Cambridge
O Level

Cambridge Assessment International Education
Cambridge Ordinary Level

BIOLOGY **5090/11**

Paper 1 Multiple Choice **May/June 2019**

1 hour

Additional Materials: Multiple Choice Answer Sheet
Soft clean eraser
Soft pencil (type B or HB is recommended)

* 1 2 8 5 4 9 3 4 8 4 *

READ THESE INSTRUCTIONS FIRST

Write in soft pencil.
Do not use staples, paper clips, glue or correction fluid.
Write your name, centre number and candidate number on the Answer Sheet in the spaces provided unless this has been done for you.
DO **NOT** WRITE IN ANY BARCODES.

There are **forty** questions on this paper. Answer **all** questions. For each question there are four possible answers **A**, **B**, **C** and **D**.
Choose the **one** you consider correct and record your choice in **soft pencil** on the separate Answer Sheet.

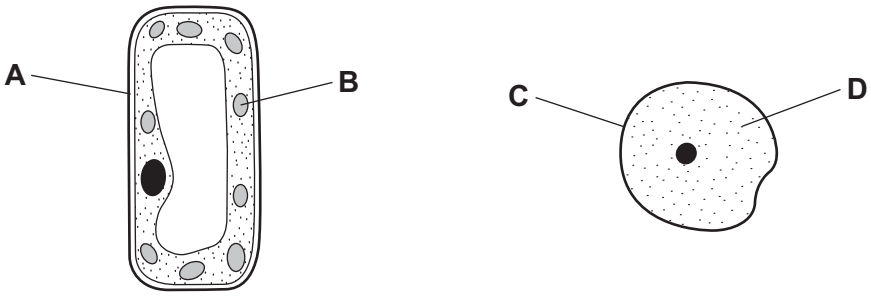
Read the instructions on the Answer Sheet very carefully.

Each correct answer will score one mark. A mark will not be deducted for a wrong answer.
Any rough working should be done in this booklet.
Electronic calculators may be used.

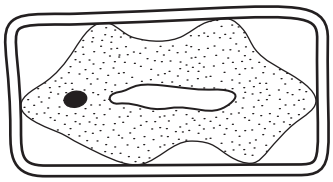
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1 The diagram shows a cell from a plant leaf and a cell from an animal's skin.

Which part will stain blue-black with iodine solution?



2 The diagram shows a plant cell after being placed in a solution for an hour.



What provides the explanation for the appearance of this cell?

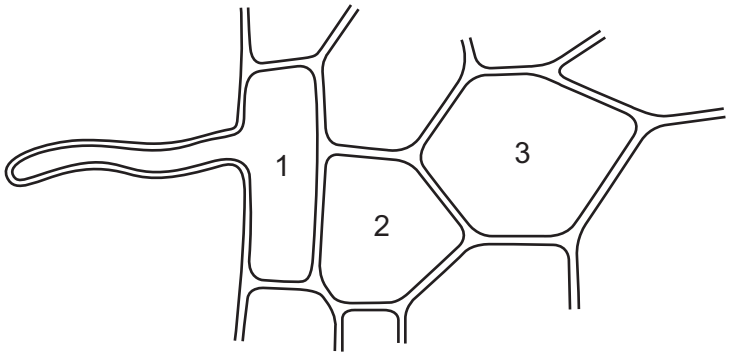
A The cell has gained water and is turgid.

B The cell has gained water and is no longer turgid.

C The cell has lost water and is turgid.

D The cell has lost water and is no longer turgid.

3 The diagram shows some cells in the root of a plant that is absorbing water from the soil.



How does the water potential of the cell marked 2 differ from the water potentials of the cells marked 1 and 3?

A higher than cell 1 and higher than cell 3

B higher than cell 1 and lower than cell 3

C lower than cell 1 and higher than cell 3

D lower than cell 1 and lower than cell 3

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4 Which statement about enzymes is **not** correct?

