



# Cambridge IGCSE™

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## BIOLOGY

0610/12

Paper 1 Multiple Choice (Core)

February/March 2020

45 minutes

You must answer on the multiple choice answer sheet.

You will need: Multiple choice answer sheet  
Soft clean eraser  
Soft pencil (type B or HB is recommended)

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## INSTRUCTIONS

- 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 multiple choice answer sheet.
- Follow the instructions on the multiple choice answer sheet.
- Write in soft pencil.
- Write your name, centre number and candidate number on the multiple choice answer sheet in the spaces provided unless this has been done for you.
- Do **not** use correction fluid.
- Do **not** write on any bar codes.
- You may use a calculator.

## INFORMATION

- The total mark for this paper is 40.
- Each correct answer will score one mark. A mark will not be deducted for a wrong answer.
- Any rough working should be done on this question paper.

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This document has **16** pages. Blank pages are indicated.



1 Which characteristic do **all** living organisms show?

- A breathing
- B excretion
- C photosynthesis
- D tropism

2 Using the binomial naming system, the Arctic fox is called *Vulpes lagopus*.

Which row is correct?

	<i>Vulpes</i>	<i>lagopus</i>
<b>A</b>	genus	kingdom
<b>B</b>	genus	species
<b>C</b>	species	genus
<b>D</b>	species	kingdom

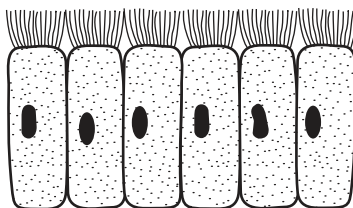
3 What is a characteristic of both insects and arachnids?

- A eight legs
- B exoskeleton
- C three pairs of legs
- D wings

4 What structures can be found in both plant and animal cells?

- A cell walls and cell membranes
- B nuclei and cell walls
- C cytoplasm and chloroplasts
- D cell membranes and nuclei

- 5 The diagram shows a sample of material taken from an organism.



Which level of organisation does the sample show?

- A** cell  
**B** organ  
**C** organ system  
**D** tissue
- 6 What is the function of a root hair cell?
- A** absorption  
**B** photosynthesis  
**C** reproduction  
**D** support
- 7 Which row describes osmosis?

	movement of water	energy from respiration used	movement through a partially permeable membrane	
<b>A</b>	✓	✓	x	key ✓ = yes x = no
<b>B</b>	✓	x	✓	
<b>C</b>	x	✓	x	
<b>D</b>	x	x	✓	

- 8 A student made the following statements about the movement of ions by active transport.

- 1 It is the net movement of particles from a low concentration to a high concentration.
- 2 It is the net movement of particles from a high concentration to a low concentration.
- 3 It requires the use of energy from respiration.
- 4 It can only take place in living cells.

Which statements are correct?

- A** 1, 3 and 4    **B** 1 and 4 only    **C** 2 and 4 only    **D** 2 only

- 9 A test was performed on a food substance. A positive result was shown by a colour change to blue-black.

