**Cambridge International Examinations**
Cambridge International General Certificate of Secondary Education

**BIOLOGY** **0610/12**

Paper 1 Multiple Choice **May/June 2015**

**45 minutes**

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

**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.

This syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

This document consists of **18** printed pages and 2 blank pages.

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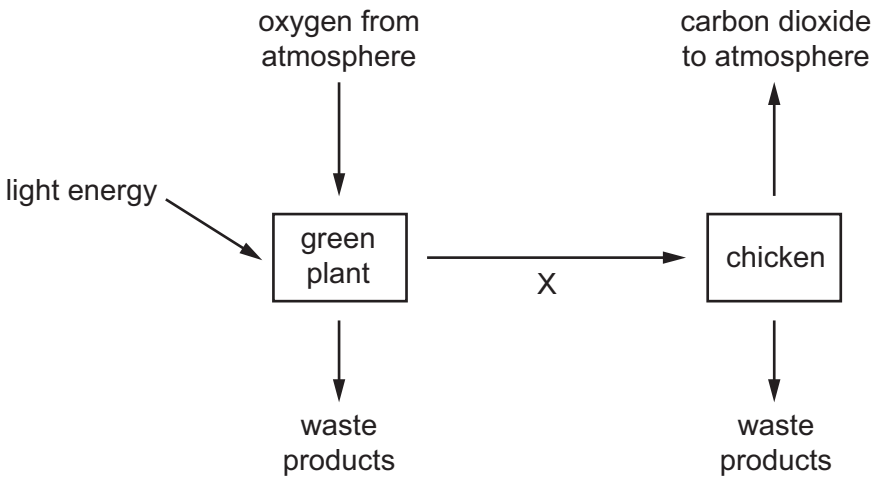
CAMBRIDGE International Examinations

**1** The diagram illustrates some of the processes carried out by living organisms.

View solution




Which characteristic of living organisms is represented by arrow X?

**A** excretion

**B** nutrition

**C** respiration

**D** sensitivity

**2** The statements describe four different plants.

View solution

Which plant must be a monocotyledon?

**A** The flowers are wind-pollinated.

**B** The flowers each have five petals.

**C** The leaves are large with a clear network of veins on them.

**D** The leaves have parallel veins.

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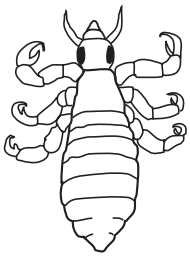
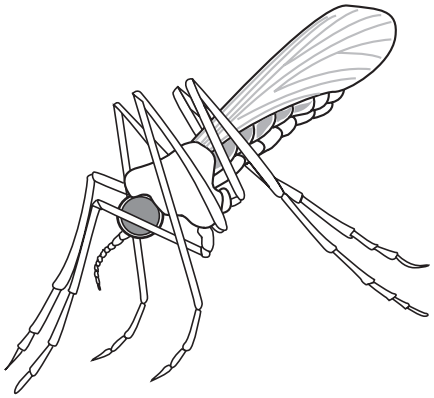
**3** The diagram shows four arthropods.

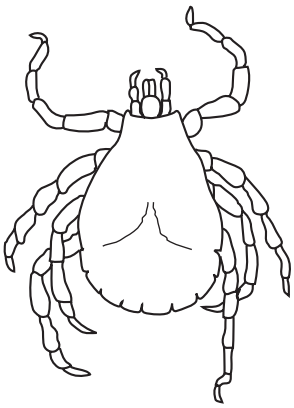
View solution



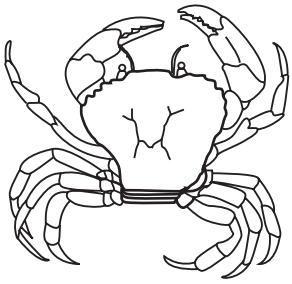
*Pediculus* ×20



*Anopheles* ×10



*Dermacentor* ×7



*Carcinus* ×0.5

How many of these arthropods are insects?

