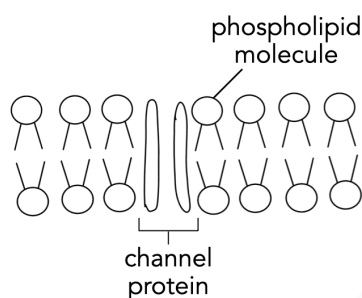




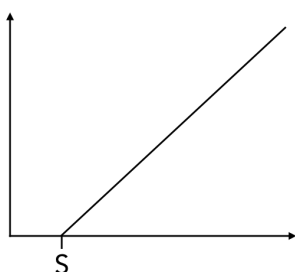
1. The following diagram shows one of the repeated sections of the cell membrane of some animal cells:



Emily prepared solutions of different concentrations of phosphate ions and placed some animal cells into each of the solutions. Which of the following graphs best shows the initial rate of the uptake of phosphate ions by facilitated diffusion into the cells? (Note: S is the concentration of phosphate ions inside the animal cells.)

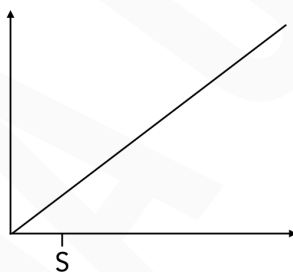
A.

Rate of Uptake



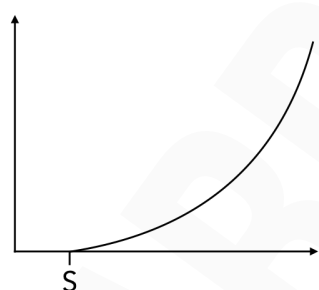
B.

Rate of Uptake



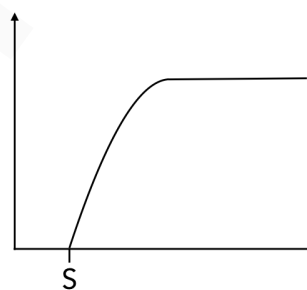
C.

Rate of Uptake



D.

Rate of Uptake



2. The following table shows the percentage changes in the lengths of 4 fresh potato cylinders after they were placed in 4 sucrose solutions of different concentrations for 1.5 hours.

	Solution S	Solution T	Solution U	Solution V
Percentage change in length (%)	10	-10	20	-5

Which of the following correctly states the descending order of the 4 sucrose solutions according to their concentrations?

A. $U > S > V > T$ B. $V > T > S > U$ C. $S > U > T > V$ D. $T > V > S > U$ 

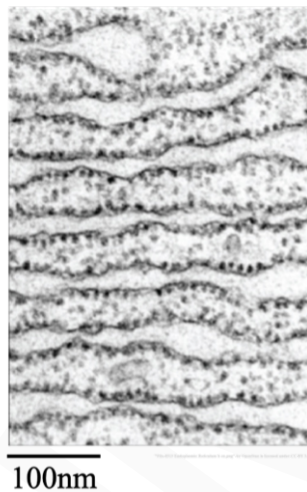


3. Which of the following statements are correct?

1. All kinds of cholesterol deteriorate our health.
2. Butter is rich in cholesterol.
3. Consuming too much cholesterol can increase the risk of having a heart attack.

- A. 1 and 3 only
B. 1 and 2 only
C. 2 and 3 only
D. 1, 2 and 3

4. The electron micrograph below shows organelle S:



Which of the following cell types most probably has the highest density of organelle S?

- A. root hair cells
B. insulin-secreting cells
C. oestrogen-secreting cells
D. cells in the lining of the air sacs

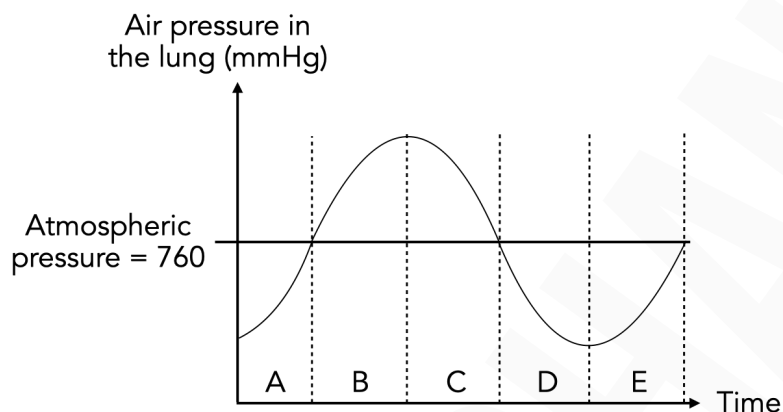
5. Which of the following is a mixed gland?