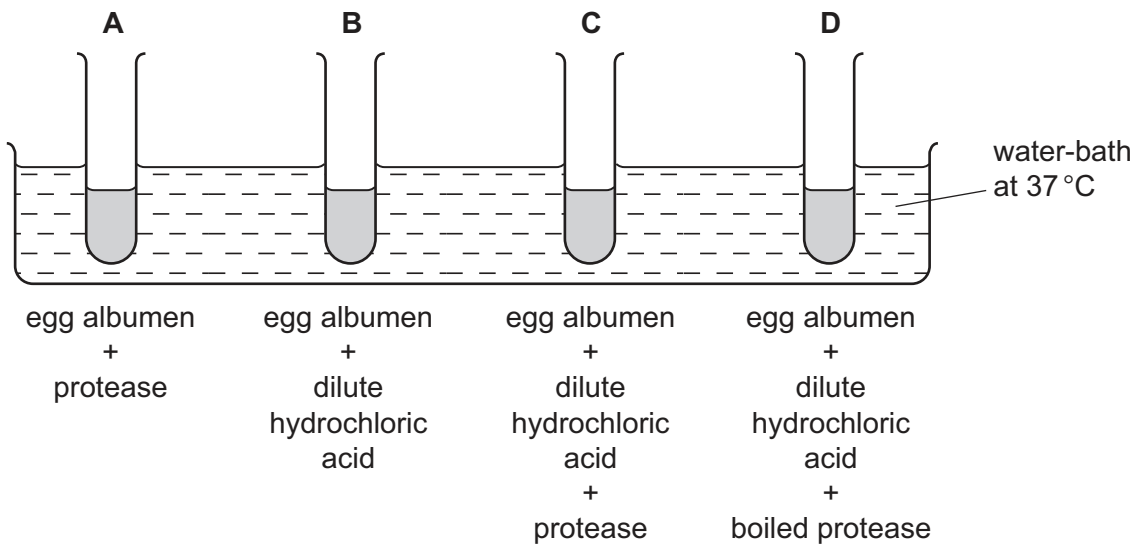
What solution was used for the test?

- A biuret solution
- B DCPIP solution
- C iodine solution
- D Benedict's solution

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

The protease was taken from a human stomach.

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



- 11 What is left at the end of an enzyme-controlled reaction?

- A enzymes and products
- B enzymes and substrates
- C enzymes only
- D products only

12 A student drew a diagram to show the substances used and produced in photosynthesis in a leaf.

1 + 2 are used by the leaf

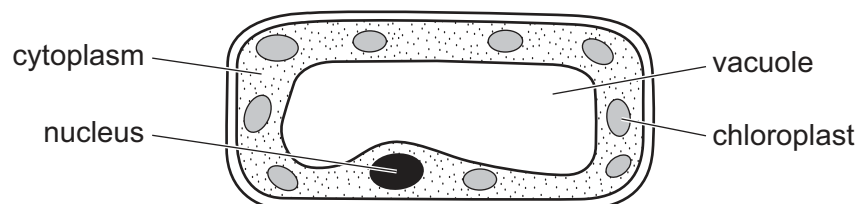


3 + 4 are produced by the leaf

Which row shows the correct labels for the diagram?

	1	2	3	4
<b>A</b>	carbon dioxide	glucose	oxygen	water
<b>B</b>	water	carbon dioxide	glucose	oxygen
<b>C</b>	oxygen	water	carbon dioxide	glucose
<b>D</b>	glucose	oxygen	water	carbon dioxide

13 The diagram shows a type of plant cell.



In which tissue is this cell found?

- A** leaf epidermis
- B** palisade mesophyll
- C** root epidermis
- D** xylem

14 The list shows some human health problems.

- 1 chronic obstructive pulmonary disease
- 2 constipation
- 3 coronary heart disease
- 4 obesity

Which problems can be caused by malnutrition?

- A** 1, 2 and 3
- B** 1 and 3 only
- C** 2, 3 and 4
- D** 2 and 4 only

- 15 The table shows the percentage of students from two schools who have one or more decayed teeth.

	percentage of students with decayed teeth
school X	30
school Y	60

What might explain these results?

- A There is less calcium in the students' diet at school X than at school Y.
  - B There is less sugar in the students' diet at school X than at school Y.
  - C There is less vitamin C in the students' diet at school X than at school Y.
  - D There is less vitamin D in the students' diet at school X than at school Y.
- 16 Digested proteins are absorbed into the blood as
- A amino acids.
  - B fatty acids.
  - C glucose.
  - D glycerol.
- 17 When stems with white flowers are cut and placed in a blue stain the petals turn blue.
- Which tissue in the stem does the stain travel through to reach the petals?
- A epidermis
  - B mesophyll
  - C phloem
  - D xylem
- 18 Which process releases water vapour into the atmosphere from the leaves of trees?
- A active transport
  - B osmosis
  - C respiration
  - D transpiration