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

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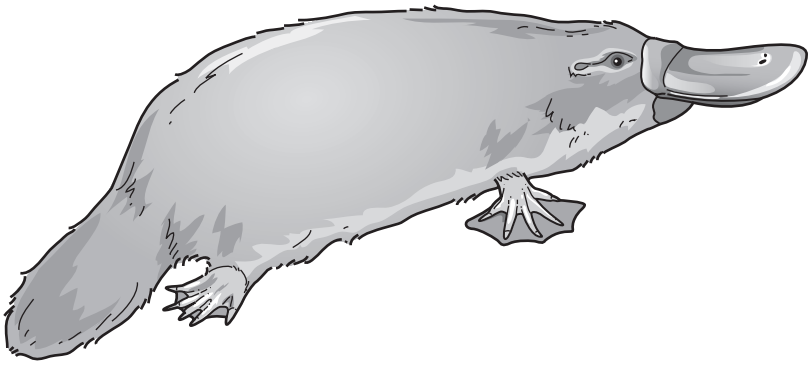
**4** The diagram shows an animal.

View solution



Use the key to identify this animal.

1 body covered with scales ..... go to 2
body covered with hair ..... go to 3

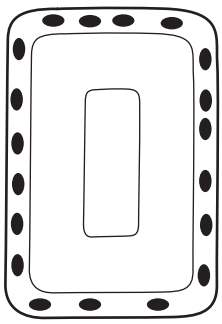
2 has a rounded bill ..... **A**
has a pointed bill ..... **B**

3 has webbed feet ..... **C**
does not have webbed feet ..... **D**

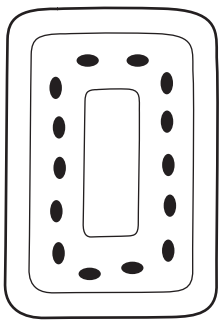
**5** Which diagram shows chloroplasts in their correct position in a plant cell?

View solution

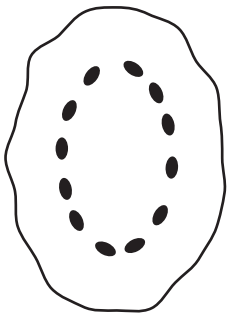
**A**



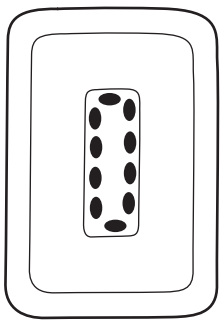
**B**



**C**



**D**



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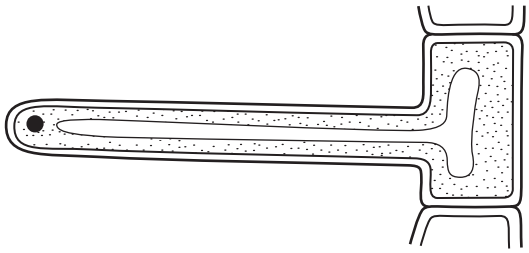
**6** The diagram shows a plant cell.

View solution



Which features show that it is a plant cell?

**A** It has a cell wall and a vacuole.

**B** It has a nucleus and cytoplasm.

**C** It has a nucleus but no chloroplasts.

**D** It has chloroplasts but no vacuole.

View solution

**7** Which is **not** an organ?

**A** blood

**B** heart

**C** tooth

**D** vein

View solution

**8** What results from the destruction of cilia in the trachea due to smoking?

**A** Cilia cannot filter bacteria.

**B** Cilia cannot trap dust.

**C** Mucus cannot be manufactured.

**D** Mucus cannot be carried towards the throat.

View solution

**9** How do carbon dioxide and oxygen move in and out of a mesophyll cell?

**A** active transport

**B** diffusion

**C** respiration

**D** transpiration

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**10** Which statements are correct for **both** diffusion and osmosis?

View solution

| | involves movement of water only | requires energy from the cell | molecules move from higher concentration to lower concentration |
|---|---|---|---|
| **A** | ✓ | ✓ | ✓ |
| **B** | ✓ | ✓ | ✗ |
| **C** | ✗ | ✗ | ✓ |
| **D** | ✗ | ✗ | ✗ |

View solution

**11** An enzyme in potato cells causes oxygen to be produced from hydrogen peroxide.

Cubes of potato were incubated with hydrogen peroxide at different temperatures.

The numbers of bubbles of oxygen released per minute were counted at each temperature.

