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Cambridge Assessment International Education

Cambridge IGCSE™

BIOLOGY **0610/12**

Paper 1 Multiple Choice (Core) **February/March 2021**

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)

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.
- Any rough working should be done on this question paper.

This document has **20** pages. Any blank pages are indicated.

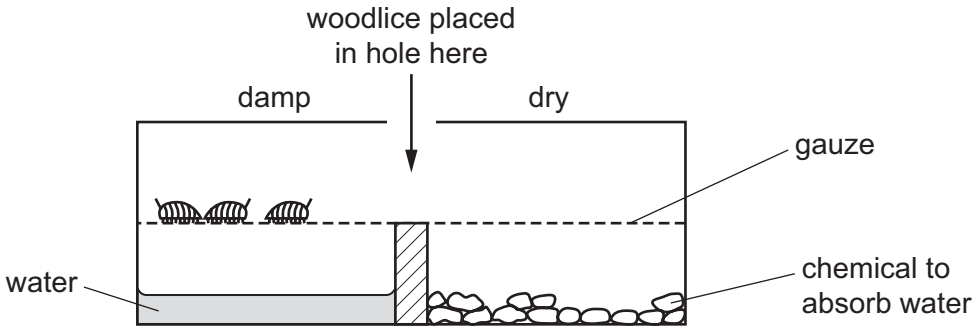
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1 Woodlice are small organisms that live in damp places.

In an experiment, three live woodlice are put into a glass container. The diagram shows what happens after 30 minutes.



Which characteristic of living organisms is shown by this experiment?

A growth

B nutrition

C respiration

D sensitivity

2 Which species can breed with *Prunella vulgaris* to produce fertile offspring?

	Prunella modularis	*Vespula vulgaris*
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

key
✓ = yes
✗ = no

3 What is the correct order of arthropod groups, from those with the **most** legs to those with the fewest legs?

A arachnids → crustaceans → insects → myriapods

B arachnids → insects → myriapods → crustaceans

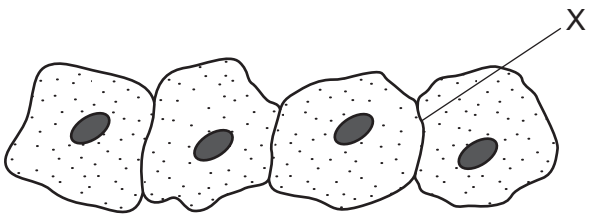
C myriapods → crustaceans → arachnids → insects

D myriapods → insects → arachnids → crustaceans

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4 The diagram shows four animal cells, as seen under a light microscope.



What will be present at X?

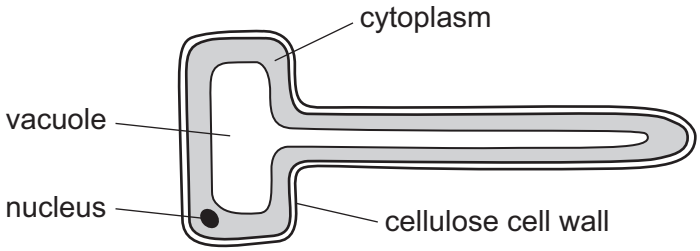
A one cell membrane

B one cell wall

C two cell membranes

D two cell walls

5 The diagram shows a root hair cell.



How is this cell modified for the absorption of water?

A It has a cellulose cell wall.

B It has a thin layer of cytoplasm.

C It has a large surface area.