19 Which person is most at risk from developing coronary heart disease?

	age	gender	activity level	other information
<b>A</b>	23	female	professional athlete	non-smoker
<b>B</b>	40	male	plays sport at weekends	non-smoker
<b>C</b>	19	female	plays sport twice a week	smokes 5 cigarettes a day
<b>D</b>	65	male	does no exercise	smokes 20 cigarettes a day

20 The diagram shows a section through a blood vessel.



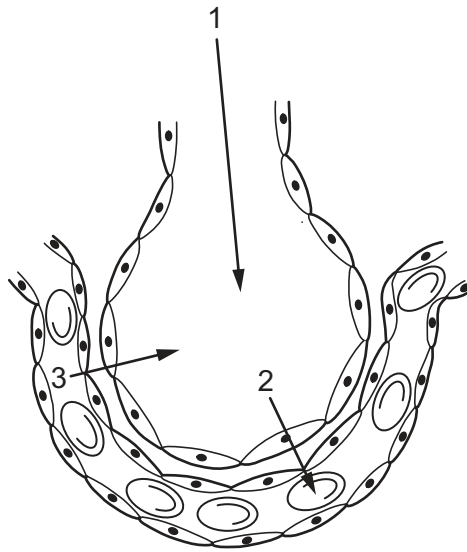
Which type of blood vessel is shown, and in which direction does the blood flow?

	type of vessel	direction of flow
<b>A</b>	artery	P to Q
<b>B</b>	artery	Q to P
<b>C</b>	vein	P to Q
<b>D</b>	vein	Q to P

21 Which disease is transmissible?

- A** cholera
- B** chronic obstructive pulmonary disease
- C** lung cancer
- D** scurvy

22 The diagram shows an alveolus. The arrows represent the movement of gases.

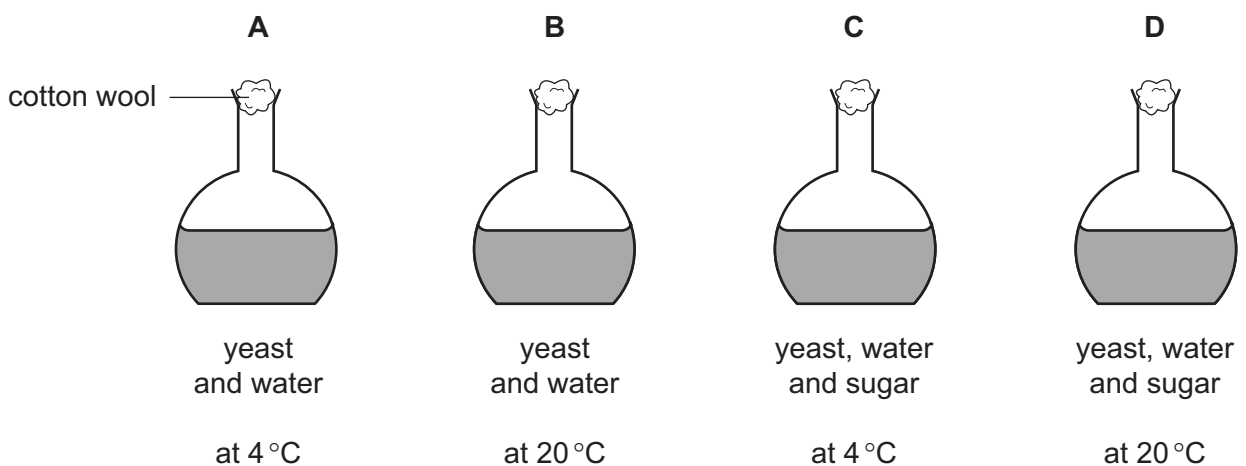


Which row is correct?