The table shows the results.

| temperature / °C | 15 | 25 | 35 | 45 | 55 |
|---|---|---|---|---|---|
| number of bubbles / bubbles per minute | 96 | 98 | 82 | 36 | 1 |

The results suggest the optimum temperature for the enzyme is between which two values?

**A** 15 °C and 35 °C

**B** 35 °C and 45 °C

**C** 35 °C and 55 °C

**D** 45 °C and 55 °C

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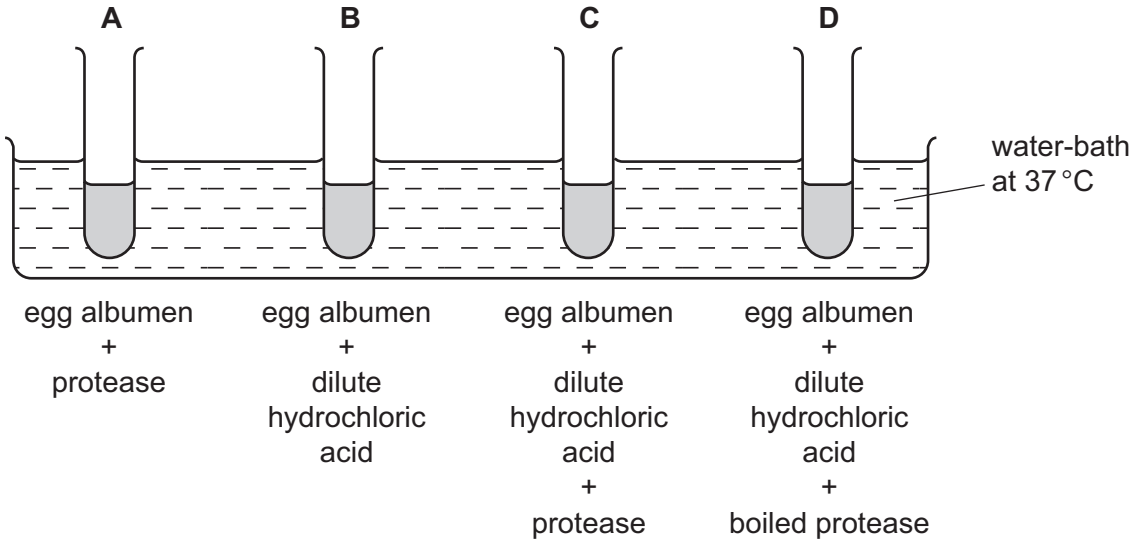
**12** The diagram shows an experiment on the digestion of the protein in egg albumen by protease.

View solution

The protease was taken from a human stomach.

In which test-tube will the protein be digested most quickly?




**13** Which row shows the elements and basic units that are used in the construction of large food molecules?

View solution

| | food molecules | elements | basic units |
|---|---|---|---|
| **A** | fats | carbon, hydrogen, oxygen, nitrogen | glucose |
| **B** | fats | carbon, hydrogen, oxygen, nitrogen | glycerol |
| **C** | starch | carbon, hydrogen, oxygen | glucose |
| **D** | starch | carbon, hydrogen, oxygen | glycerol |

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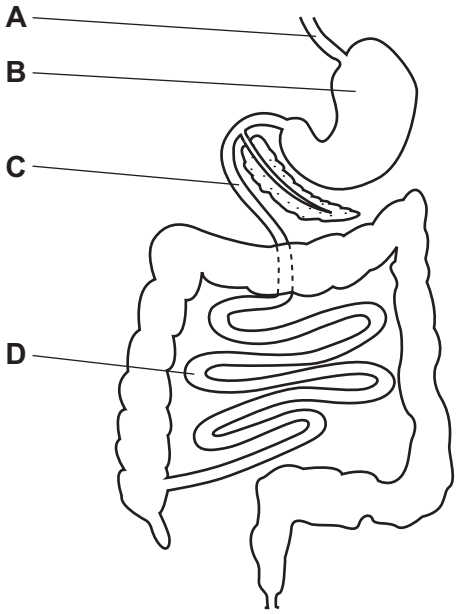
**14** The diagram shows part of the human alimentary canal.

In which part does protein digestion begin?

View solution




**15** Poor nutrition can lead to a condition called rickets in which bones fail to develop properly.

View solution

The table shows some minerals and vitamins present in four foods.

