**11** Which process moves water from the surfaces of the mesophyll cells into the air spaces during transpiration?

**A** active transport

**B** circulation

**C** evaporation

**D** osmosis

**12** The mass of water lost from a plant was investigated.

The leaves of the plant were covered with a type of grease that acts as a waterproof barrier.

The environmental conditions remained the same throughout the experiment.

The table shows the results of the investigation.

| treatment | mass lost in seven days / g |
|---|---|
| no grease applied | 12.0 |
| grease applied only to the upper surface of every leaf | 8.7 |
| grease applied to both surfaces of every leaf | 0.0 |

What is the mean daily rate of water loss through the upper surface of the leaves?

**A** 0.47 g / day **B** 1.24 g / day **C** 1.71 g / day **D** 3.30 g / day



**13** Which environmental conditions will result in the highest rate of transpiration?

| | high air humidity | very windy | low air temperature |
|---|---|---|---|
| **A** | no | no | yes |
| **B** | no | yes | no |
| **C** | yes | yes | yes |
| **D** | yes | no | no |

**5** A student investigated the effect of humidity on water vapour loss in plant leaves. As water vapour was lost, the mass of the leaves decreased.

Similar-sized leaves were collected from one species of plant.

The leaves were divided into two groups, **A** and **B**. The leaves in group **A** were placed in a low humidity environment and the leaves in group **B** were placed in a high humidity environment. The leaves in each group were kept in their environment for 12 hours.

The temperature in each environment was maintained at 20 °C.

The mass of the leaves in each group was measured at the start of the investigation and then every hour throughout the 12-hour period.

The student calculated the mass of water vapour lost as a percentage of the starting mass of the leaves for each group.

Fig. 5.1 shows the student's results.