A All enzymes are made of protein.

B Enzymes are biological catalysts.

C Enzymes are destroyed during the reaction they are involved in.

D Most human enzymes work best at temperatures between 35 °C and 40 °C.

5 What is the effect of a lack of nitrate ions on plant leaves?

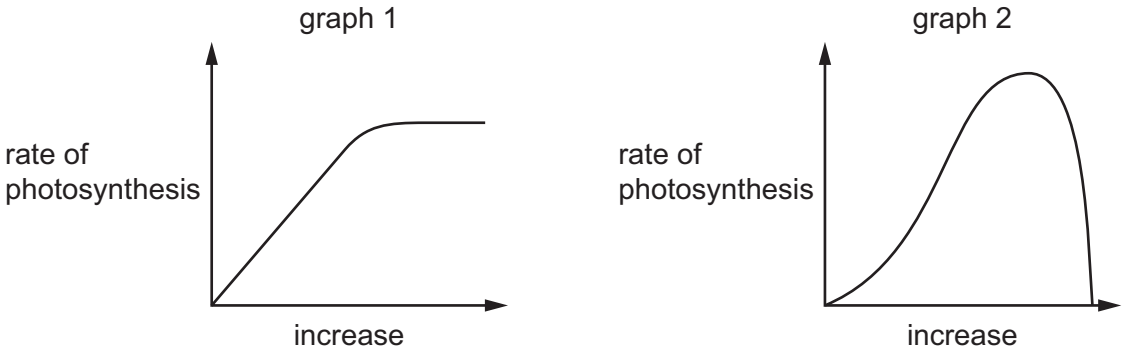
A All leaves turn very dark green.

B Leaves lose their yellow colour.

C The leaves wilt.

D Young leaves grow very slowly.

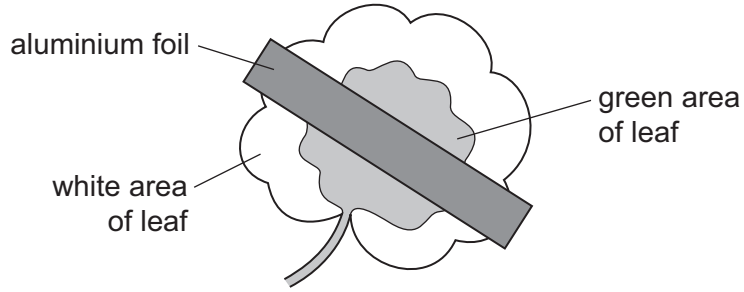
6 The graphs show how two different conditions affect the rate of photosynthesis.



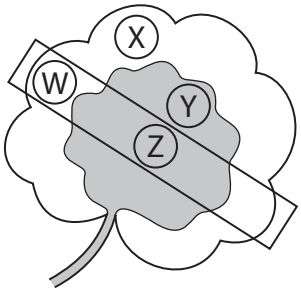
Which conditions are being altered in graphs 1 and 2?

	graph 1	graph 2
A	carbon dioxide concentration	light intensity
B	carbon dioxide concentration	temperature
C	temperature	carbon dioxide
D	temperature	light intensity

7 A plant has leaves with both green and white areas. One of its leaves is partly covered with aluminium foil which blocks light.



The plant is then placed under a lamp for 24 hours. After this time, discs are cut from the areas of the leaf shown, and tested with iodine solution.

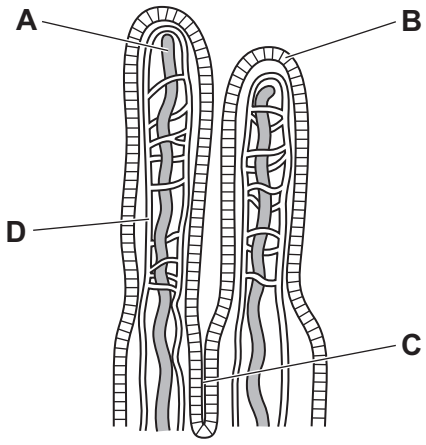


Which of the leaf discs will give a blue-black colour when tested with iodine solution?