Which food would be best for a child who has rickets?

| | calcium | iron | vitamin C | vitamin D |
|---|---|---|---|---|
| **A** | ✓ | ✗ | ✓ | ✗ |
| **B** | ✓ | ✗ | ✗ | ✓ |
| **C** | ✗ | ✓ | ✓ | ✗ |
| **D** | ✗ | ✓ | ✗ | ✓ |

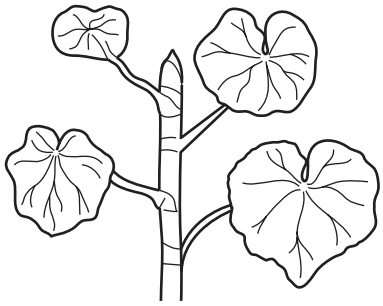
key

✓ = substance present

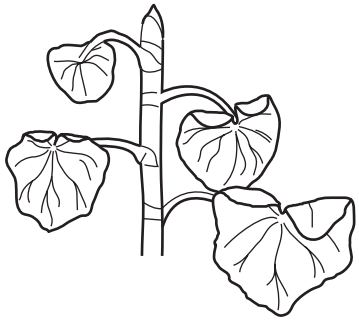
✗ = substance absent

**16** The diagram shows a plant shoot and the same shoot six hours later.

View solution



plant shoot



same shoot six hours later

Which change in environmental conditions could cause this change in the shoot?

**A** a decrease in available water

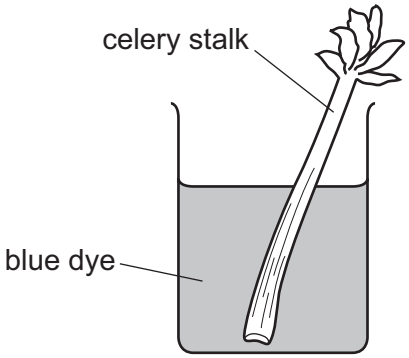
**B** a decrease in light intensity

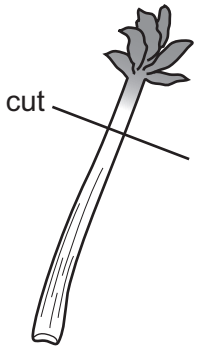
**C** a decrease in wind speed

**D** an increase in humidity

**17** A celery stalk is placed in a beaker of blue dye. Once the dye reaches the leaves, the stalk is taken out and cut in half.

View solution



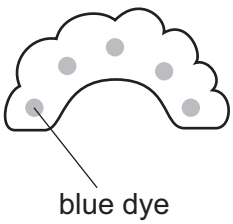




Which diagram shows the appearance of the cut end of the stalk?

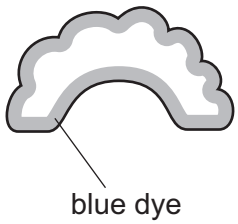
**A**



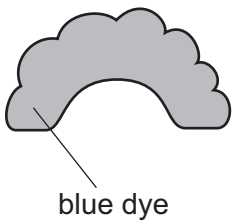
**B**




**C**




**D**

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**18** Why does chewing food speed up digestion?

View solution

**A** Bacteria in the food are killed.

**B** Food is mixed with protease.

**C** The surface area of the food is increased.

**D** The taste of food is improved.

View solution

**19** The table shows the composition of four samples of air.

| air sample | percentage of oxygen | percentage of carbon dioxide | percentage humidity |
|---|---|---|---|
| P | 21 | 0.04 | 20 |
| Q | 16 | 4.04 | 100 |
| R | 4 | 0.40 | 80 |
| S | 20 | 4.00 | 60 |

Which sample is inspired air and which sample is expired air?

| | sample breathed in | sample breathed out |
|---|---|---|
| **A** | P | Q |
| **B** | P | S |
| **C** | Q | R |
| **D** | Q | S |

