

بسم الله الرحمن الرحيم

مقابل هذا الجهد ارجو منكم الدعاء لي بالمغفرة والابنائى الهداية والنجاح

والتوفيق

أرجو ان يساعد هذا المجهد على مساعدة ابنائنا طلبة ال IGCSE لثانوية البريطانية ونحصيلهم على افضل واحسن واعلى الدرجات انشاء الله .  
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ابو احمد

للاستفسار والمساعدة اكتب لي على العنوان البريدي التالي :-  
العنوان البريدي : [jedeaaa@hotmail.com](mailto:jedeaaa@hotmail.com)

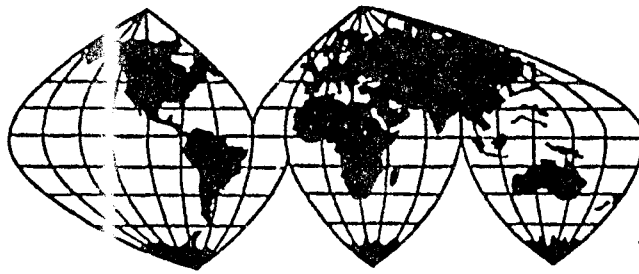
*In the name of god*

**Pry for me and my sons to success, mitigating and  
proselyting**

This is a free past papers exams an answers scanned file's for our IGCSE sun's and daughters. The only thing I need you to do is "pry for me so GOD bless me and pry for my sons to success, mitigating and proselyting.

These file are in PDF format for portability and easy to see using any computer system and TIF file format to use with Microsoft Office (cut and past, print ....etc).

If you need any help contact me at: [jedeaaa@hotmail.com](mailto:jedeaaa@hotmail.com)



**IGCSE**

**BIOLOGY**  
**Examination**

**PAPER**

*Good luck*

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**1**



UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE  
INTERNATIONAL EXAMINATIONS

# *Biology O.L*

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International General Certificate of Secondary Education  
UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE  
BIOLOGY 0610/1  
PAPER 1 Multiple Choice

Thursday 9 JUNE 1994 Morning 45 minutes

Additional materials:  
Multiple Choice answer sheet  
Soft pencil (type B or HB is recommended)  
Soft clean eraser

TIME 45 minutes

**INSTRUCTIONS TO CANDIDATES**

Do not open this booklet until you are told to do so.

Write your name, Centre number and candidate number on the answer sheet in the spaces provided unless this has already been done for you.

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

Read very carefully the instructions on the answer sheet.

**INFORMATION FOR CANDIDATES**

Each correct answer will score one mark. A mark will not be deducted for a wrong answer.

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This question paper consists of 16 printed pages.

1

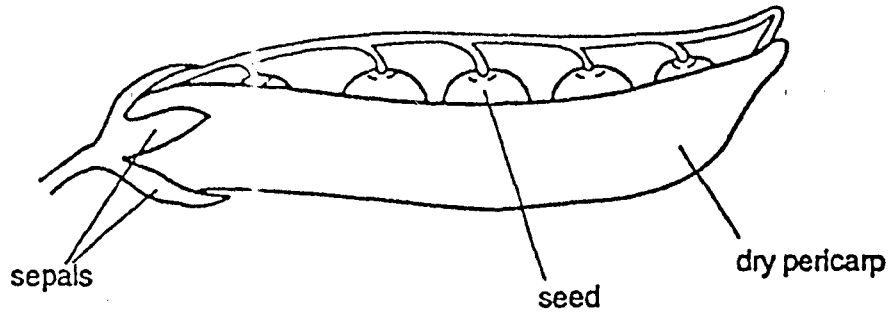
- 1 The table lists six of the seven characteristics of living organisms.

characteristics of living organisms	
1	excretion
2	growth
3	irritability
4	nutrition
5	reproduction
6	respiration
7	?

What is the seventh characteristic?

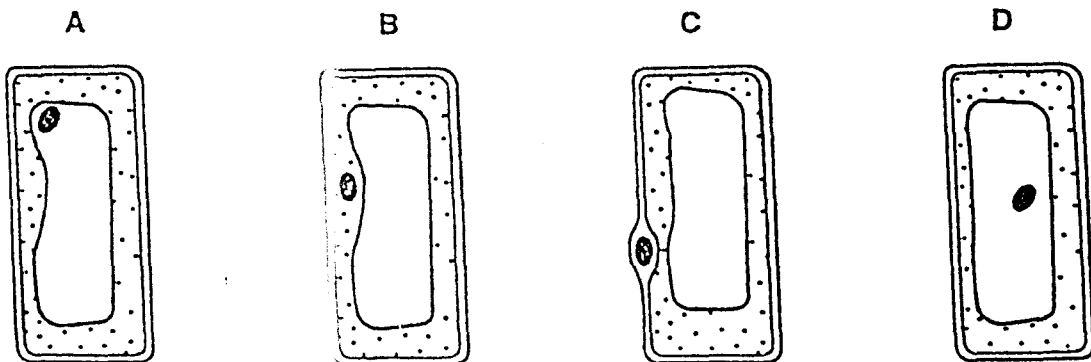
- A co-ordination  
 B digestion  
 C movement  
 D sight
- 2 
$$\text{water} + \text{carbon dioxide} \xrightarrow[\text{chlorophyll}]{\text{sunlight}} \text{sugar} + \text{oxygen}$$
- Which characteristic of living organisms is shown by this equation?
- A excretion  
 B nutrition  
 C reproduction  
 D respiration
- 3 Which substance is absorbed from the soil by plants to make proteins?
- A carbon dioxide  
 B nitrates  
 C oxygen  
 D vitamins

- 4 The diagram shows a type of fruit.



Using the following key, what is this type of fruit?

- 1 Sepals fall off as soon as the flower is fertilised..... go to 2  
Sepals do not fall off as soon as the flower is fertilised..... go to 3
  - 2 Pericarp dry; containing fewer than four seeds..... type A  
Pericarp dry; containing more than four seeds..... type B
  - 3 Fruit splits to release several seeds..... type C  
Fruit splits to release only one seed..... type D
- 5 What is the function of human red blood cells?
- A to absorb heat
  - B to carry oxygen
  - C to destroy bacteria
  - D to make antibodies
- 6 Which diagram shows the position of the nucleus in a palisade cell?



- 7 Which of the following is a tissue?

- A eye
- B leaf
- C muscle
- D stomach

8 Which of the following lists the structures from the simplest to the most complex?

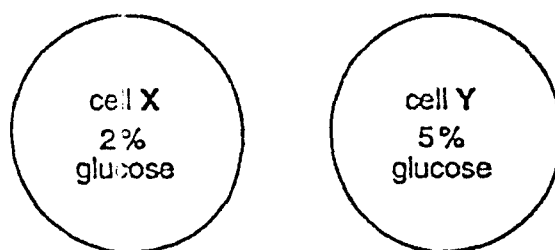
simplest  $\longrightarrow$   $\longrightarrow$   $\longrightarrow$  most complex

- A cells  $\longrightarrow$  organs  $\rightarrow$  organ systems  $\rightarrow$  tissues  
 B cells  $\longrightarrow$  tissues  $\rightarrow$  organs  $\longrightarrow$  organ systems  
 C organ systems  $\rightarrow$  organs  $\rightarrow$  tissues  $\longrightarrow$  cells  
 D tissues  $\longrightarrow$  cells  $\longrightarrow$  organs  $\longrightarrow$  organ systems

9 By which process does oxygen pass from the alveoli of the lungs into the blood?

- A diffusion  
 B osmosis  
 C respiration  
 D transpiration

10 The diagram shows the concentrations of glucose in two cells X and Y.

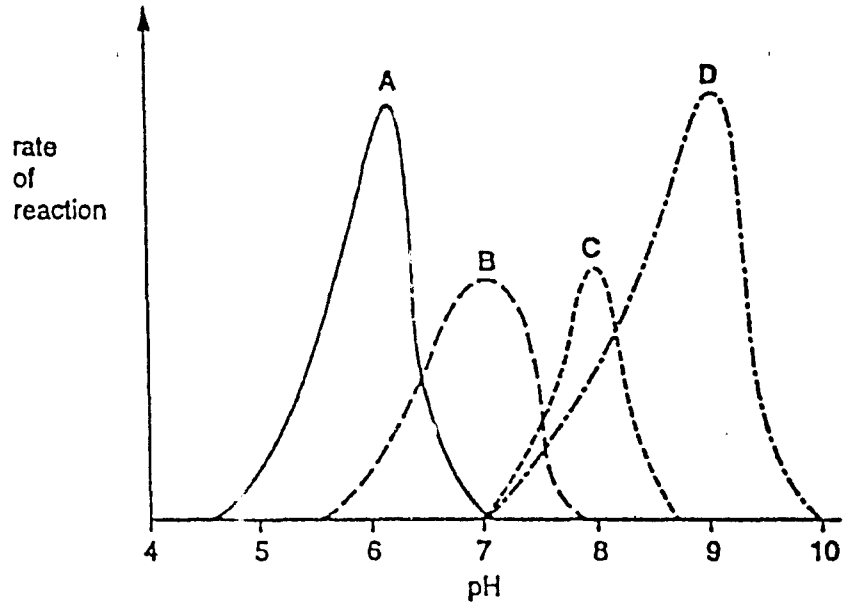


If cell X and cell Y come into contact, the concentration of glucose in each cell begins to change.