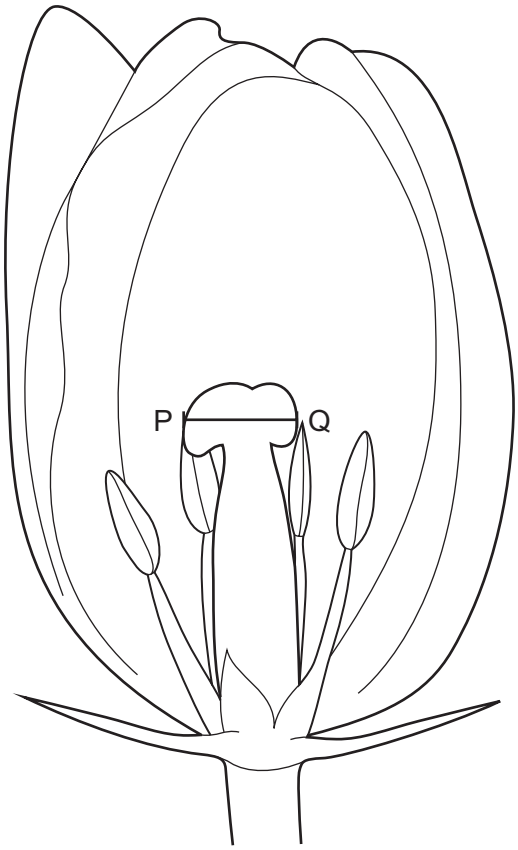
D It has a large vacuole.

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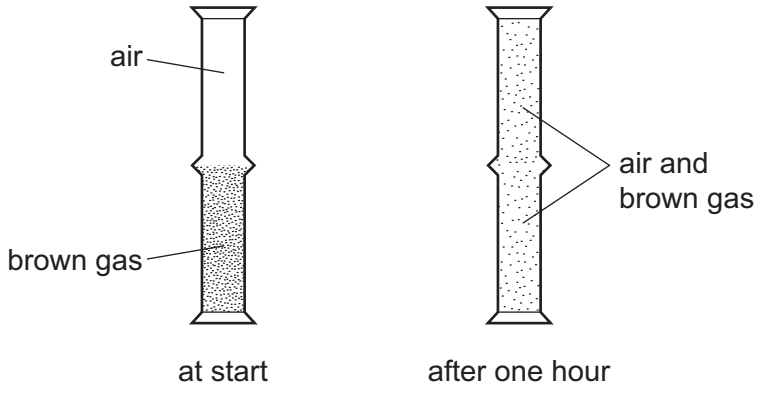
6 The diagram shows a drawing of part of a tulip flower. The actual width of the stigma, shown by the line PQ, is 5 mm. The length of line PQ is 15 mm.



What is the magnification of the diagram?

A ×0.3 **B** ×3 **C** ×30 **D** ×300

7 A jar of air was placed upside down on top of a jar containing a brown gas as shown.



Which process has taken place?

A diffusion both upwards and downwards

B diffusion downwards only

C diffusion upwards only

D diffusion and osmosis

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8 Which row describes active transport?

	particles move through a cell membrane		energy from respiration needed
	from a region of	to a region of	
A	higher concentration	lower concentration	no
B	higher concentration	lower concentration	yes
C	lower concentration	higher concentration	no
D	lower concentration	higher concentration	yes

9 Four foods were tested for each of these nutrients:

fat (using the ethanol emulsion test)

protein (using the biuret test)

reducing sugar (using Benedict's solution).

Which food contains protein and fat?

	colour of result of food test		
	purple	brick-red	milky-white
A	✓	✗	✓
B	✓	✗	✗
C	✗	✓	✓
D	✗	✓	✗

key

✓ = nutrient present

✗ = nutrient absent

10 A human enzyme was used in an experiment. All factors were kept constant, apart from temperature.

What happened to the rate of reaction when the temperature was reduced steadily from 35 °C to 5 °C?

A It decreased steadily.

B It increased and then decreased.

C It increased steadily.