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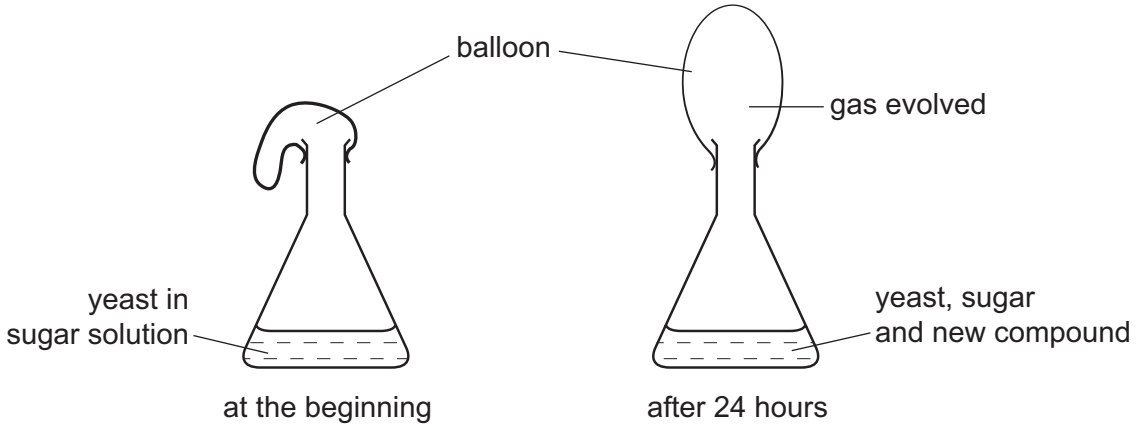
**20** The diagram shows an experiment to investigate the respiration of yeast.

View solution




Which gas is evolved and which new compound is present after 24 hours?

| | gas evolved | new compound |
|---|---|---|
| **A** | carbon dioxide | ethanol (alcohol) |
| **B** | carbon dioxide | lactic acid |
| **C** | oxygen | ethanol (alcohol) |
| **D** | oxygen | lactic acid |

**21** In which conditions do the leaves of a green plant respire?

View solution

| | bright light | darkness |
|---|---|---|
| **A** | ✓ | ✓ |
| **B** | ✓ | ✗ |
| **C** | ✗ | ✓ |
| **D** | ✗ | ✗ |

**22** Which two substances are both reabsorbed in the kidneys?

View solution

**A** glucose and salts

**B** glucose and starch

**C** glycogen and salts

**D** glycogen and starch

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**23** Which organ makes urea?

View solution

**A** bladder

**B** kidney

**C** liver

**D** stomach

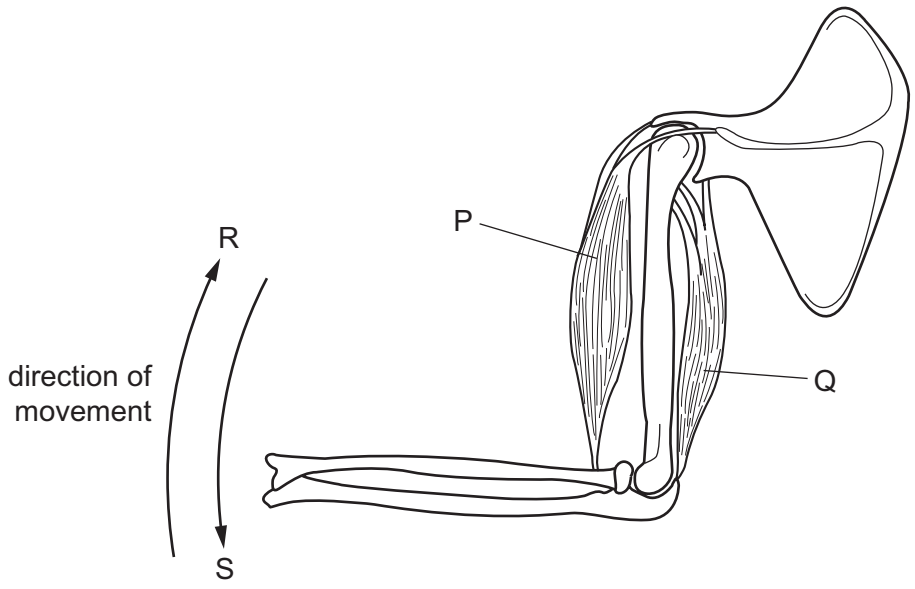
**24** What are correct descriptions of mitosis and meiosis?