	1	2	3
<b>A</b>	oxygen	carbon dioxide	air
<b>B</b>	air	carbon dioxide	oxygen
<b>C</b>	air	oxygen	carbon dioxide
<b>D</b>	carbon dioxide	oxygen	air

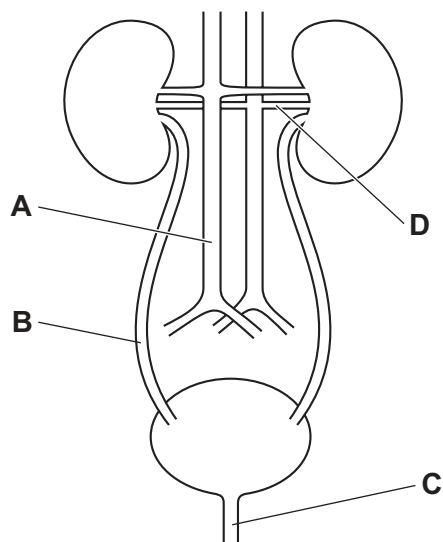
23 Four flasks are sterilised and are set up as shown.

Which flask will contain the most alcohol after several hours?





24 In the diagram, which letter identifies the urethra?



25 Some organs are listed.

- 1 adrenal
- 2 pancreas
- 3 ovary
- 4 salivary

Which are endocrine glands?

- A** 1, 2 and 3      **B** 1, 2 and 4      **C** 1, 3 and 4      **D** 2 and 3 only

26 The table shows some of the responses that occur in humans when body temperature changes.

Which row shows the responses that occur when the body temperature increases **above** normal?

	hair lies flat	shivering	sweating	
<b>A</b>	✓	✓	x	key ✓ = yes x = no
<b>B</b>	✓	x	✓	
<b>C</b>	x	✓	✓	
<b>D</b>	✓	✓	✓	

27 What is an example of phototropism?

- A** a chemical messenger produced by a plant
- B** a painful sensation in response to a stimulus
- C** the growth of a plant root towards the centre of the Earth
- D** the growth of a plant shoot towards light

28 The oxygen carrying capacity of the blood of smokers is less than that of non-smokers.

Which component of tobacco smoke causes this?

- A carbon monoxide
- B nicotine
- C smoke particles
- D tar

29 Which statement about asexual reproduction is correct?

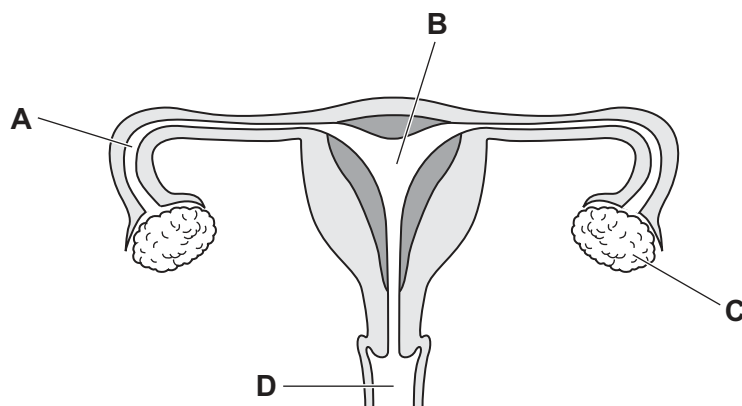
- A Asexual reproduction produces genetically identical offspring from one parent.
- B Asexual reproduction produces genetically identical offspring from two parents.
- C Asexual reproduction produces genetically different offspring from one parent.
- D Asexual reproduction produces genetically different offspring from two parents.

30 Which environmental factor is **not** always a requirement for seed germination?

- A light
- B oxygen
- C suitable temperature
- D water

31 The diagram shows the female reproductive system.

Where are gametes produced?