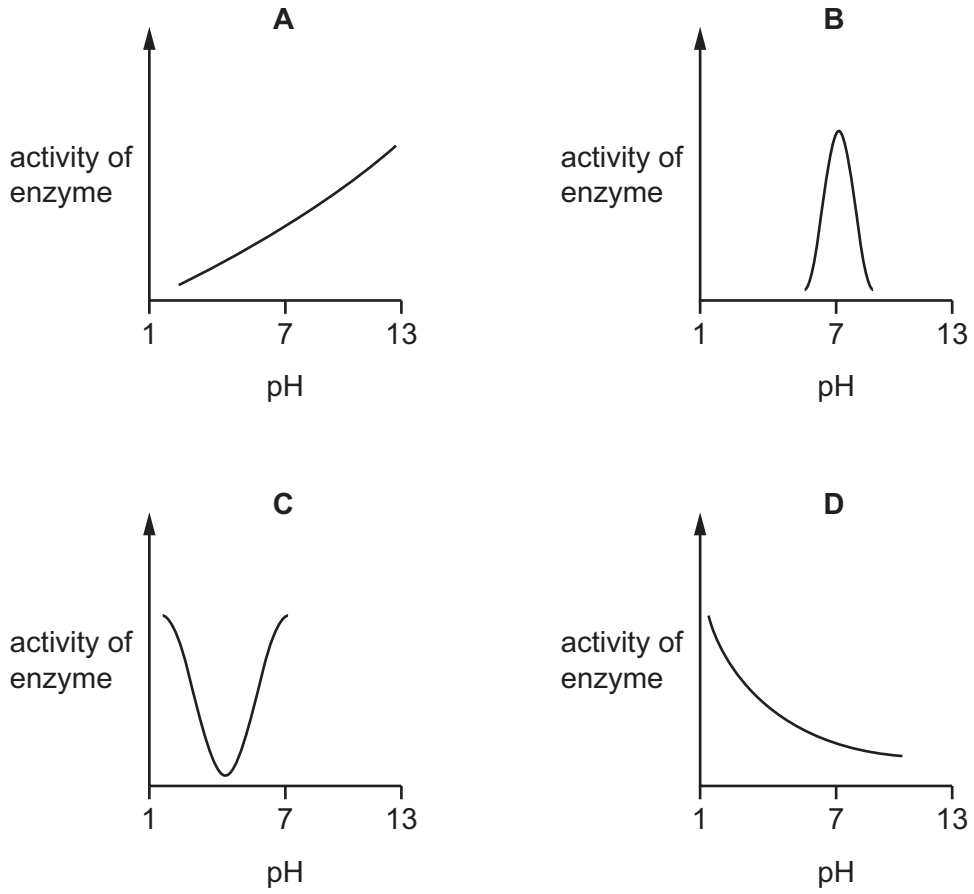
D It remained the same.

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11 Which graph represents the effect of pH on the activity of a digestive enzyme?



12 In which process is oxygen a waste product?

A active transport

B aerobic respiration

C anaerobic respiration

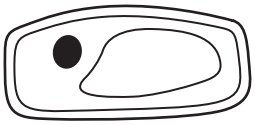
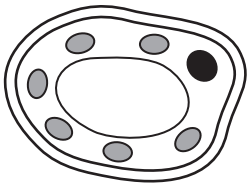
D photosynthesis

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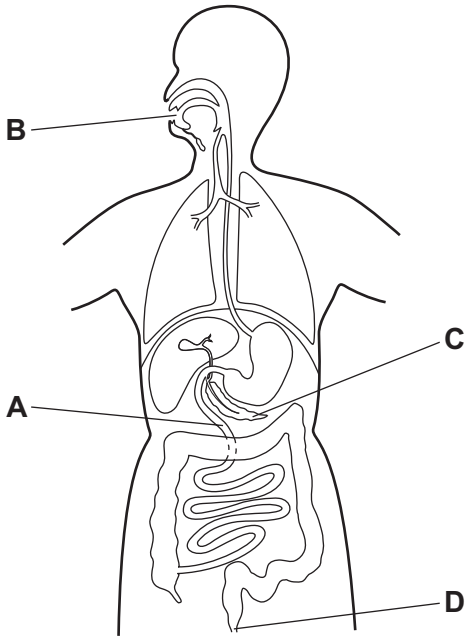
13 The table shows diagrams of three types of cell found in a leaf.

Which row correctly identifies each cell type?