View solution

| | mitosis | meiosis |
|---|---|---|
| **A** | cells produced are genetically identical | repairs damaged cells |
| **B** | halves the chromosome number | cells produced are genetically identical |
| **C** | involved in asexual reproduction | halves the chromosome number |
| **D** | involved in sexual reproduction | doubles the chromosome number |

**25** The diagram shows two antagonistic muscles and the directions of movement that they produce.

View solution




Which row correctly identifies these muscles and the directions of movement they produce on contraction?

| | muscle P | | muscle Q | |
|---|---|---|---|---|
| | name | movement | name | movement |
| **A** | biceps | R | triceps | S |
| **B** | biceps | S | triceps | R |
| **C** | triceps | R | biceps | S |
| **D** | triceps | S | biceps | R |

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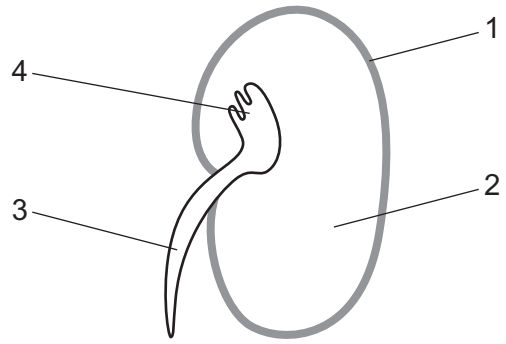
**26** The diagram shows a germinating broad bean seed which has been cut in half.

View solution

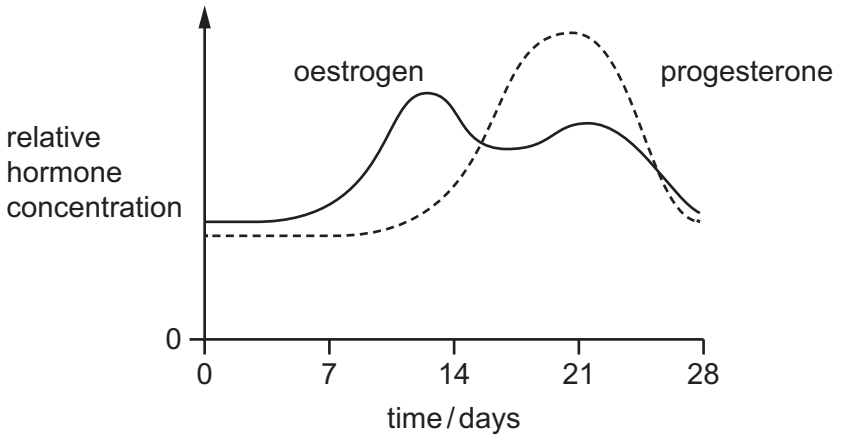



Which labels show the cotyledon and the plumule?

| | cotyledon | plumule |
|---|---|---|
| **A** | 1 | 3 |
| **B** | 1 | 4 |
| **C** | 2 | 3 |
| **D** | 2 | 4 |

**27** The diagram shows some changes which take place during a woman's menstrual cycle.

View solution




Assuming ovulation occurs on day 14, what is occurring at the time of ovulation?

**A** a fall in the levels of oestrogen and progesterone

**B** a fall in the level of progesterone only

**C** a rise in the level of oestrogen

**D** a rise in the level of progesterone and fall in the level of oestrogen

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**28** In addition to a suitable temperature, what else is always necessary for seed germination?

View solution

**A** carbon dioxide and sunlight

**B** mineral ions

**C** sunlight and water

**D** water and oxygen

**29** What defines the development of an organism?

View solution

**A** increase in age

**B** increase in complexity

**C** increase in height

**D** increase in length

**30** A man has three sons.

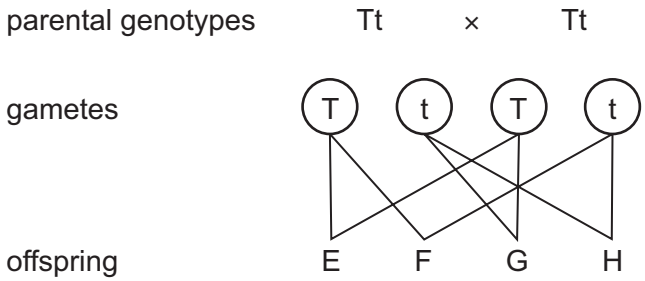
View solution

What is the chance of his next child being a son?