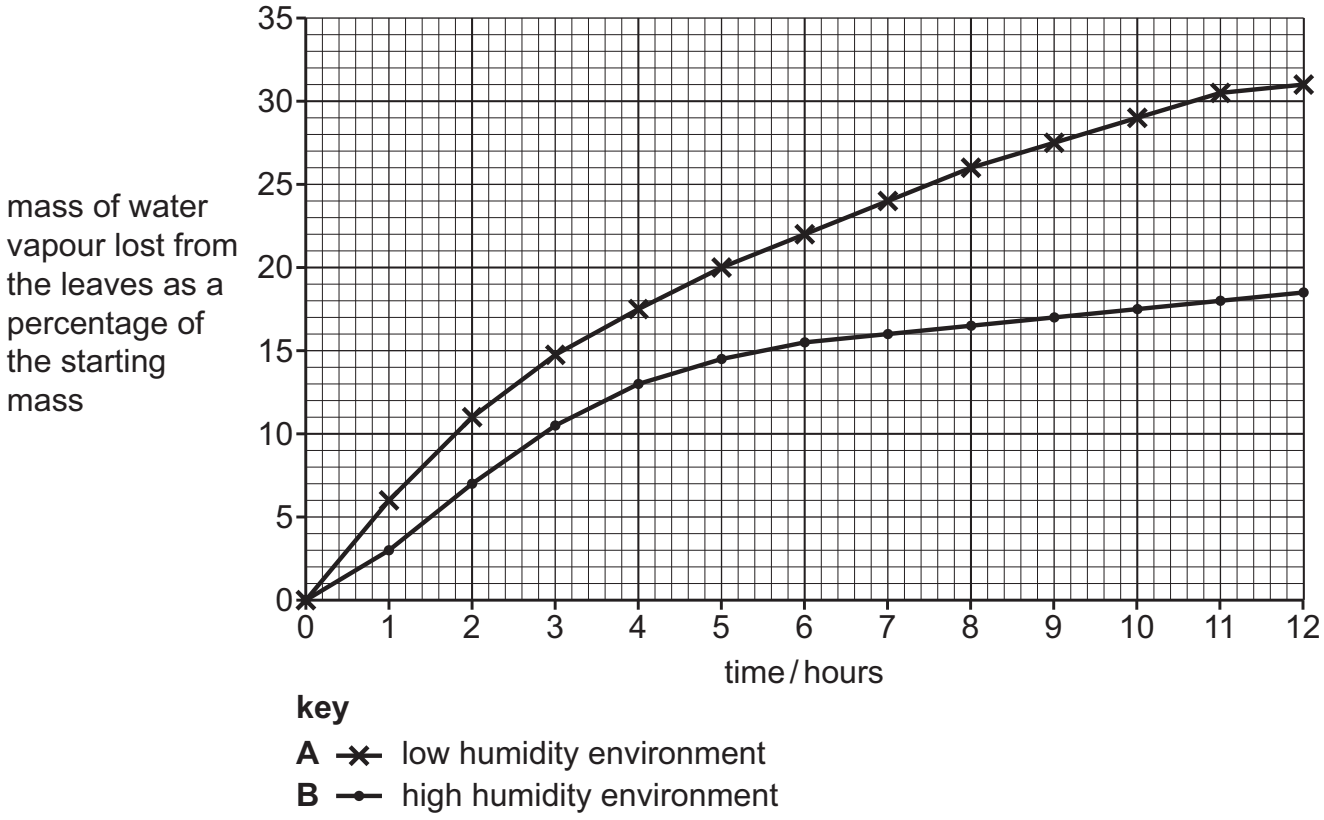


**Fig. 5.1**

**(a) (i)** State the name of the process by which water vapour is lost from plant leaves.

..... [1]

**(ii)** Compare **and** explain the effects of high and low humidity shown in Fig. 5.1.

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..... [5]

**(iii)** The students repeated the investigation at a temperature of 35 °C.

The leaves were kept in a low humidity environment.

Draw a line **on the graph** in Fig. 5.1 to predict the results of this investigation. [1]

**(b)** Humans also lose water vapour from their bodies by sweating.

**(i)** Explain how sweating helps a person to maintain a constant internal body temperature.

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..... [3]

**(ii)** State **one** other way that humans lose water vapour from their bodies.

.....

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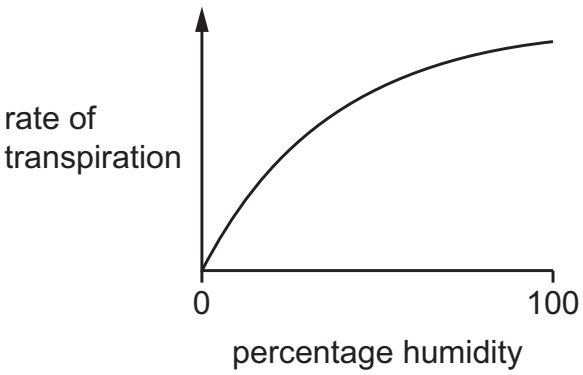
..... [1]

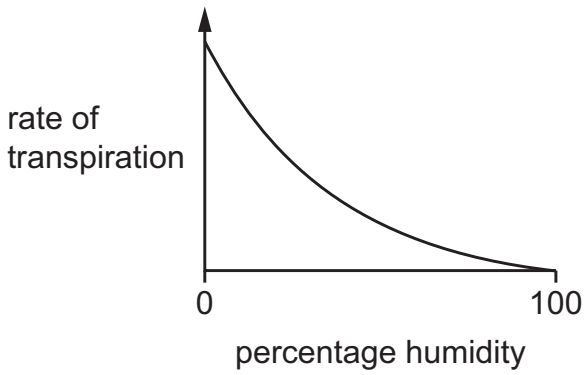
[Total:11]