			
A	spongy mesophyll	epidermis	xylem
B	spongy mesophyll	xylem	epidermis
C	xylem	epidermis	spongy mesophyll
D	xylem	spongy mesophyll	epidermis

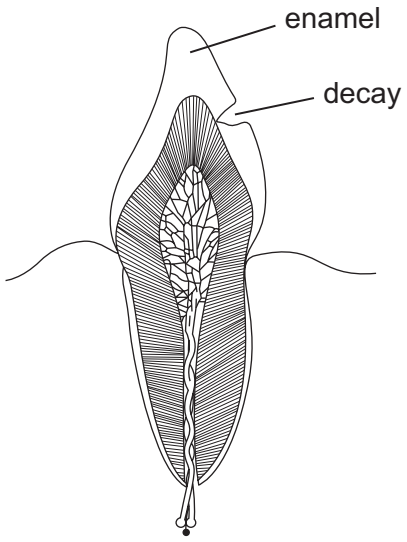
not to scale

14 Where does egestion take place?



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15 The diagram shows a tooth with signs of decay.



What has made the hole in the enamel of the tooth?

A acid

B saliva

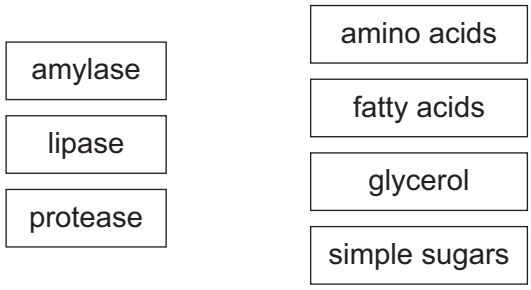
C sugar

D toothpaste

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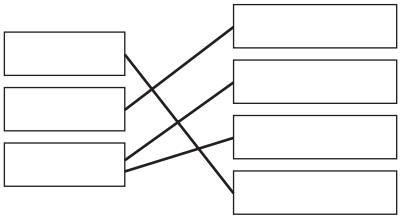
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16 The diagram shows enzymes and the products of the reactions they catalyse.

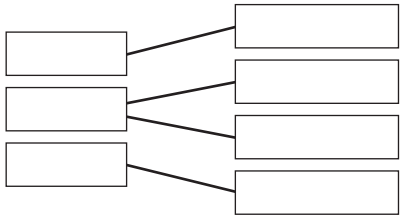


Which diagram matches the enzymes with the correct products?

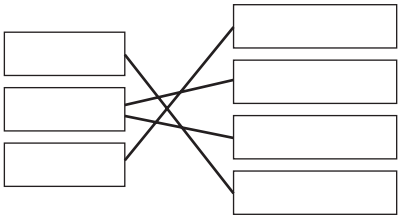
A



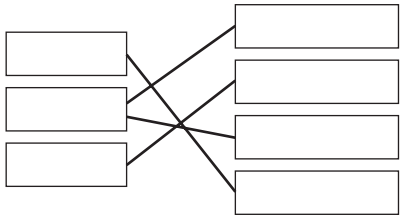
B



C



D



17 Which statement about a function of xylem tissue is correct?

A It carries glucose from the roots to the leaves.

B It helps to support stems and leaves.

C It is the only transport tissue in the plant.

D It carries water away from the leaves.

18 What is part of the definition of transpiration?

A the loss of water vapour from plant leaves by evaporation of water at the surfaces of the mesophyll cells

B the movement of molecules into the cells of the organism where they are used

C the movement of particles through a cell membrane from a region of lower concentration to a region of higher concentration

D the transport of mineral ions from the roots into the stem and leaves

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19 Which structures ensure the one-way flow of blood in the human circulatory system?