A W and X **B** X only **C** Y and Z **D** Y only

8 The diagram shows a section of the wall of the small intestine.

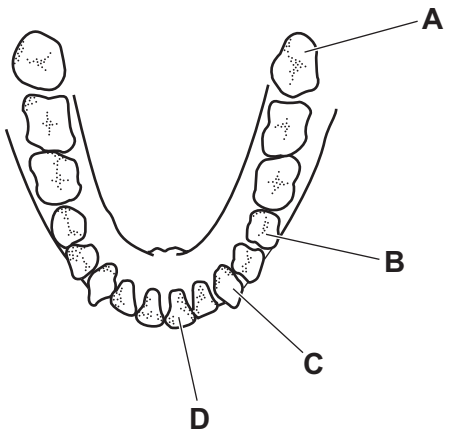
Into which structure are most of the lipid components of the diet absorbed for transport to the rest of the body?



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9 The diagram shows the arrangement of human teeth in the lower jaw.

Which tooth is an incisor?



10 Which statement describes the function of the stomach?

A It absorbs indigestible food material.

B It is the place where protease and bile work.

C It is the first place in the alimentary canal where starch digestion happens.

D It secretes protease and strong acid.

11 Which statement best describes the movement of water through the stem of a plant?

A Water moves up the stem as it evaporates from the leaves.

B Water moves up the stem as it is pushed by water entering the roots.

C Water moves up the stem because it is used in photosynthesis.

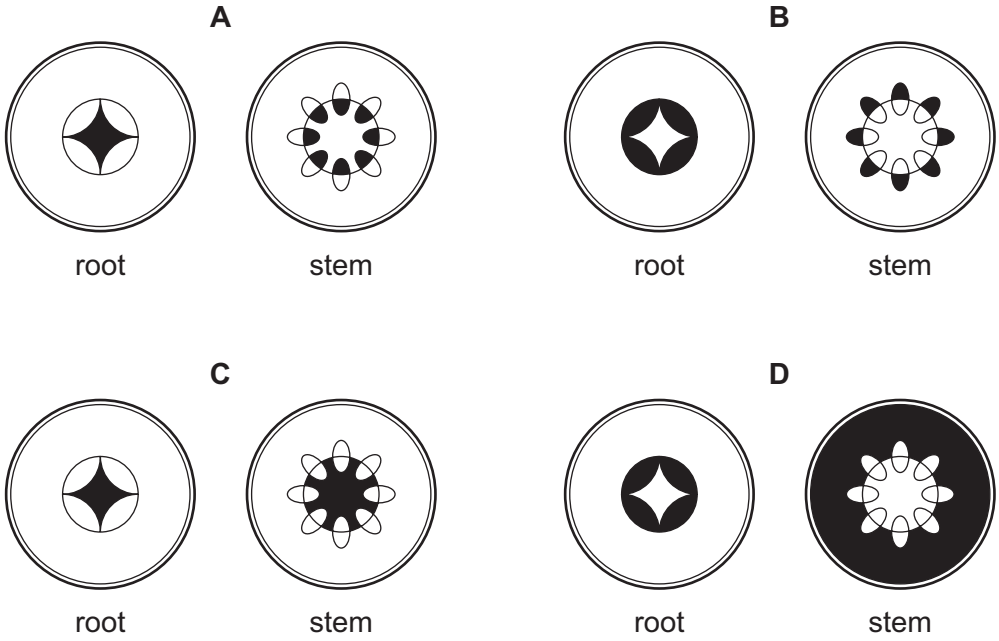
D Water moves up the stem by osmosis.

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[Turn over

12 A plant was placed in water containing black dye. After 24 hours the plant was removed and sections were taken from the root and the stem.