When will there be no further change?

- A when cell X and cell Y have the same glucose concentration  
 B when cell X has a higher glucose concentration than cell Y  
 C when all the glucose is in cell X  
 D when all the glucose is in cell Y
- 11 A student set up an experiment to investigate the effect of a mammalian enzyme on cooked egg white.
- At which temperature would the enzyme be most active?
- A 25 °C      B 40 °C      C 65 °C      D 80 °C

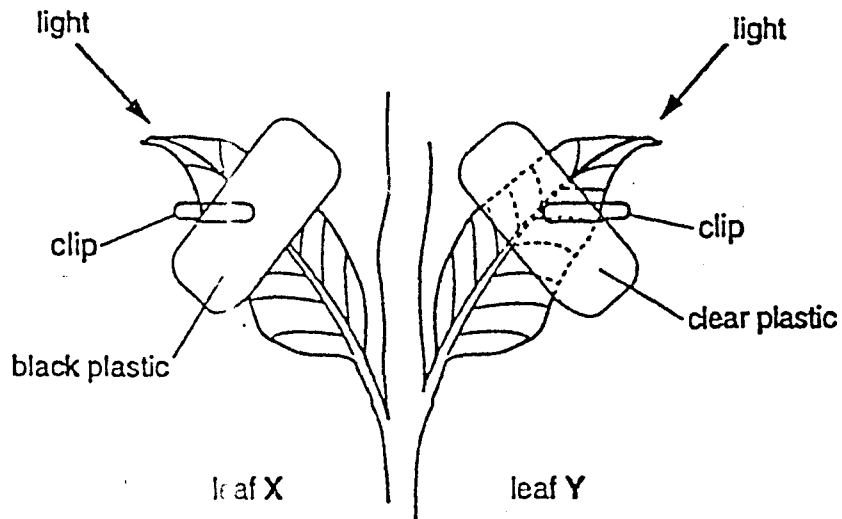
12 The graph shows how pH affects the activity of four enzymes.



Salivary amylase works best at pH 7.

Which curve represents the activity of salivary amylase?

13 The following experiment was set up, using leaves on the same plant.



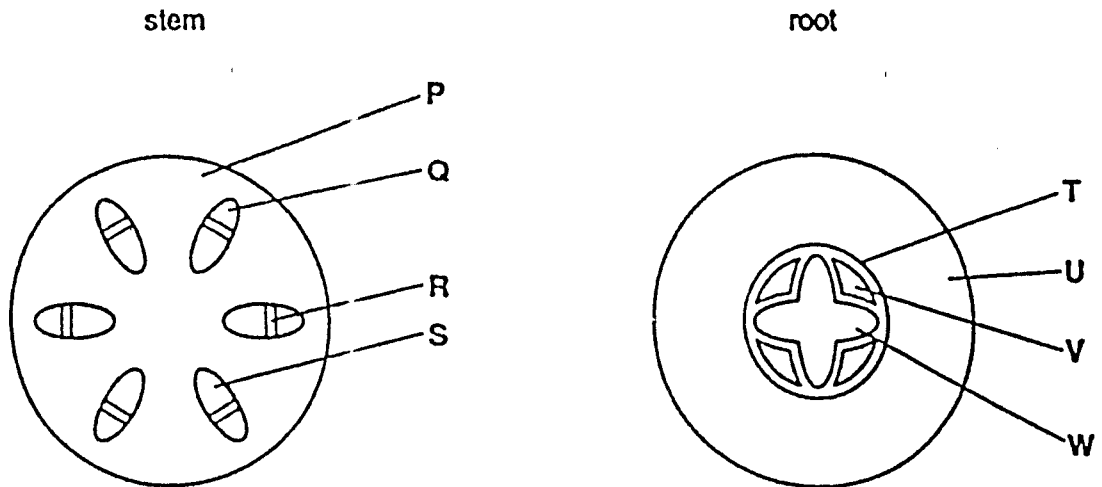
Both leaves were left to photosynthesise for six hours.

Which set of results should be obtained after testing both leaves for starch?

- | leaf X              | leaf Y            |
|---------------------|-------------------|
| A all blue-black    | all blue-black    |
| B all blue-black    | partly blue-black |
| C partly blue-black | all blue-black    |
| D partly blue-black | partly blue-black |



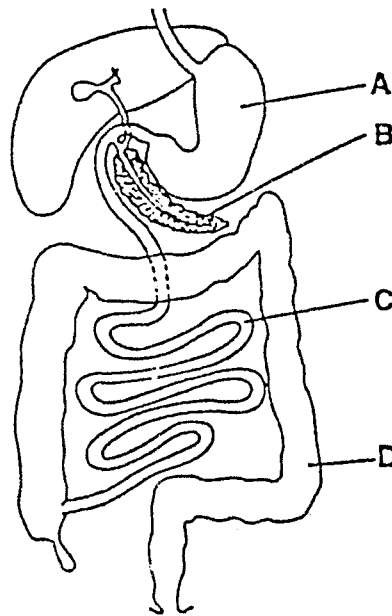
14 The diagrams show cross-sections through a stem and a root of a flowering plant.



Which pair of lines label similar tissues?

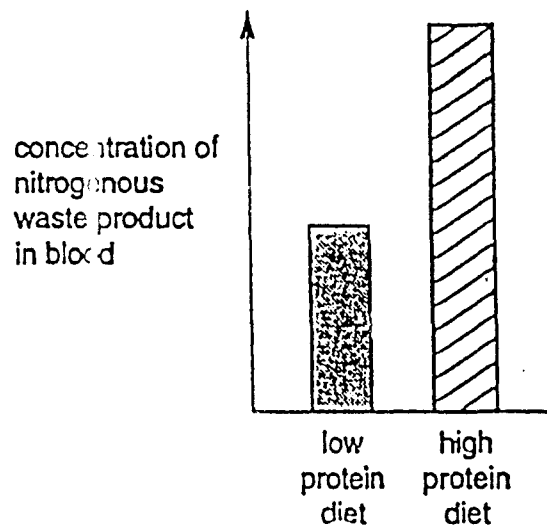
- A P and T      B Q and U      C R and V      D S and W

15 The diagram shows part of the human alimentary canal.



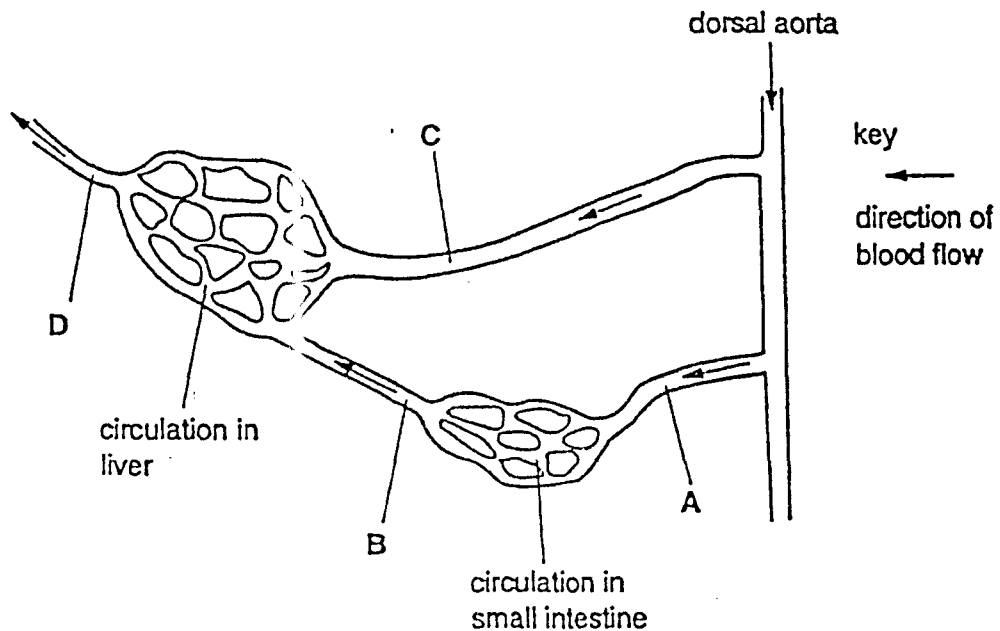
Which part absorbs digested food?

- 16 The diagram shows the levels of a nitrogenous waste product in the blood of a person living at first on a low protein diet and then on a high protein diet.