A alveoli

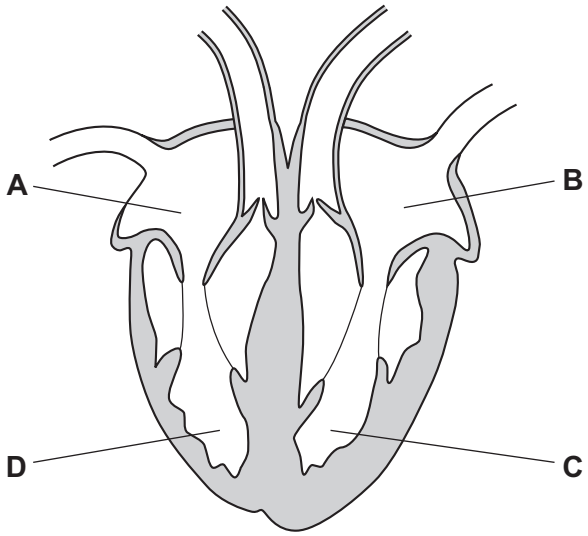
B capillaries

C synapses

D valves

20 The diagram shows a section through the heart.

Which part pumps blood to the aorta?



21 Which defence prevents pathogens from entering the body?

A antibody production

B mucus

C phagocytosis

D vaccination

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22 Air entering human lungs contains approximately 21% oxygen and 0.04% carbon dioxide.

Which row shows the concentrations of these gases in air leaving the lungs?

	percentage of oxygen in expired air	percentage of carbon dioxide in expired air
A	4	21.0
B	12	4.0
C	16	4.0
D	20	0.4

23 What are the products of anaerobic respiration in yeast?

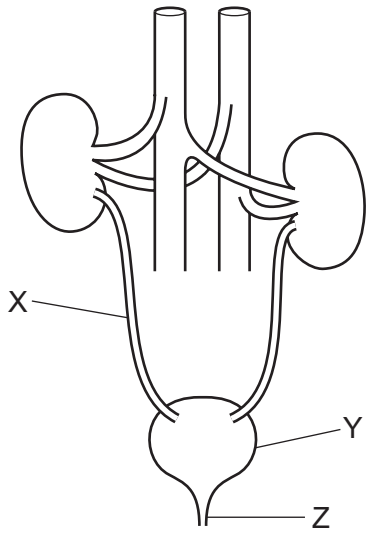
A alcohol + carbon dioxide

B alcohol + oxygen

C lactic acid + carbon dioxide

D lactic acid + oxygen

24 The diagram shows the human excretory system and associated blood vessels.



What are structures X, Y and Z?

	X	Y	Z
A	ureter	bladder	urethra
B	ureter	kidney	urethra
C	urethra	bladder	ureter
D	urethra	kidney	ureter

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25 Sensory neurones conduct impulses from

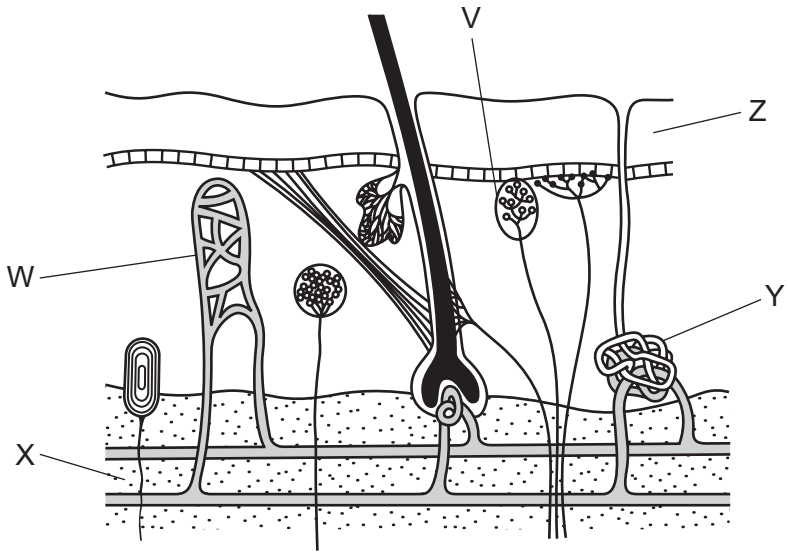
A the brain and spinal cord to muscles.

B one sense organ to another sense organ.

C sense organs to the brain and spinal cord.

D sense organs to muscles.