32 Some features of cell division are listed.

- 1 involved in making gametes
- 2 involved in replacing cells
- 3 makes genetically different cells
- 4 makes genetically identical cells

Which features are involved in meiosis?

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

33 Which cross will be pure-breeding?

- A** a female homozygous individual and a male heterozygous individual bred together  
**B** a male homozygous individual and a female heterozygous individual bred together  
**C** two identical heterozygous individuals bred together  
**D** two identical homozygous individuals bred together

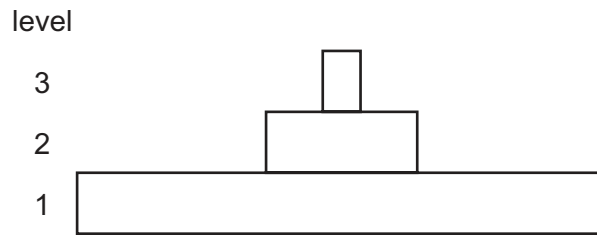
34 What applies to selective breeding but **not** to natural selection?

- A** Humans select individuals with desirable features.  
**B** Individuals may produce a large number of offspring.  
**C** Individuals pass their alleles to the next generation.  
**D** There is variation among the offspring produced.

35 What is the principal source of energy for living organisms?

- A** herbivores  
**B** plants  
**C** photosynthesis  
**D** the Sun

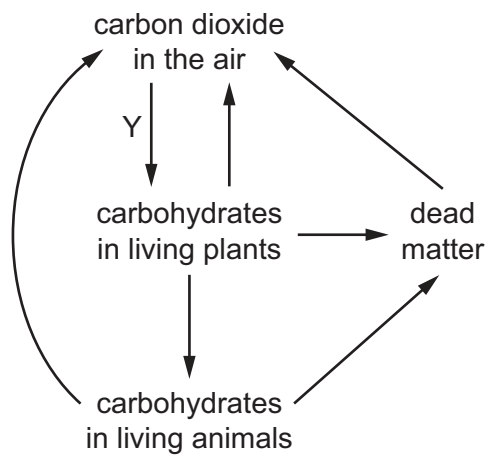
36 The diagram shows a pyramid of numbers.



Which type of organism is found at level 1?

- A carnivore
- B decomposer
- C herbivore
- D producer

37 The diagram shows part of the carbon cycle.

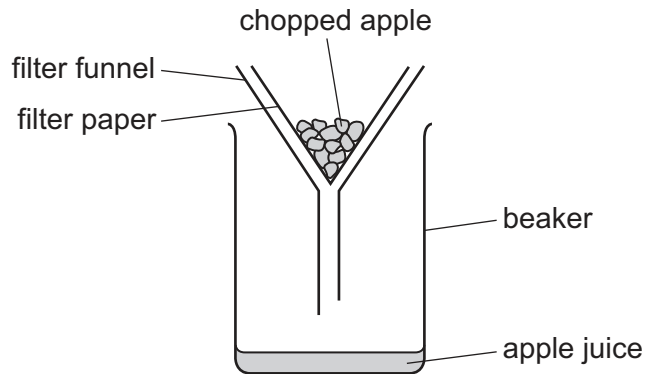


Which process occurs at Y?

- A combustion
- B decay
- C photosynthesis
- D respiration

38 Chopped apple is placed into filter paper and a funnel as shown in the diagram.

Enzymes are added to increase the volume of apple juice released.

