; external intercostal muscles relax; diaphragm relaxes
- B ribcage moves downwards and inwards; external intercostal muscles relax; diaphragm relaxes
- C ribcage moves upwards and outwards; external intercostal muscles contract; diaphragm relaxes
- D ribcage moves downwards and inwards; external intercostal muscles contract; diaphragm contracts

Your answer

B

[1]

15. The diagram shows part of the gas exchange system of an insect.



Which of the labels, **A** to **D**, indicates the trachea?

Your answer

B

[1]

Total Marks for Question Set 3: 15

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