26 The diagram shows a section through human skin.



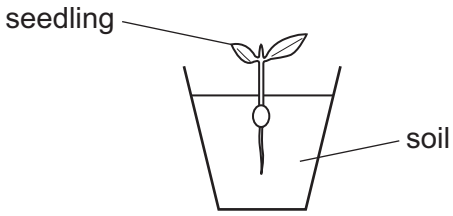
Which row matches the labelled part to its function?

	insulation	sensing temperature	sweat production
A	Y	W	Z
B	Y	V	X
C	X	W	Z
D	X	V	Y

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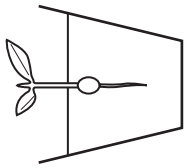
27 The diagram shows a seedling growing in a pot in the light.



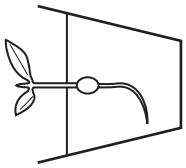
The pot was then placed on its side in a dark room.

What will be the appearance of the seedling after 48 hours?

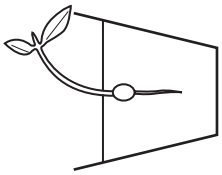
A



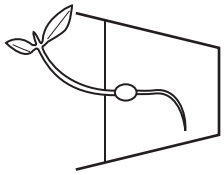
B



C



D



28 Heroin is an illegal drug which has many effects on the body.

Which statement about the effects of heroin abuse is correct?

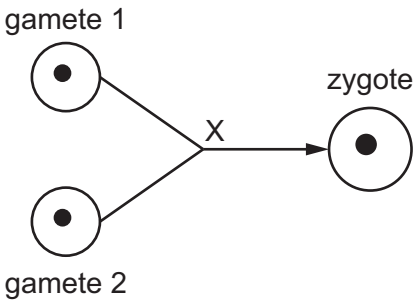
A Heroin decreases reaction times.

B Heroin increases negative social behaviour.

C Heroin is a stimulant.

D Heroin is not addictive.

29 Which process is occurring at X?



A fertilisation

B mitosis

C pollination

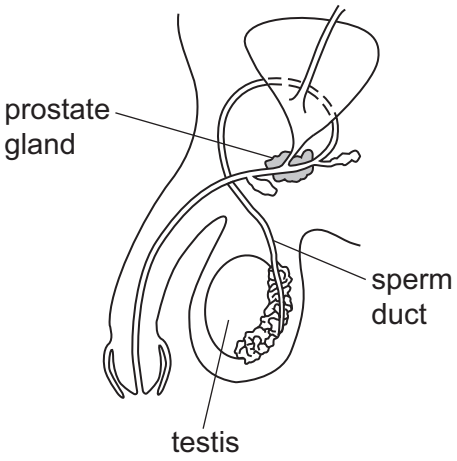
D meiosis

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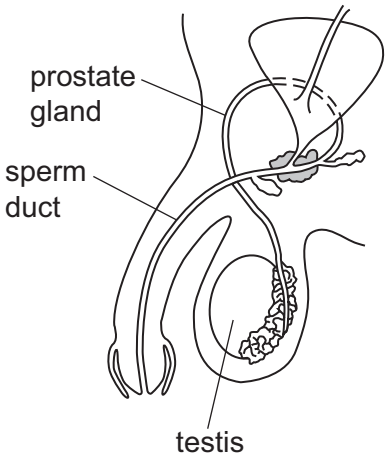
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30 Which diagram of the male reproductive system is correctly labelled?