**13** Which graph shows the effect of humidity in the air on the rate of transpiration in a plant?

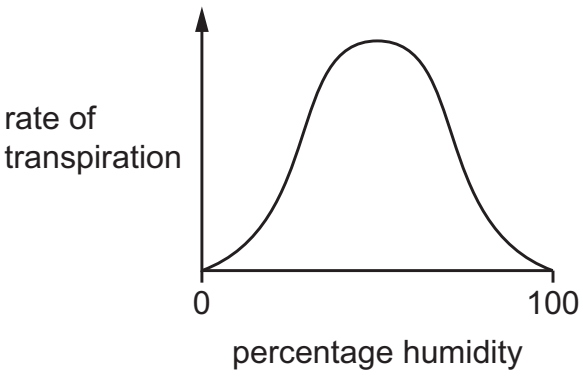
**A**



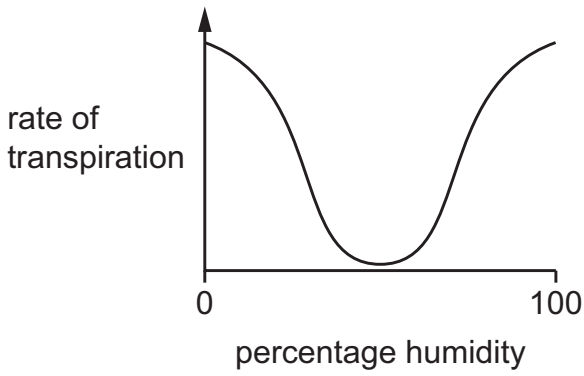

**B**



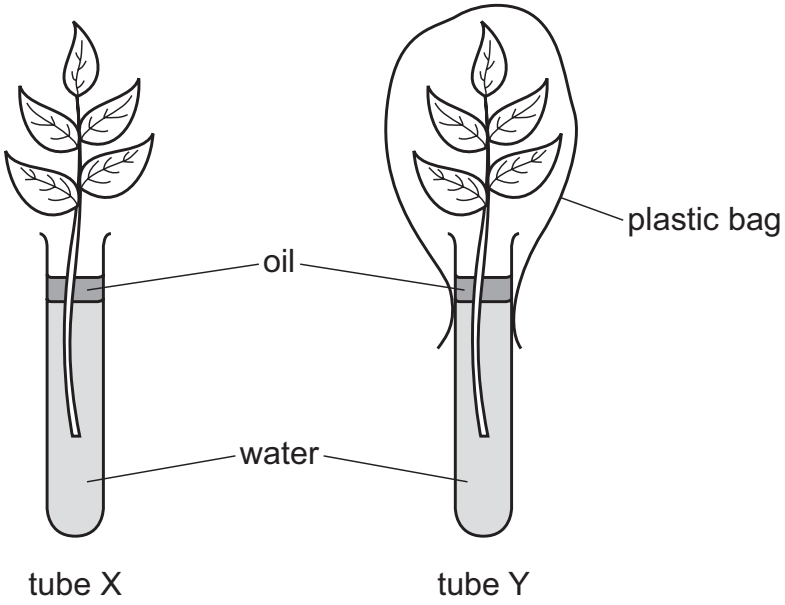

**C**




**D**



**15** A student wanted to investigate the effect of humidity on transpiration. She set up two sets of apparatus with identical-sized plants of the same species.




The masses of the water in both tubes were measured at the start of the investigation and again after five days. The table shows the results of the investigation.

| tube | mass of the water in the tube at the start / g | mass of the water in the tube at the end / g |
|---|---|---|
| X | 40.3 | 34.6 |
| Y | 41.0 | 39.4 |

Which statement describes and explains these results?

**A** Transpiration in tube Y was higher than in tube X as the plastic bag decreased the humidity.

**B** Transpiration in tube Y was higher than in tube X as the plastic bag increased the humidity.

**C** Transpiration in tube Y was lower than in tube X as the plastic bag decreased the humidity.

**D** Transpiration in tube Y was lower than in tube X as the plastic bag increased the humidity.

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**15** Which conditions cause the highest rate of transpiration?

**A** high temperature, high wind speed and high humidity

**B** high temperature, high wind speed and low humidity

**C** low temperature, low wind speed and low humidity

**D** low temperature, low wind speed and high humidity