Which diagram shows the results?



13 In a muscle, which two substances show net movement from the plasma **into** the tissue fluid?

A carbon dioxide and glucose

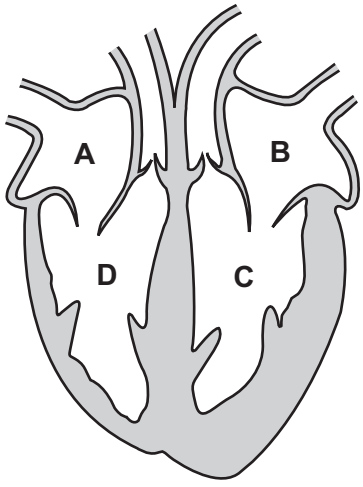
B carbon dioxide and lactic acid

C glucose and oxygen

D lactic acid and oxygen

14 A patient inhales a drug.

Which chamber of the patient's heart would be the first to receive blood containing the drug?



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15 Which table shows vessels carrying blood to and from the heart, liver and lungs?

A

blood to organ	organ	blood away from organ
pulmonary artery	heart	pulmonary vein
hepatic portal vein	liver	hepatic vein
pulmonary vein	lungs	pulmonary artery

B

blood to organ	organ	blood away from organ
pulmonary artery	heart	pulmonary vein
hepatic vein	liver	hepatic portal vein
pulmonary vein	lungs	pulmonary artery

C

blood to organ	organ	blood away from organ
pulmonary vein	heart	pulmonary artery
hepatic portal vein	liver	hepatic vein
pulmonary artery	lungs	pulmonary vein

D

blood to organ	organ	blood away from organ
pulmonary vein	heart	pulmonary artery
hepatic vein	liver	hepatic portal vein
pulmonary artery	lungs	pulmonary vein

16 Which statement about anaerobic respiration in humans is correct?

A It only happens in the cells of the lungs.

B It only happens when oxygen supply exceeds oxygen demand.

C It releases carbon dioxide.

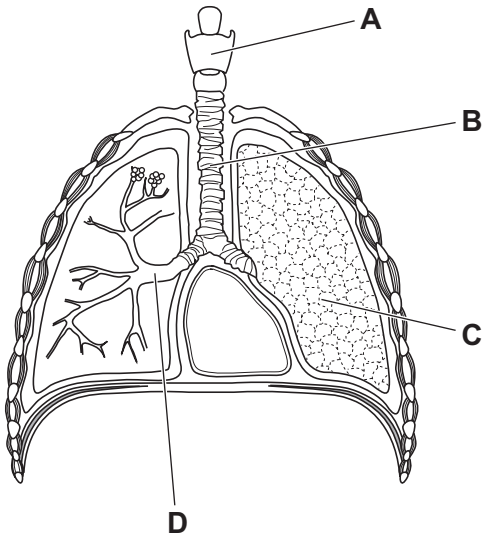
D It releases less energy than aerobic respiration.