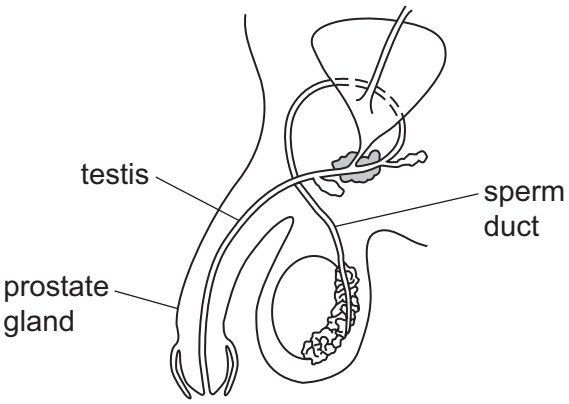
A



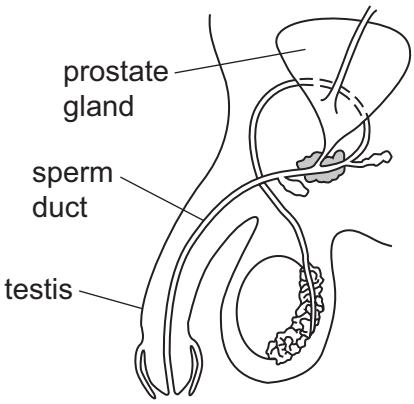
B



C



D



31 Which method of birth control works by preventing an egg from being released?

A condom

B contraceptive pill

C monitoring body temperature

D vasectomy

32 What is defined as ‘a thread-like structure of DNA, carrying genetic information in the form of genes’?

A allele

B chromosome

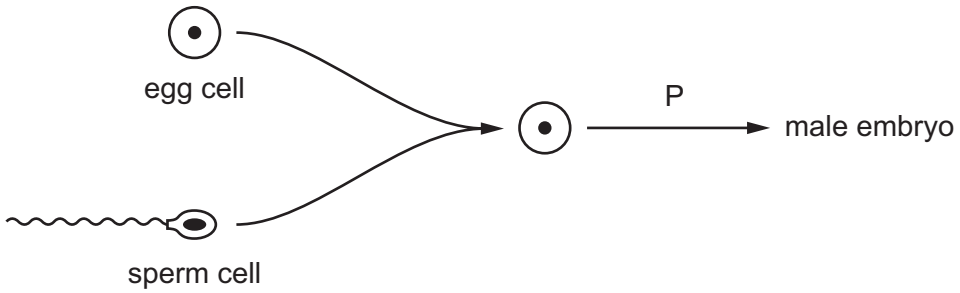
C protein

D zygote

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33 The diagram shows the production of a male embryo.



Which row shows the sex chromosomes in the cells and the type of cell division at P?

	sex chromosomes found in			type of cell division at P
	egg cell	sperm cell	male embryo	
A	X	X	XX	mitosis
B	X	X	XX	meiosis
C	X	Y	XY	mitosis
D	X	Y	XY	meiosis

34 Foxes are mammals. The table shows adaptations of four different species of fox.

Which fox is best adapted to live in a hot dry desert region?

	behaviour	ear size	fur colour	daily volume of urine produced
A	mainly active in the day	very small	white	large
B	mainly active at night	very large	pale brown	small
C	mainly active at night	small	dark brown	large
D	mainly active in the day	large	dark grey	small

35 What is the principal source of energy input into food chains?

A glucose

B heat

C soil

D sunlight

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36 What would be the effect of cutting down forests, on the carbon dioxide concentration in the atmosphere?

A Carbon dioxide concentration would fall because of less photosynthesis.

B Carbon dioxide concentration would fall because of more photosynthesis.

C Carbon dioxide concentration would rise because of less photosynthesis.

D Carbon dioxide concentration would rise because of more photosynthesis.

37 What is an example of a population?

A all the arthropods in a pond

B all the chital deer found in a forest

C all the lions that lived from 1950–2000

D all the flowering plants in a wood

38 During the extraction of apple juice, ripe apples are crushed and the enzyme pectinase is added.

Which observation shows that pectinase has been used to produce the apple juice?

	volume of juice obtained / dm^3	appearance of the juice
A	0.6	cloudy
B	1.2	cloudy
C	0.4	clear
D	2.8	clear

39 Rice has been modified by adding genes from bacteria and another plant so that it can produce the nutrient beta carotene.

What is this process called?

A evolution

B genetic engineering

C mutation

D selective breeding

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40 During the treatment of sewage, what is removed by screening?

A bacteria

B fats and grease

C large plastics

D urine

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