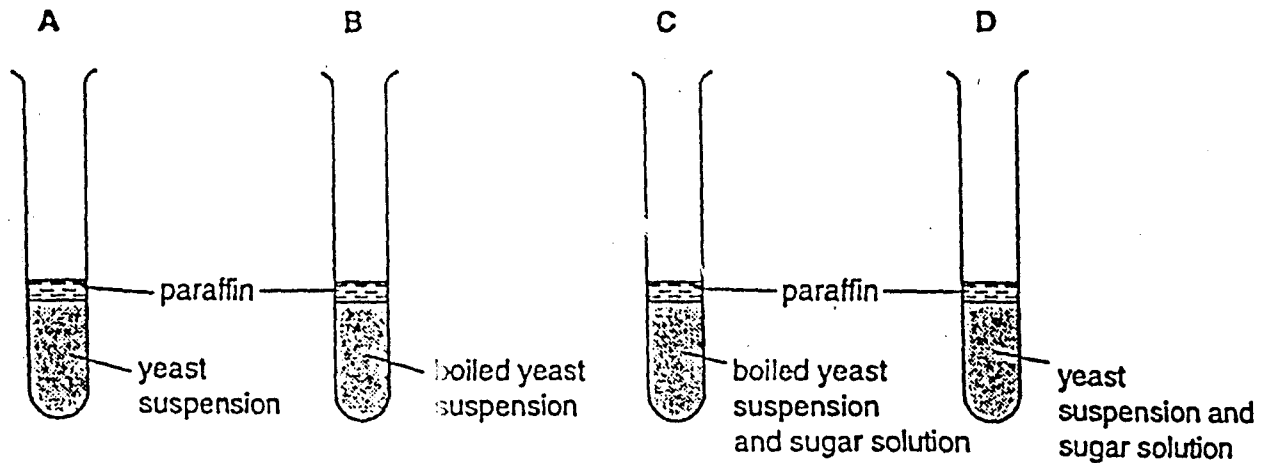
What is the waste product?

- A amino acid
  - B nitrate
  - C protein
  - D urea
- 17 The diagram shows the blood vessels associated with the liver and small intestine.



After a meal, which blood vessel will contain the greatest concentration of sugar?

18 The diagram shows an experiment to investigate anaerobic respiration in yeast.

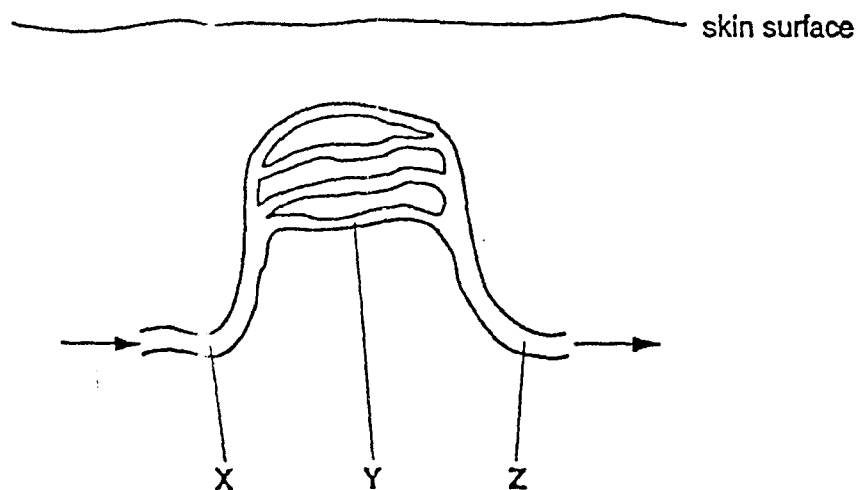


In which test-tube will alcohol be produced?

19 Which are products of respiration?

- A carbon dioxide and nitrogen
- B carbon dioxide and water
- C nitrogen and water
- D oxygen and carbon dioxide

20 The diagram shows some blood vessels near the surface of the skin.

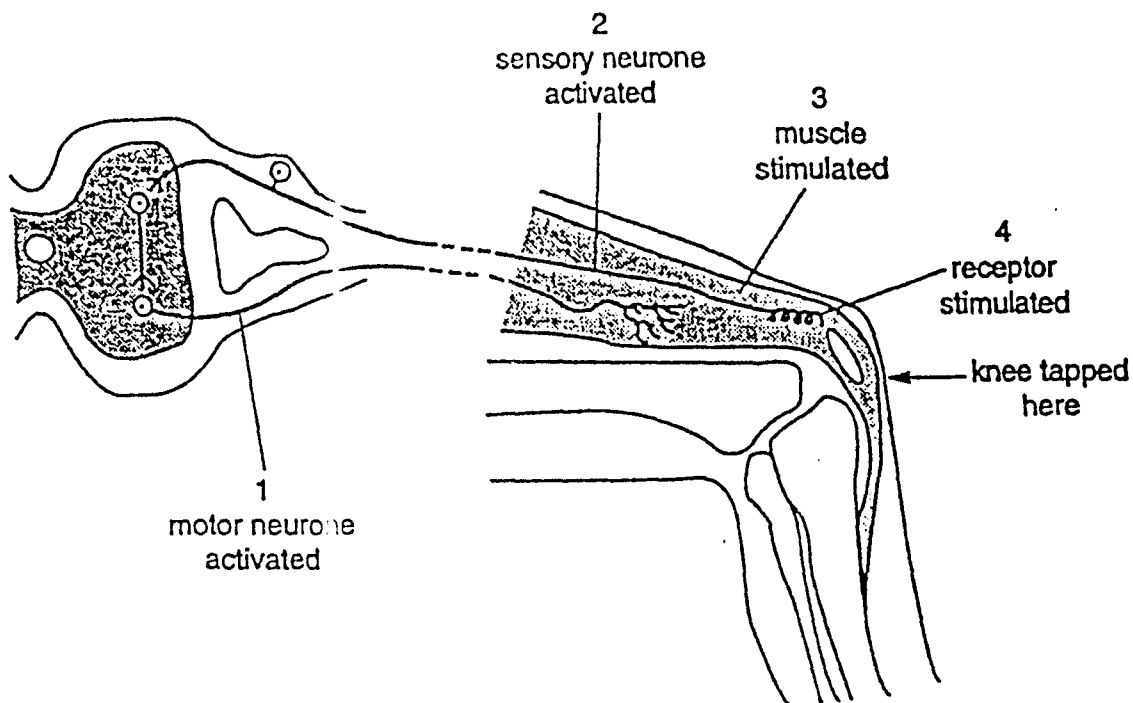


If vasoconstriction occurs at X, what happens to the blood flow at Y and Z?

- |   | Y         | Z              |
|---|-----------|----------------|
| A | decreases | decreases      |
| B | decreases | stays constant |
| C | increases | stays constant |
| D | increases | increases      |

- 21 What is an example of excretion in mammals?
- A the release of digestive enzymes into the stomach
  - B the release of hormones from glands
  - C the removal of undigested food through the anus
  - D the removal of urea by the kidneys

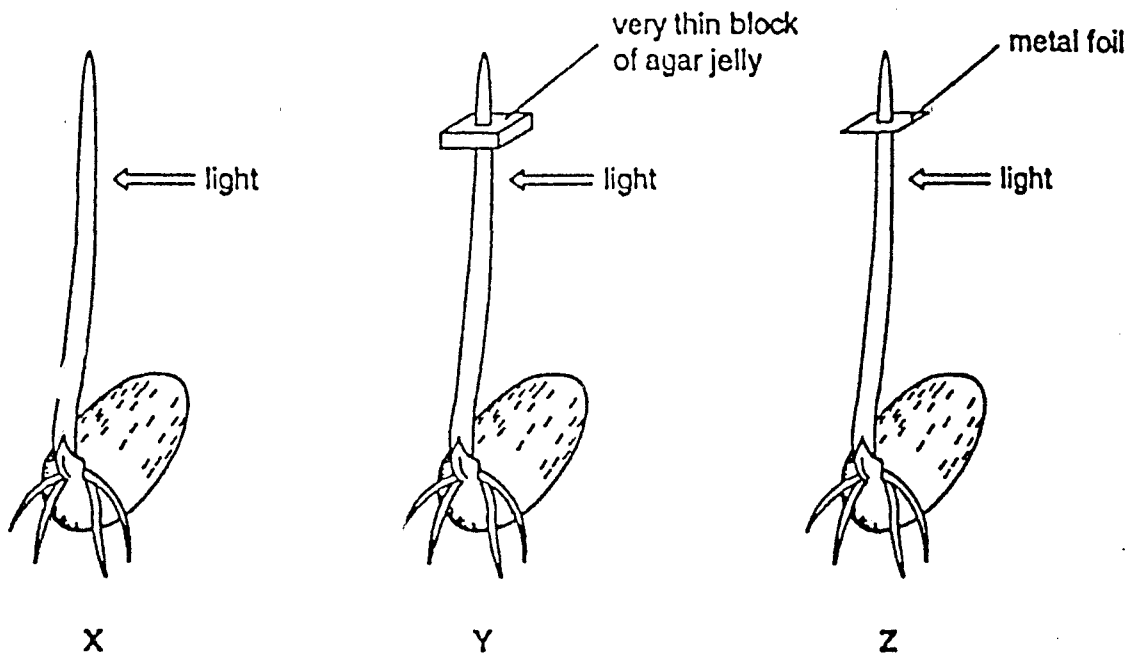
22 The diagram shows a simple reflex arc.