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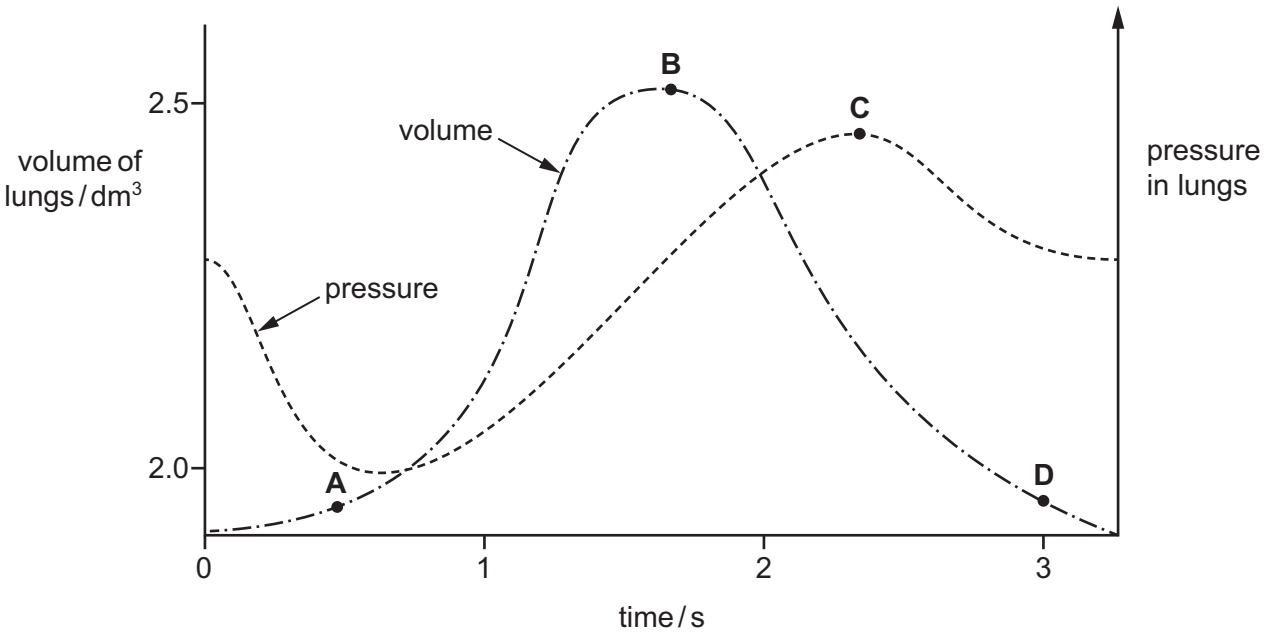
17 The diagram shows the human gas exchange system.

Which label shows the position of the larynx?

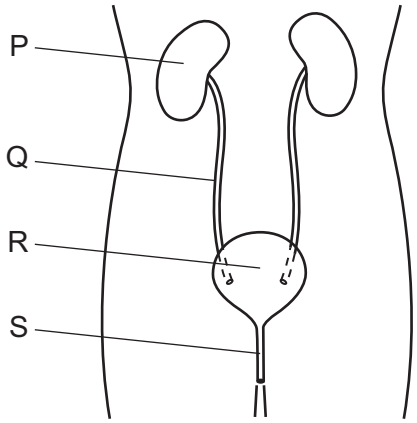


18 The graph shows how the pressure and volume inside the lungs change during one complete breath.

At which point are the muscles of the diaphragm starting to contract?



19 The diagram shows the kidneys and their associated structures.



Which row identifies P, Q, R and S?

	P	Q	R	S
A	bladder	ureter	urethra	kidney
B	bladder	urethra	kidney	ureter
C	kidney	ureter	bladder	urethra
D	kidney	urethra	bladder	ureter

20 By which mechanism would the body be able to lose most heat on a hot dry day, if the surrounding air temperature is higher than body temperature?

A Blood vessels in the skin become narrower.

B Hair erector muscles relax so hairs lay flat.

C Shivering by body muscles ceases.

D Sweat glands become more active.

21 What are the short-term effects of adrenaline on the body?

1 decreased blood sugar concentration

2 decreased heart rate

3 increased blood sugar concentration

4 increased heart rate

A 1 and 2 **B** 1 and 4 **C** 2 and 3 **D** 3 and 4

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22 How does hormonal control usually differ from nervous control?

	speed of message	duration of effect
A	faster	long-term
B	faster	short-term
C	slower	long-term
D	slower	short-term