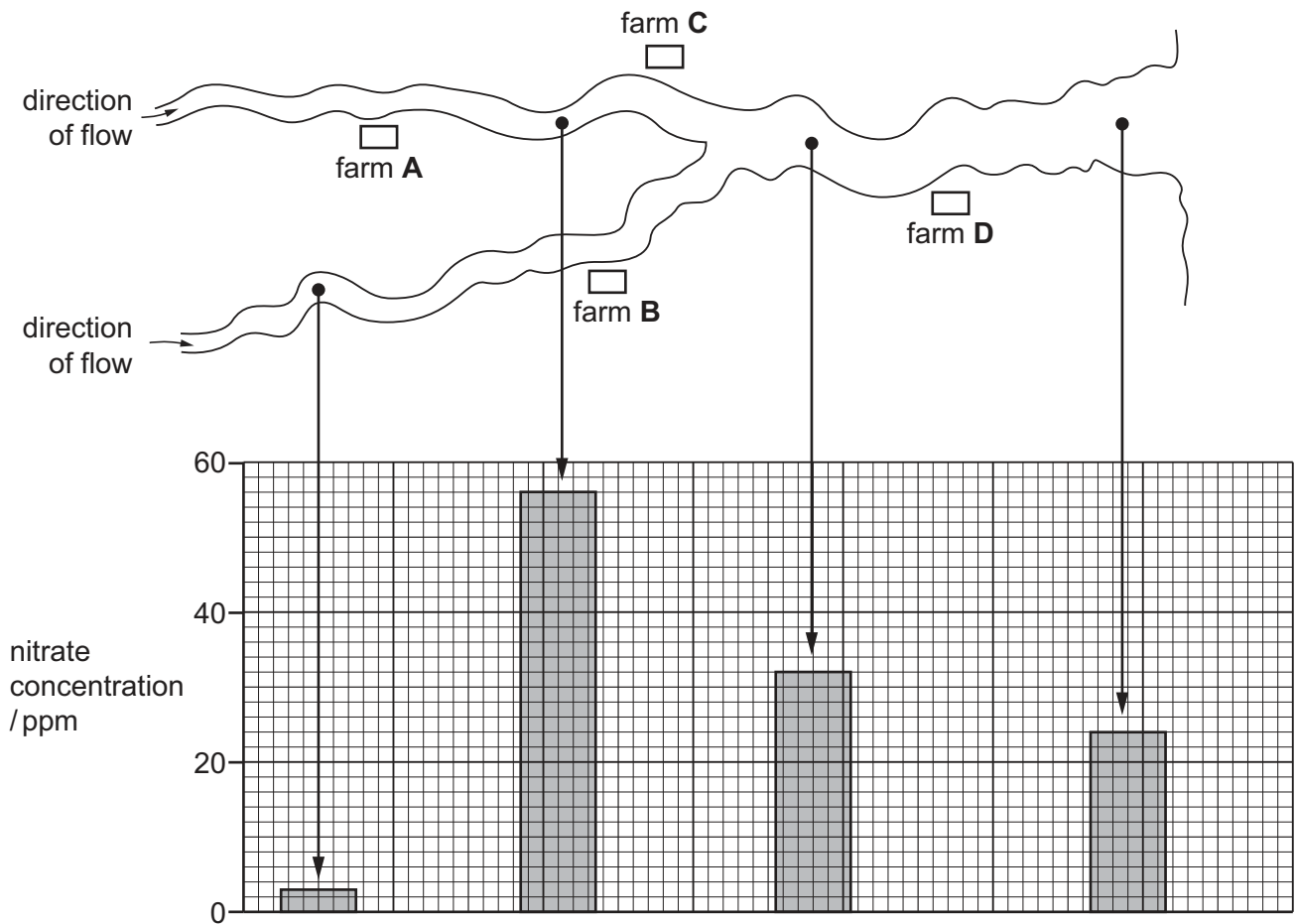


Which enzyme would release the highest volume of juice?

- A amylase
  - B lipase
  - C pectinase
  - D protease
- 39 Which effect is **most** likely to occur as a result of deforestation?
- A an increase in the number of species
  - B an increase in soil erosion
  - C a decrease in the level of carbon dioxide in the atmosphere
  - D a decreased risk of flooding

- 40 The diagram shows the positions of four farms and the concentrations of nitrate at different points in a river.

Which farm is likely to have been using too much fertiliser on its land?





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