What is the correct order of events after the knee is tapped?

- A 1 → 2 → 3 → 4
- B 1 → 4 → 2 → 3
- C 4 → 2 → 1 → 3
- D 4 → 3 → 2 → 1

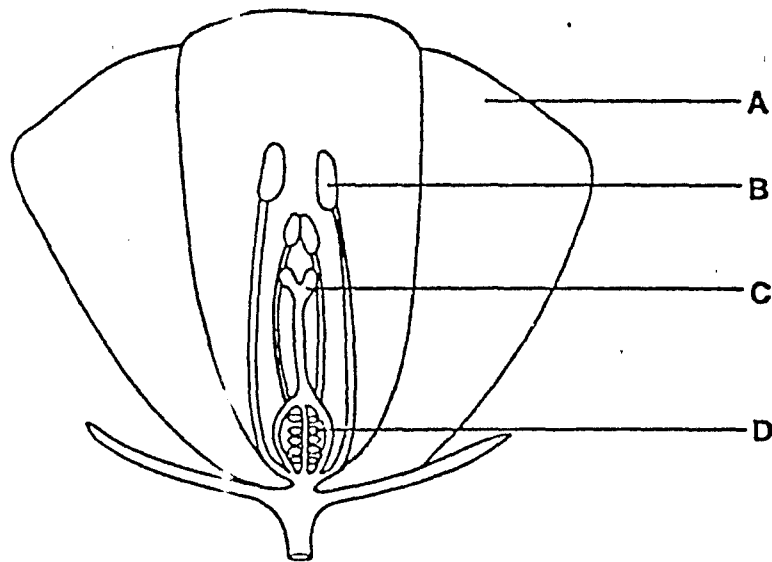
23 The diagram shows how three plant shoots were treated.



Which of the shoots would grow towards the light?

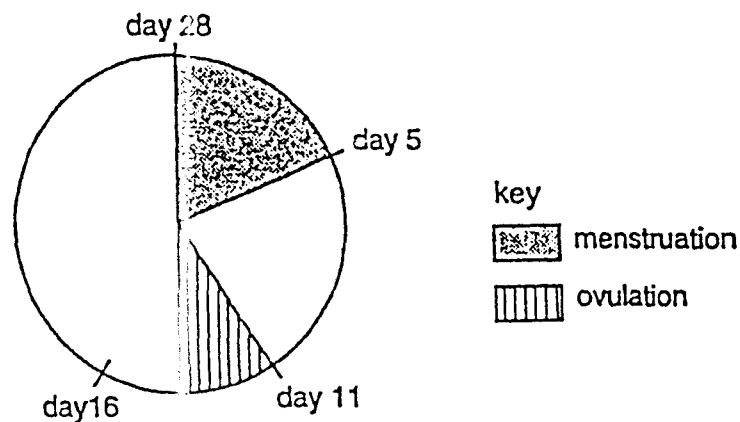
- A X only
  - B X and Y only
  - C X and Z only
  - D X, Y and Z
- 24 Which route does the unfertilised mammalian egg follow through the female reproductive system, after being released from the ovary?
- A oviduct → uterus → vagina
  - B oviduct → vagina → uterus
  - C uterus → oviduct → vagina
  - D uterus → vagina → oviduct

25 The diagram shows a flower cut in half.



In which part of the flower does fertilisation take place?

26 The diagram represents a woman's menstrual cycle.



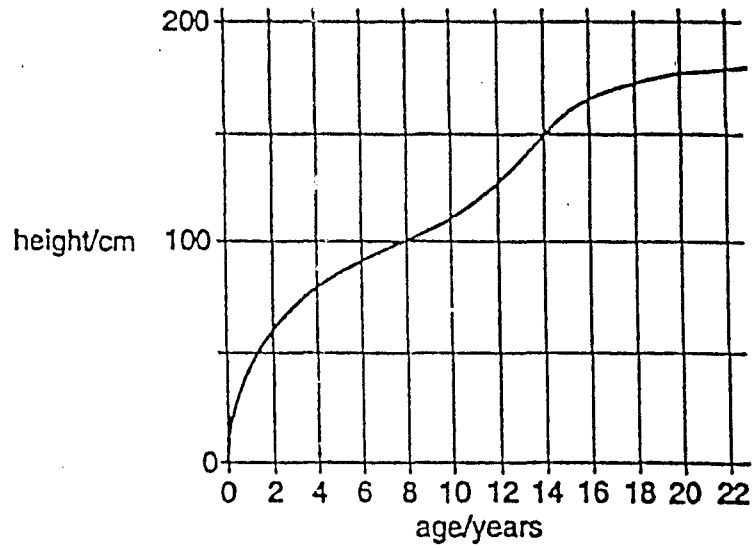
On which day is sexual intercourse most likely to result in fertilisation?

- A day 5      B day 11      C day 16      D day 28

27 Which conditions are necessary for seed germination?

- A carbon dioxide and oxygen  
 B chlorophyll and light  
 C soil particles and mineral salts  
 D water and a suitable temperature

28 The graph shows how human height changes with age.



In which age range is growth most rapid?

- A 0–2 years
- B 12–14 years
- C 16–18 years
- D 20–22 years

29 Which will produce a male child?

	sex chromosome in egg	sex chromosome in sperm
A	X	X
B	X	Y
C	Y	X
D	Y	Y

30 What name is given to a sudden change in a gene or chromosome?

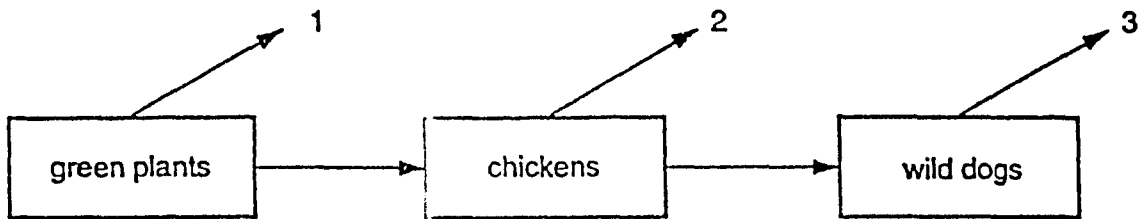
- A allele
- B genotype
- C mutation
- D phenotype

- 31 Heterozygous tall plants were crossed with pure-breeding dwarf plants of the same species. The resulting seeds were collected and grown to produce the next generation.

What were the approximate percentages of tall and dwarf offspring?

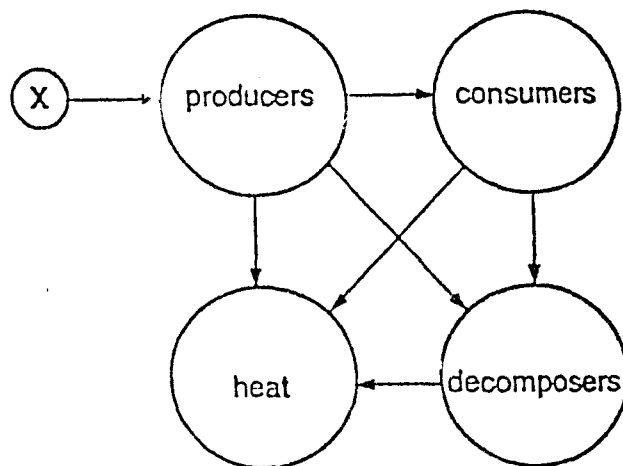
	tall	dwarf
A	25%	75%
B	50%	50%
C	75%	25%
D	100%	0%

- 32 The diagram shows a simple food chain.



By what process is energy being lost at 1, 2 and 3?

- A evaporation
  - B respiration
  - C translocation
  - D transpiration
- 33 The diagram shows the flow of energy through an ecosystem.

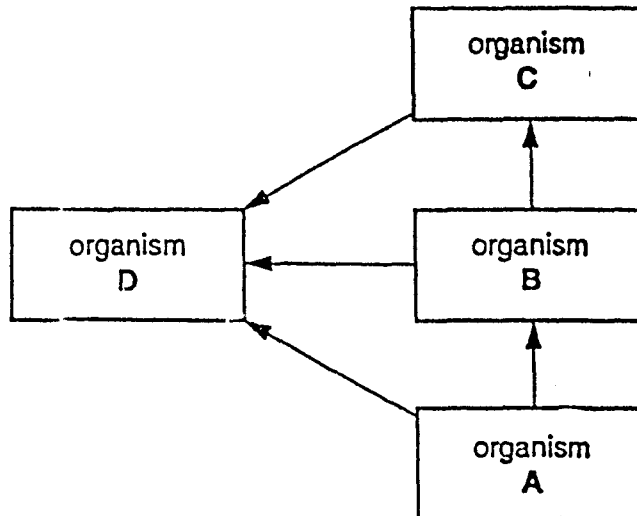


What does X represent?