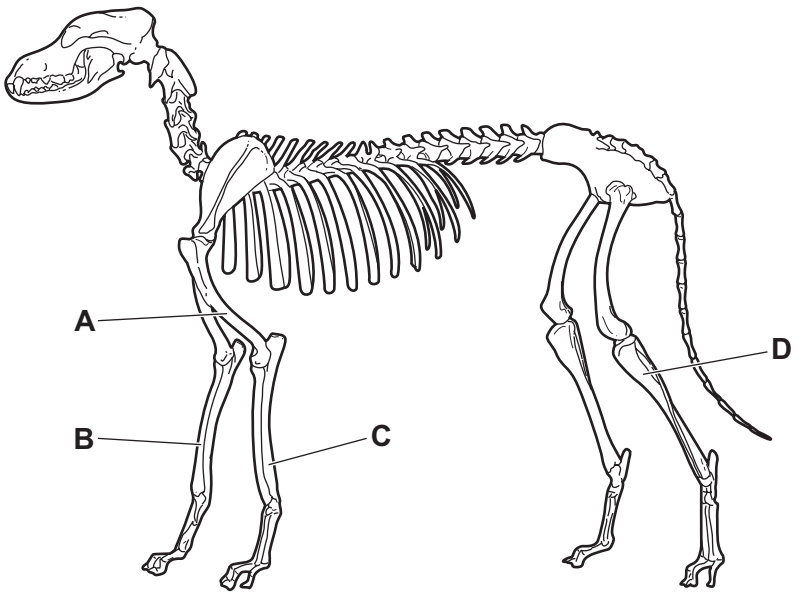
23 A girl is waiting at a bus stop and is watching a bus travelling towards her.

What happens to her eyes as the bus gets closer?

	ciliary muscle	change in shape of lens	change in suspensory ligaments
A	contracts less	less rounded	less tension
B	contracts less	more rounded	more tension
C	contracts more	less rounded	more tension
D	contracts more	more rounded	less tension

24 The diagram shows the skeleton of a dog.

Which bone is the radius?



25 Which statements about the use of heroin are correct?

	addiction occurs as higher and higher doses are needed to get the same effect	everybody who takes a dose of heroin becomes an addict	tolerance to heroin means a user can survive higher and higher doses	medical assistance is always necessary to withdraw from heroin addiction
A	✗	✓	✗	✗
B	✓	✗	✓	✗
C	✓	✗	✗	✓
D	✗	✓	✓	✓

key
✓ = yes
✗ = no

26 What are characteristics of bacteria?

	contain cytoplasm	have DNA	nuclear membrane present
A	✓	✓	✓
B	✓	✓	✗
C	✓	✗	✓
D	✗	✓	✓

key
✓ = yes
✗ = no

27 Which can be produced using bacteria?

1 alcohol

2 bread

3 cheese

4 yogurt

A 1, 2, 3 and 4

B 1, 3 and 4 only

C 3 and 4 only

D 4 only

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[Turn over

28 What eventually happens to all the energy in an ecosystem?

A It is lost from the system as heat.

B It is recycled by the decomposers.

C It is used by the producers.

D It is used by the top carnivore.

29 Which statement about the organisms at the beginning of food chains is correct?

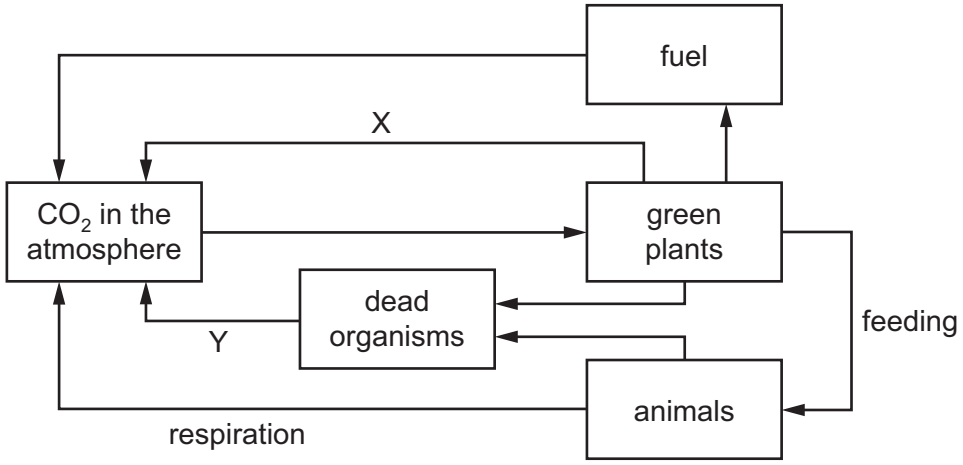
A They cause decay and provide minerals for the ecosystem.