**A** 0% **B** 25% **C** 50% **D** 75%

**31** The diagram shows a cross between heterozygous tall pea plants.

View solution




Which statement is **not** correct?

**A** Offspring E and H are both homozygous.

**B** Offspring F and G are both heterozygous.

**C** The phenotypes of offspring E, F and G are the same.

**D** The ratio of different phenotypes in the offspring is 1 : 1.

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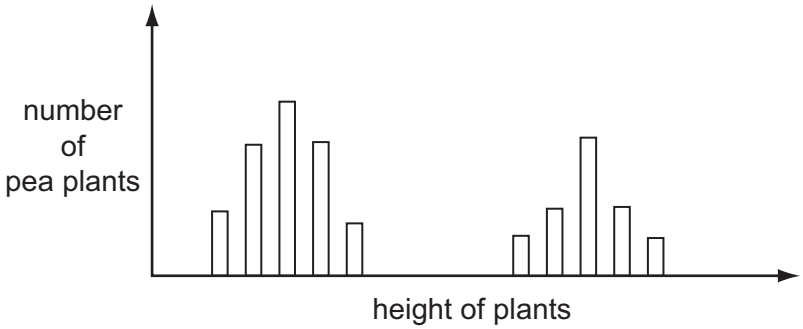
**32** The bar chart shows the heights of pea plants grown from 500 pea seeds.

View solution




What variation do the plants show?

**A** continuous variation only

**B** discontinuous variation only

**C** both continuous variation and discontinuous variation

**D** neither continuous variation nor discontinuous variation

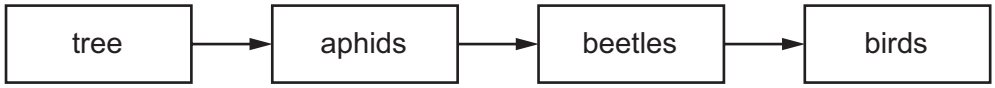
View solution

**33** Which pair of statements about energy flow in ecosystems is correct?

| | energy entering the ecosystem from the Sun | nature of energy flow |
|---|---|---|
| **A** | light and chemical | cyclical |
| **B** | light and chemical | non-cyclical |
| **C** | light and heat | cyclical |
| **D** | light and heat | non-cyclical |

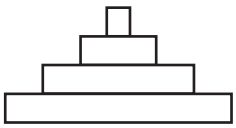
View solution

**34** The diagram shows a food chain based on a tree.

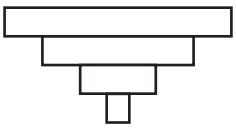



Which diagram shows a pyramid of numbers for this food chain?

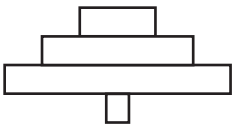
**A**



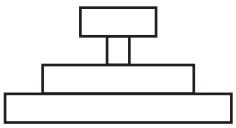
**B**



**C**



**D**



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**35** Which process forms part of the carbon cycle?

View solution

**A** combustion

**B** evaporation

**C** osmosis

**D** transpiration

**36** Herbivores take in carbon atoms from plants.

View solution

How do carbon atoms leave the herbivores?

| | in faeces | in respiration | through death and decay |
|---|---|---|---|
| **A** | ✓ | ✓ | ✓ |
| **B** | ✓ | ✗ | ✓ |
| **C** | ✓ | ✗ | ✗ |
| **D** | ✗ | ✓ | ✓ |

**37** In which stages in the water cycle is the water in vapour form?

View solution

| | absorption by plant roots | movement from sea to clouds | precipitation | transpiration |
|---|---|---|---|---|
| **A** | ✓ | ✓ | ✗ | ✗ |
| **B** | ✓ | ✗ | ✓ | ✗ |
| **C** | ✗ | ✓ | ✗ | ✓ |
| **D** | ✗ | ✗ | ✓ | ✓ |