- A carbon dioxide and water
- B mineral salts
- C oxygen
- D sunlight



34 The diagram shows a food web.

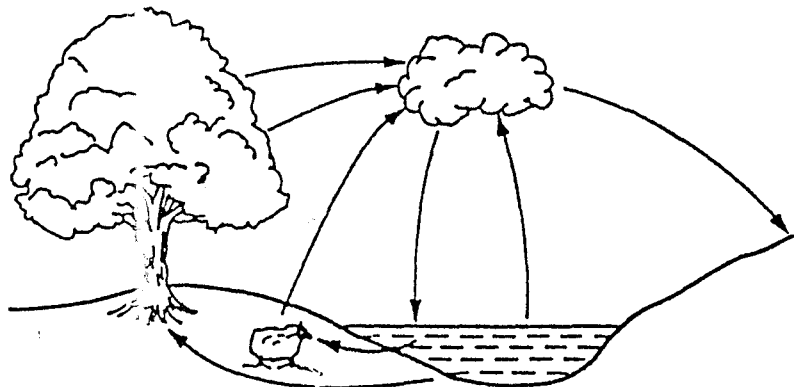


Which organism is the decomposer?

35 Which process does not release carbon dioxide into the air?

- A burning of coal
- B decomposition of humus
- C photosynthesis
- D respiration

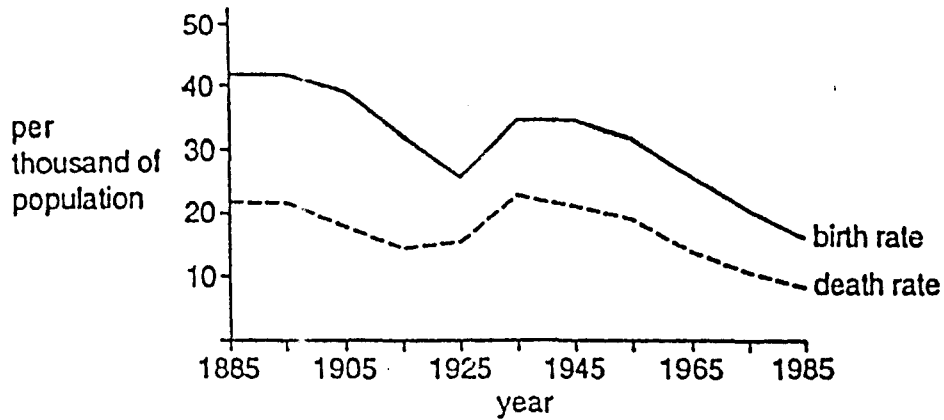
36 The diagram shows the natural cycle of a substance.



What is the substance?

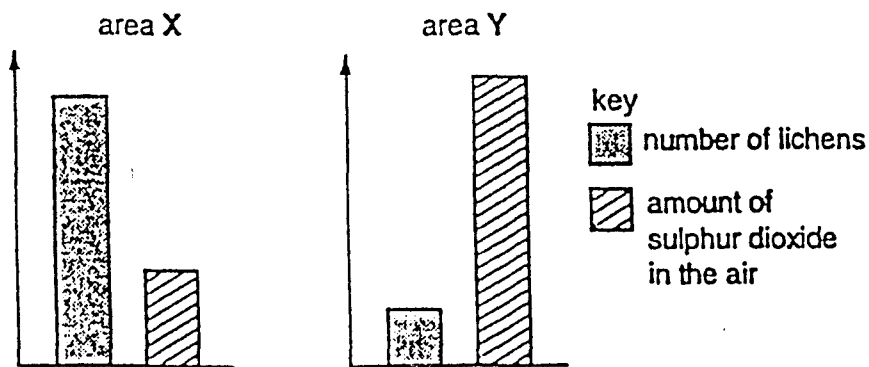
- A carbon dioxide
- B nitrogen
- C oxygen
- D water

37 The graph shows the birth rate and the death rate in a country.



What happened to the population total between 1905 and 1925?

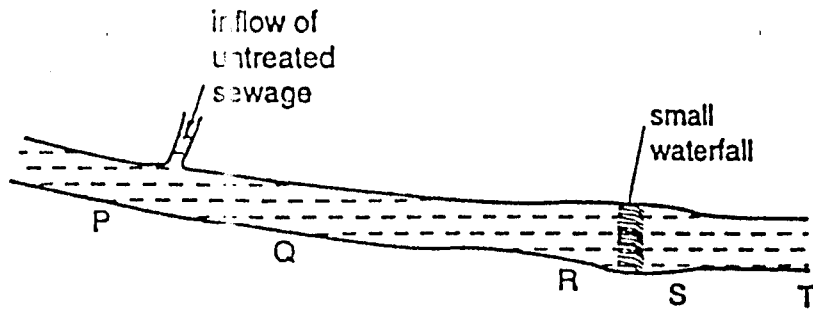
- A it decreased  
 B it decreased then increased  
 C it increased then decreased  
 D it stayed the same
- 38 Why is it that pesticides sprayed in low concentrations may increase the yield of a crop, but may also be harmful to wildlife?
- A Pesticides cause acid rain  
 B Pesticides enter the food chain.  
 C Pesticides increase the nitrates in soil.  
 D Pesticides kill other plants.
- 39 Lichens grow on tree trunks and buildings. The diagrams show the results of a survey of the number of lichens in two areas X and Y.



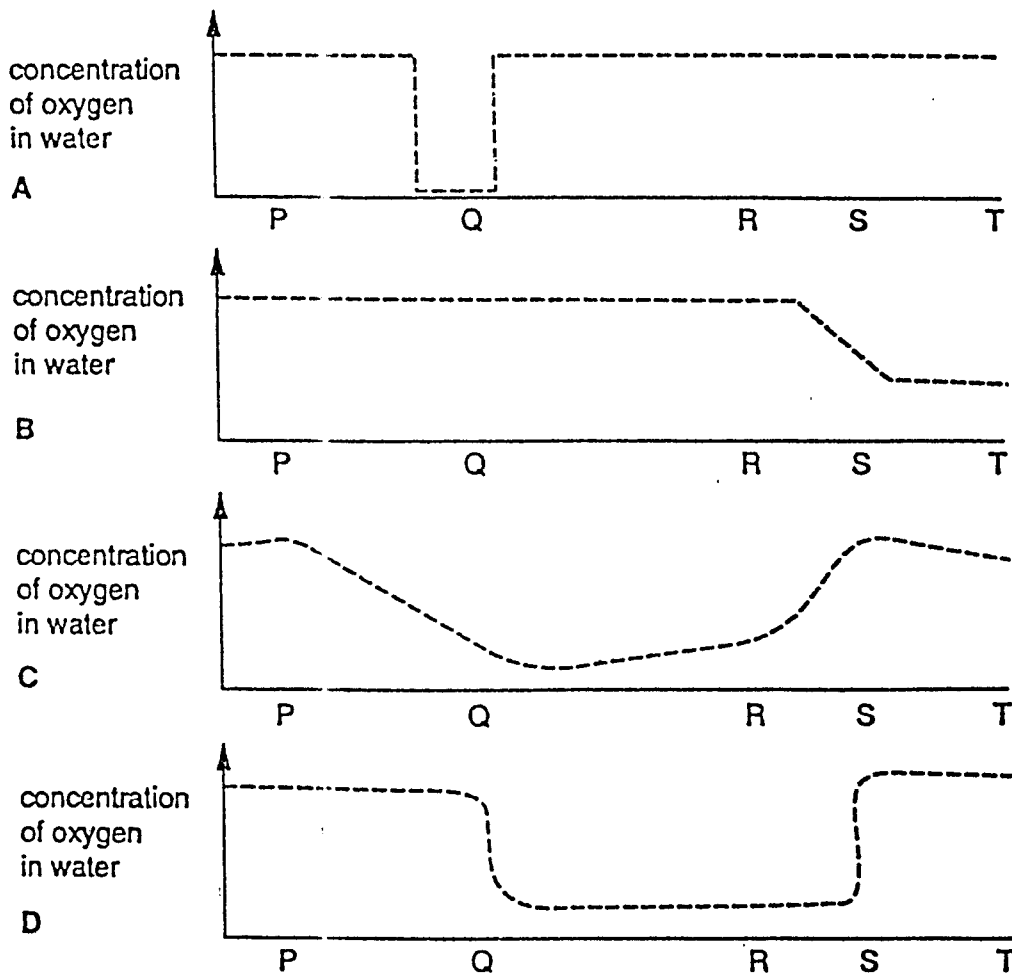
Which statement is correct?

- A An increase in sulphur dioxide results in fewer lichens.  
 B Area X is more heavily polluted by sulphur dioxide than area Y.  
 C Lichens need sulphur dioxide to survive.  
 D Lichens produce sulphur dioxide and pollute the atmosphere.

40 The map shows part of a river.



Which graph represents the likely oxygen content of the water along the river?



International General Certificate of Secondary Education  
UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE

**BIOLOGY**

**0610/1**

**PAPER 1**

Wednesday

**23 NOVEMBER 1994**

Morning

45 minutes

Additional materials:

Multiple Choice answer sheet

Soft pencil (type B or HB is recommended)

Soft clean eraser

**TIME** 45 minutes

**INSTRUCTIONS TO CANDIDATES**

Do not open this booklet until you are told to do so.