B They feed on animals and recycle energy.

C They feed on plants and provide food for animals.

D They absorb nutrients and photosynthesise.

30 The diagram shows part of the carbon cycle.



What are the processes X and Y?

	X	Y
A	photosynthesis	decomposition
B	photosynthesis	excretion
C	respiration	photosynthesis
D	respiration	respiration

31 How does an anti-malarial drug control malaria?

A It kills the mosquito when the mosquito bites a person.

B It kills the pathogen in the bloodstream.

C It prevents the mosquito from breeding.

D It stops the pathogen entering a person's blood.

32 Many of the world's major rivers have dams to control the flow of water.

Which consequence of this is of long-term benefit to humans?

A holding silt in the reservoir so that it is not spread on the flood plain

B providing a reservoir of still water for mosquito larvae

C separating migrating fish from spawning grounds

D storing water for humans to drink

33 A male gamete leaves the pollen tube immediately after the pollen tube has entered which structure?

A ovary

B ovule

C stigma

D style

34 What are genetically identical?

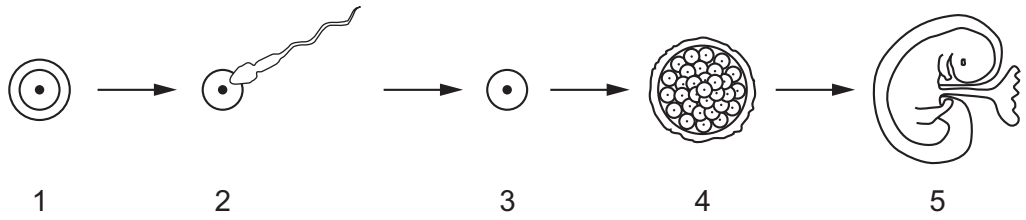
A brothers and sisters in the same family

B cuttings taken from the same plant

C gametes from the same parent

D seeds produced by the same tree

35 The diagram shows some of the stages in human reproduction, from ovum (egg) to fetus.



Where in the body does stage 2 occur?

A ovary

B oviduct

C uterus

D vagina

36 Which row correctly pairs a hormone with its function in the menstrual cycle?

	hormone	function
A	FSH	stimulates release of eggs
B	LH	stimulates release of eggs
C	oestrogen	maintains uterus lining
D	progesterone	repairs uterus lining

37 Two heterozygous plants are crossed.

What is the likely ratio of homozygous genotypes to heterozygous genotypes in the offspring?

	homozygous genotypes	:	heterozygous genotypes
A	1	:	1
B	1	:	2
C	1	:	3
D	3	:	1

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38 Which row shows the sex chromosomes when parents have a baby boy?

	in the egg cell	in the sperm cell	in the zygote
A	X	X	XX
B	X	Y	XY
C	Y	X	XY
D	Y	Y	YY

39 Which statement about the process of genetic engineering is **not** correct?

A Animals with suitable organs for transplant can be developed in the laboratory.

B Gene therapy can be used to prevent infectious bacterial diseases.

C It can be used to make important medical products such as insulin and human growth hormone.

D Plants can be made to resist pests and disease, and to produce bigger fruit with more flavour.

40 Which term describes reproduction between those members of a species that are best fitted to their environment?

A discontinuous variation

B gene mutation

C natural selection

D survival of the fittest

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