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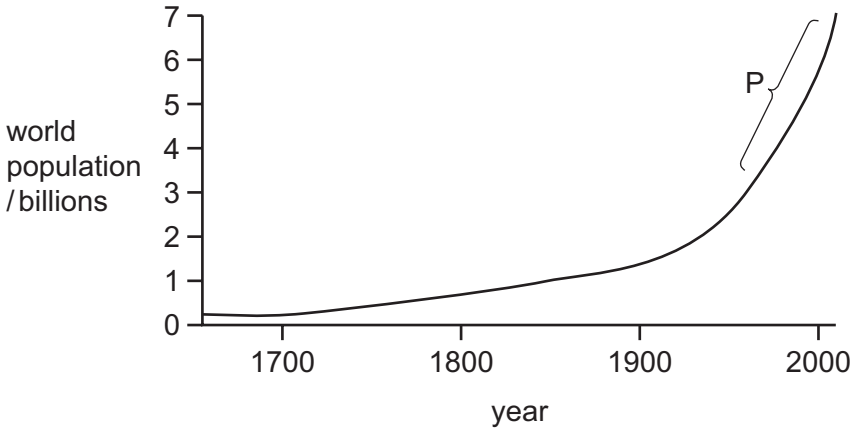
**38** The graph shows how the population of the world has increased from 1650 until the present day.

View solution




What stage in the sigmoid population growth curve is represented by region P?

**A** death phase

**B** exponential (log) phase

**C** lag phase

**D** stationary phase

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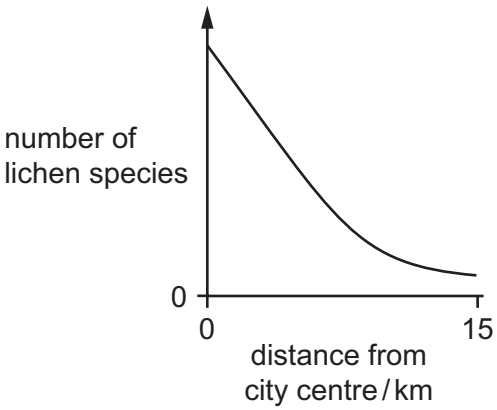
**39** Lichens are organisms that do **not** grow well in air containing sulfur dioxide.

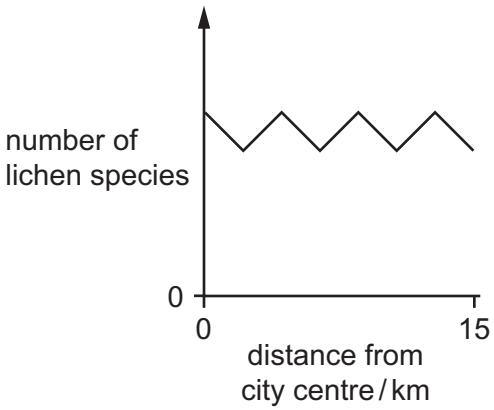
Which graph shows the change in number of lichen species from the centre of an industrial city to the countryside 15 km away?

View solution

**A**




**B**

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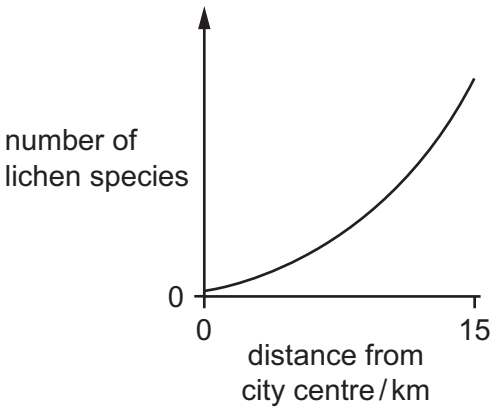


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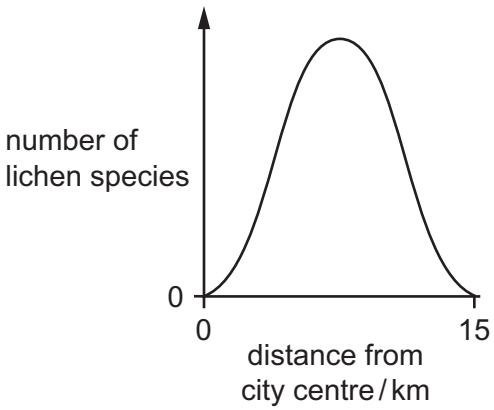


View solution

**40** Which two gases **both** contribute to global warming?

**A** carbon dioxide and methane

**B** methane and oxygen

**C** oxygen and sulfur dioxide

**D** sulfur dioxide and carbon dioxide

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