Write your name, Centre number and candidate number on the answer sheet in the spaces provided unless this has already been done for you.

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

Read very carefully the instructions on the answer sheet.

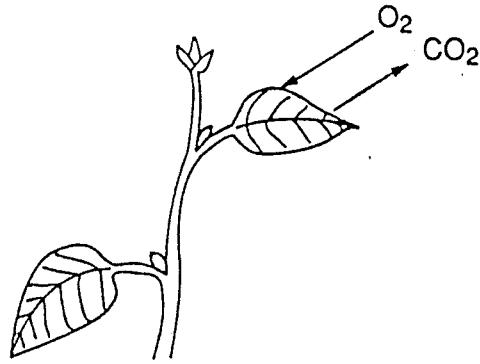
**INFORMATION FOR CANDIDATES**

Each correct answer will score one mark. A mark will not be deducted for a wrong answer.

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This question paper consists of 16 printed pages.

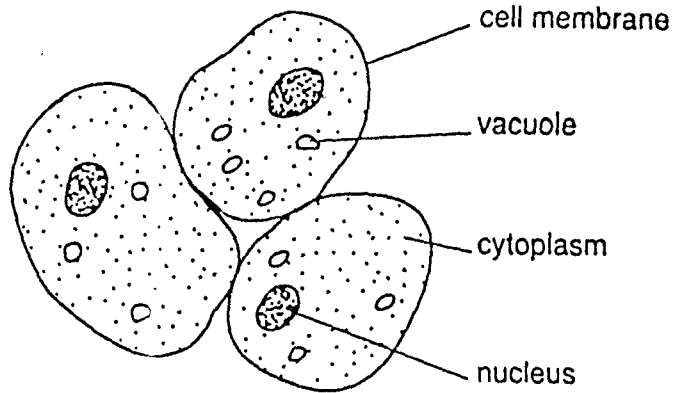
- 1 The diagram shows part of a green plant.



Which process leads directly to the exchange of the gases indicated?

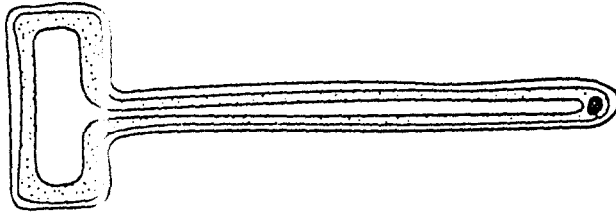
- A growth
  - B movement
  - C nutrition
  - D respiration
- 2 Excretion, irritability and reproduction are characteristics of
- A all animals and plants.
  - B animals only.
  - C plants only.
  - D some animals and some plants only.
- 3 What is the correct way to write the biological name of the lion?
- A *Panthera Leo*
  - B panthera Leo
  - C *Panthera leo*
  - D panthera leo

- 4 The diagram shows some cells.



What are these cells?

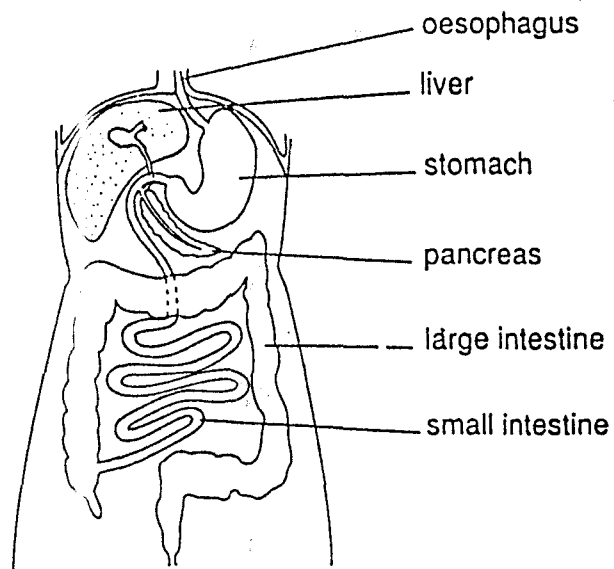
- A liver cells
  - B palisade cells
  - C red blood cells
  - D white blood cells
- 5 The diagram shows a plant cell.



What is the main function of this cell?

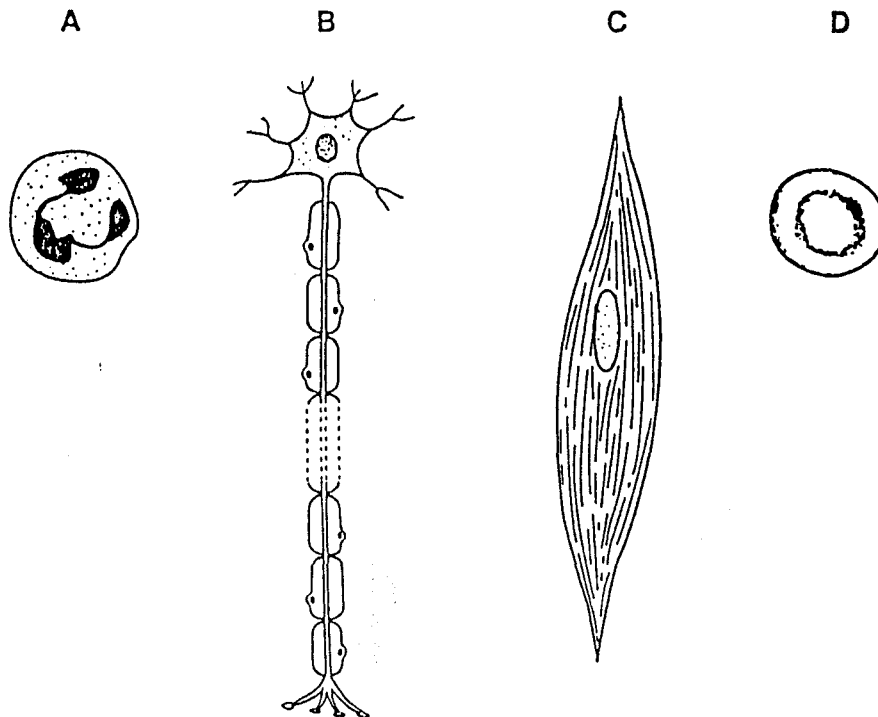
- A absorption
- B digestion
- C photosynthesis
- D reproduction

- 6 The diagram shows some structures in the human body.



Together these parts form

- A a cell.
  - B a tissue.
  - C an organ.
  - D an organ system.
- 7 The diagrams show four cells (not drawn to the same scale).

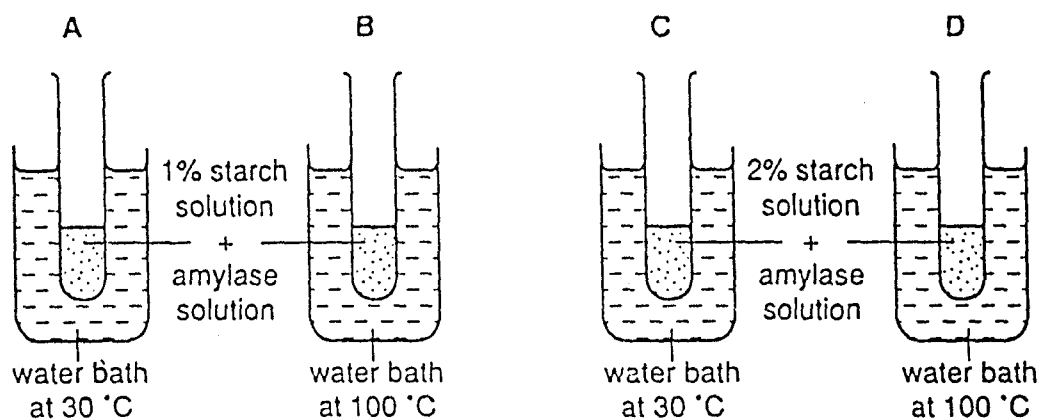


Which cell carries nerve impulses?

- 8 Osmosis in living organisms is movement across a partially permeable membrane.

Which correctly describes this movement?

- A solute molecules from a concentrated solution to a dilute solution
  - B solute molecules from a dilute solution to a concentrated solution
  - C water molecules from a concentrated solution to a dilute solution
  - D water molecules from a dilute solution to a concentrated solution
- 9 The scent from a bunch of flowers soon spreads throughout a room.
- By what method does the scent spread?
- A diffusion
  - B osmosis
  - C radiation
  - D transpiration
- 10 The diagrams show four experiments each using 1 cm<sup>3</sup> of amylase solution and 10 cm<sup>3</sup> of starch solution.