- A. pituitary
B. hypothalamus
C. pancreas
D. thyroid gland





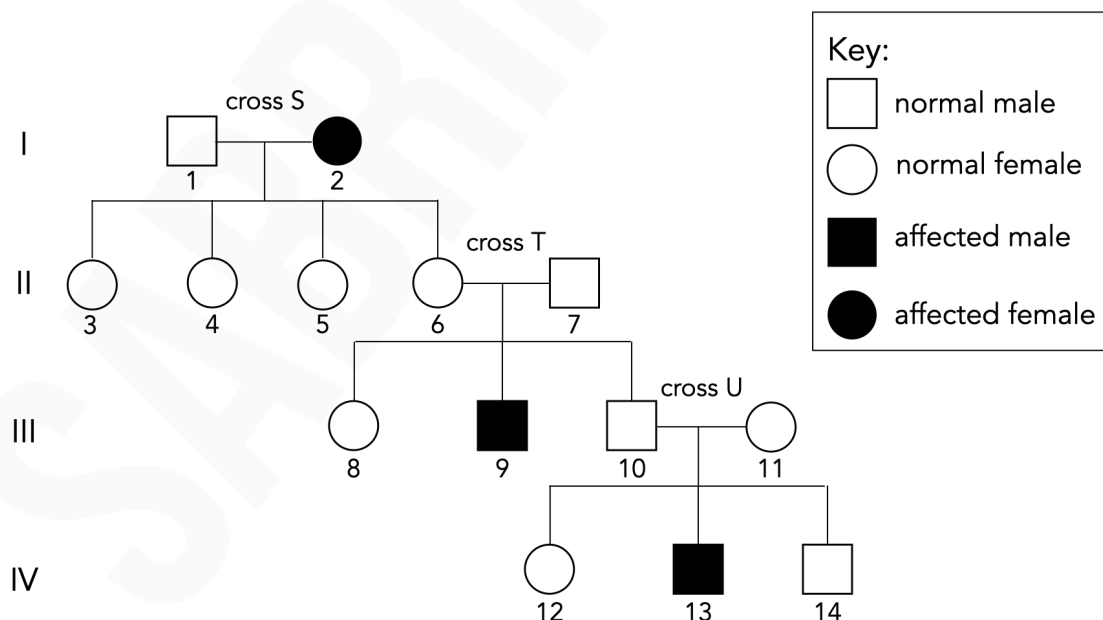
6. The following graph shows the change in air pressure in the lungs of Lala during breathing:



At which point is the lung volume the smallest?

- A. Beginning of A
- B. Beginning of B
- C. Beginning of C
- D. Beginning of D

Directions: Questions 7 and 8 refer to the following pedigree which shows the inheritance of a certain characteristic controlled by a pair of alleles. The pair of alleles is carried by autosomes.





7. Which of the above crosses can be used to deduce which allele is dominant?

- A. cross S
- B. cross U
- C. crosses T and U
- D. crosses S and T

8. If individuals 10 and 11 are going to give birth to another baby, what is the probability of having a daughter who is affected?

- A. $\frac{1}{2}$
- B. $\frac{1}{4}$
- C. $\frac{1}{8}$
- D. $\frac{1}{16}$

9. Emily wanted to study the conditions necessary for the germination of seed X. She placed 20 seed Xs into each of the 3 beakers that contained cotton wool at the bottom. The following table shows the factors she studied and the results after 8 days:

Beaker	Factors				Germination? (after 8 days)
	Temperature (°C)	Light	Oxygen	Water	
T	4	+	+	+	-
U	26	+	+	+	+
V	26	+	-	-	-

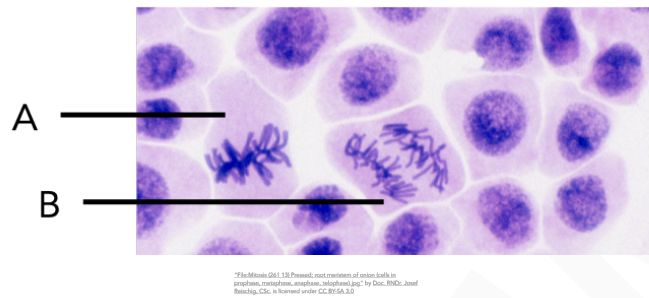
Note: "+" = present; "-" = absent

What conclusion can we draw when comparing the results of beakers U and V?

- A. Only oxygen is needed for the germination of seed X.
- B. Only water is needed for the germination of seed X.
- C. Oxygen and water are needed for the germination of seed X.
- D. No conclusions can be drawn.



10. Bobo observed some plant cells undergoing cell division under a light microscope. The following shows what she saw:



A normal plant cell in the above diagram has 20 chromosomes. State the number of chromatids and chromosomes present in cell B.

- Number of chromatids: _____
- Number of chromosomes: _____



Suggested Answers:

1. D

2. D

3. C

4. B

5. C

6. D

7. C

8. C

9. D

10.

- Number of chromatids: 0
- Number of chromosomes: 40