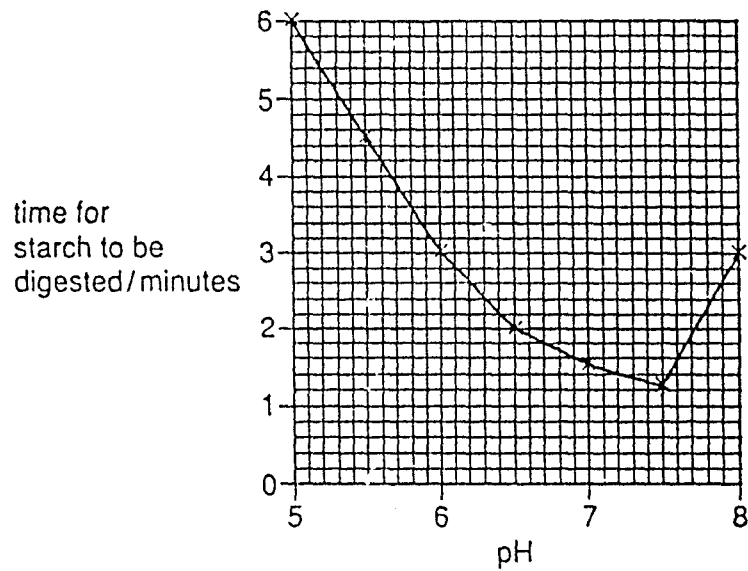


Which test-tube would contain the most sugar after one day?



- 11 Equal volumes of amylase solution and starch solution were mixed together at different pH values.

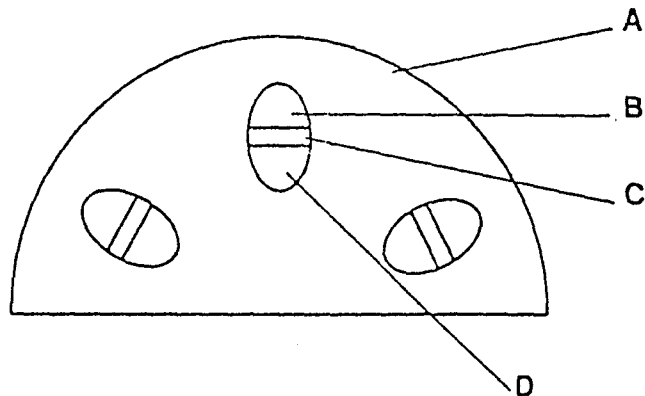
The graph shows the time taken for each sample of starch to be completely digested.



At which pH is amylase most active?

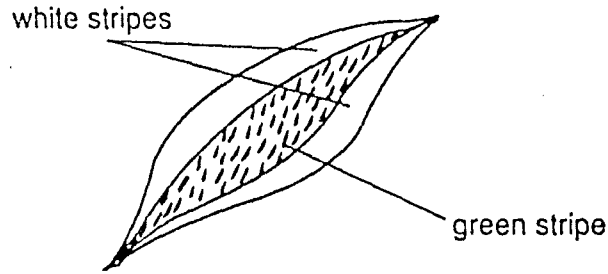
- A 5.0      B 6.5      C 7.5      D 8.0

- 12 The diagram shows part of a cross-section of a plant stem.



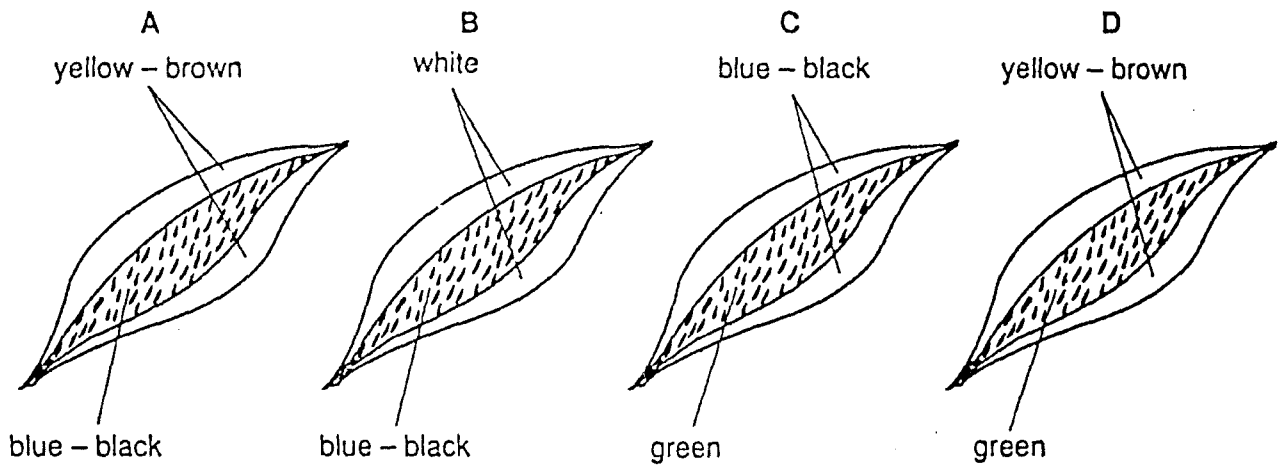
Which region carries water up the plant?

13 A plant with striped leaves, similar to the one below, was kept in bright light for six hours.

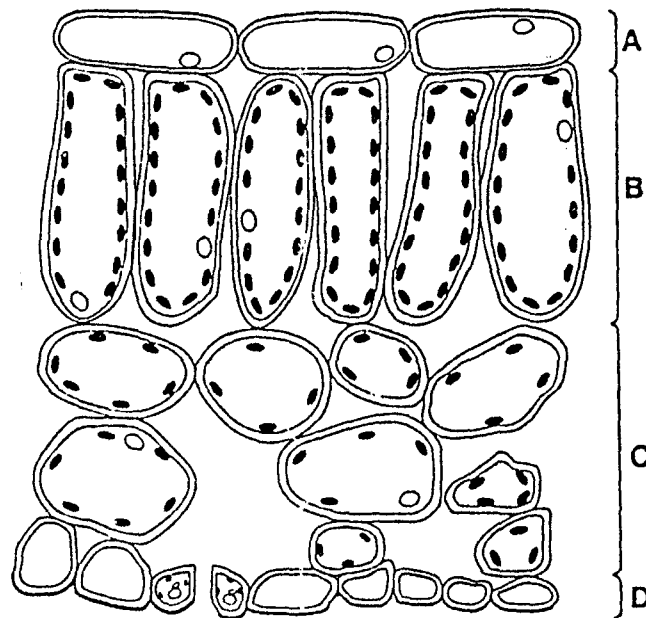


A leaf was removed and tested for starch using iodine solution.

Which diagram shows the result of the test?

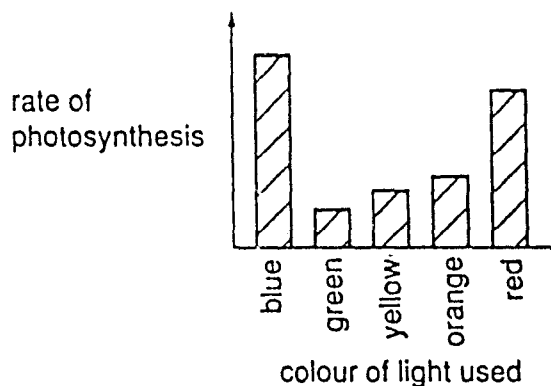


14 The diagram shows the internal structure of a leaf.



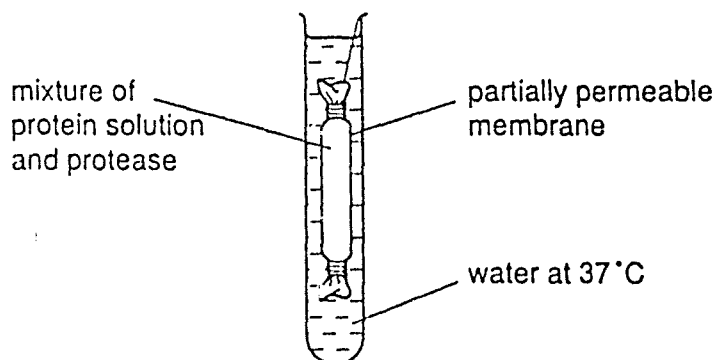
In which region will most photosynthesis take place?

- 15 The bar chart shows the rate of photosynthesis of a green plant when placed in light of different colours.



In which colours of light was the rate of photosynthesis fastest?

- A blue and yellow  
 B green and red  
 C red and blue  
 D yellow and green
- 16 From which disease is a child likely to suffer, if she never eats any fresh fruit?
- A diabetes  
 B heart disease  
 C rickets  
 D scurvy
- 17 An experiment was set up as shown in the diagram.



After 15 minutes the water was tested.

Which substance was found in the water in the test-tube?

- A amino acids  
 B fatty acids  
 C glucose  
 D glycerol

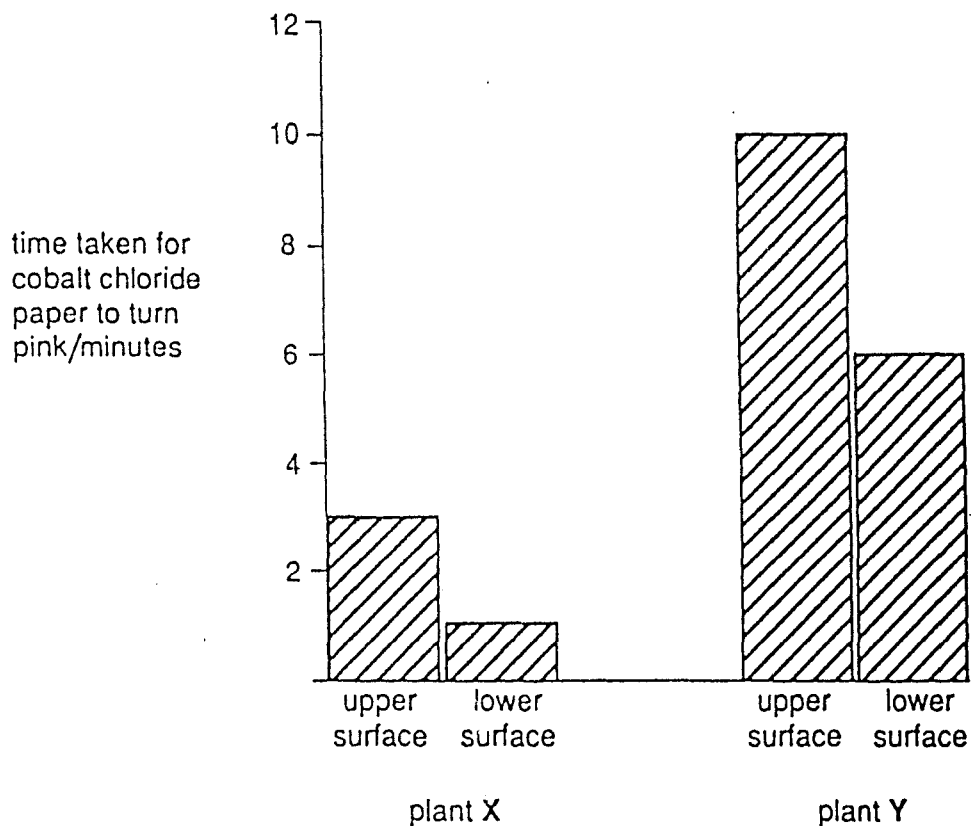
18 The table shows the composition of four foods.

	food	% composition		
		carbohydrate	protein	fat
A	bread	47	10	3
B	butter	0	1	82
C	fish	8	20	10
D	fried rice	37	4	19

Which one would provide the most energy, if the foods were eaten in equal quantities?

19 Cobalt chloride paper is blue when dry but turns pink when wet. Some blue cobalt chloride paper was fastened to the upper and lower surfaces of a leaf on plant X and a leaf on plant Y.

The diagram shows the results of the experiment.



Through which leaf surface was water lost most quickly?

- A plant X, lower surface
- B plant X, upper surface
- C plant Y, lower surface
- D plant Y, upper surface

20 What is the percentage composition of atmospheric air?

	carbon dioxide	nitrogen	oxygen
A	0.03	79.01	20.96
B	4.10	79.50	16.40
C	5.50	80.70	13.80
D	20.00	60.40	19.60

21 What contains the largest amount of urea?

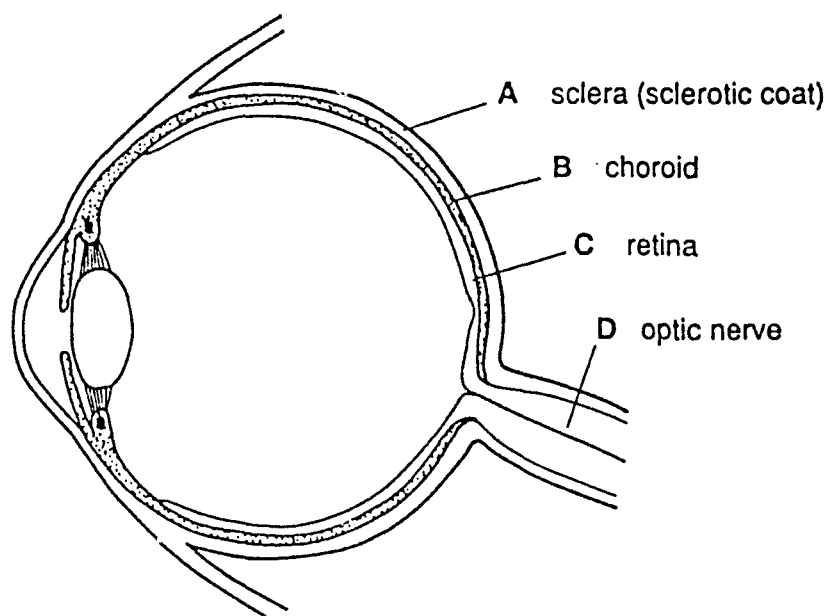
- A breath
- B faeces
- C sweat
- D urine

22 The amount of urea in the blood increases as it passes through a particular organ.

Through which organ is the blood passing?

- A heart
- B liver
- C pancreas
- D testis

23 The diagram shows a section through the human eye.



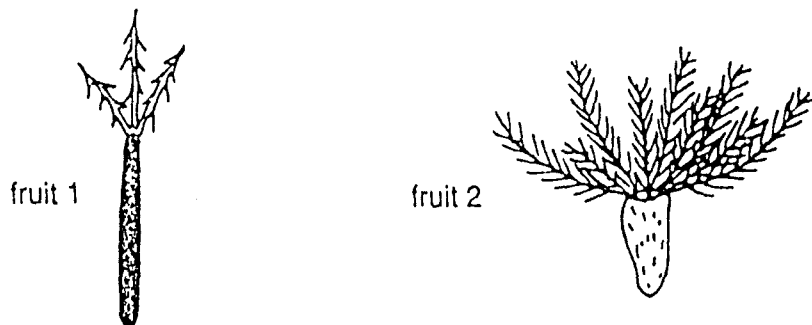
In which part are light-sensitive cells found?

- 24 Car drivers with alcohol in their blood are more likely to have accidents.

What is the main reason for this?

- A Alcohol affects the nervous system.
- B Alcohol causes depression.
- C Alcohol increases the pulse rate.
- D Alcohol is addictive.

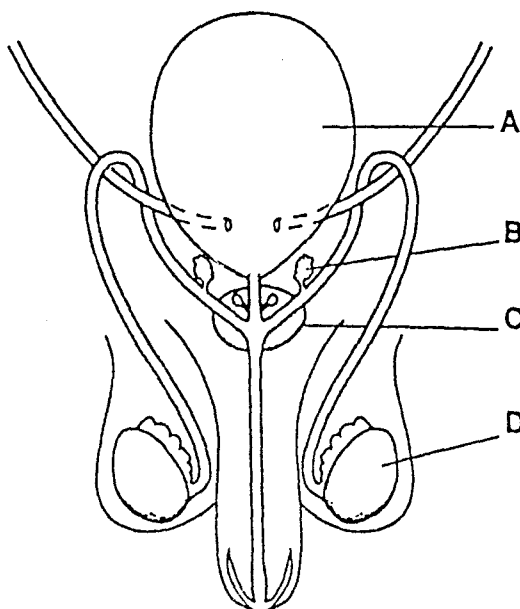
- 25 The diagrams show two different fruits.



How are the two fruits dispersed?

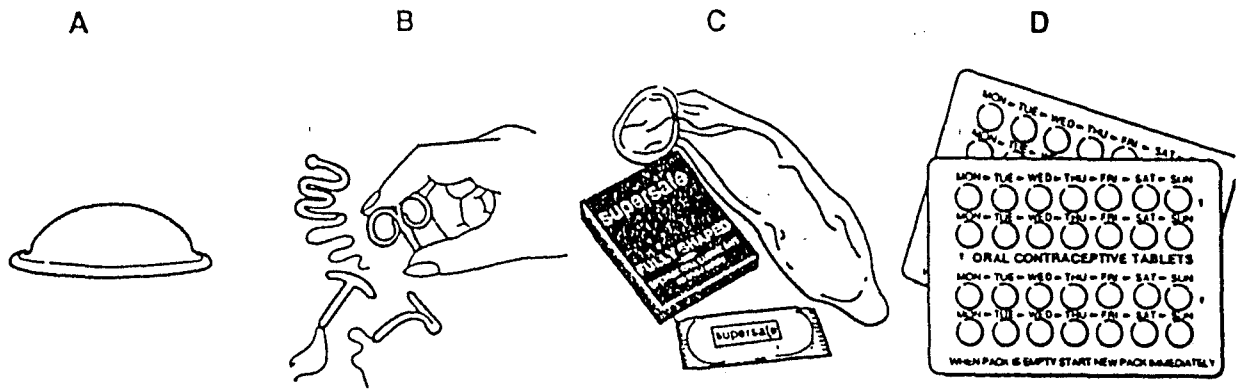
- | fruit 1   | fruit 2 |
|-----------|---------|
| A birds   | mammals |
| B mammals | wind    |
| C wind    | birds   |
| D wind    | wind    |

- 26 The diagram shows the human male reproductive system.



In which region are sperms produced?

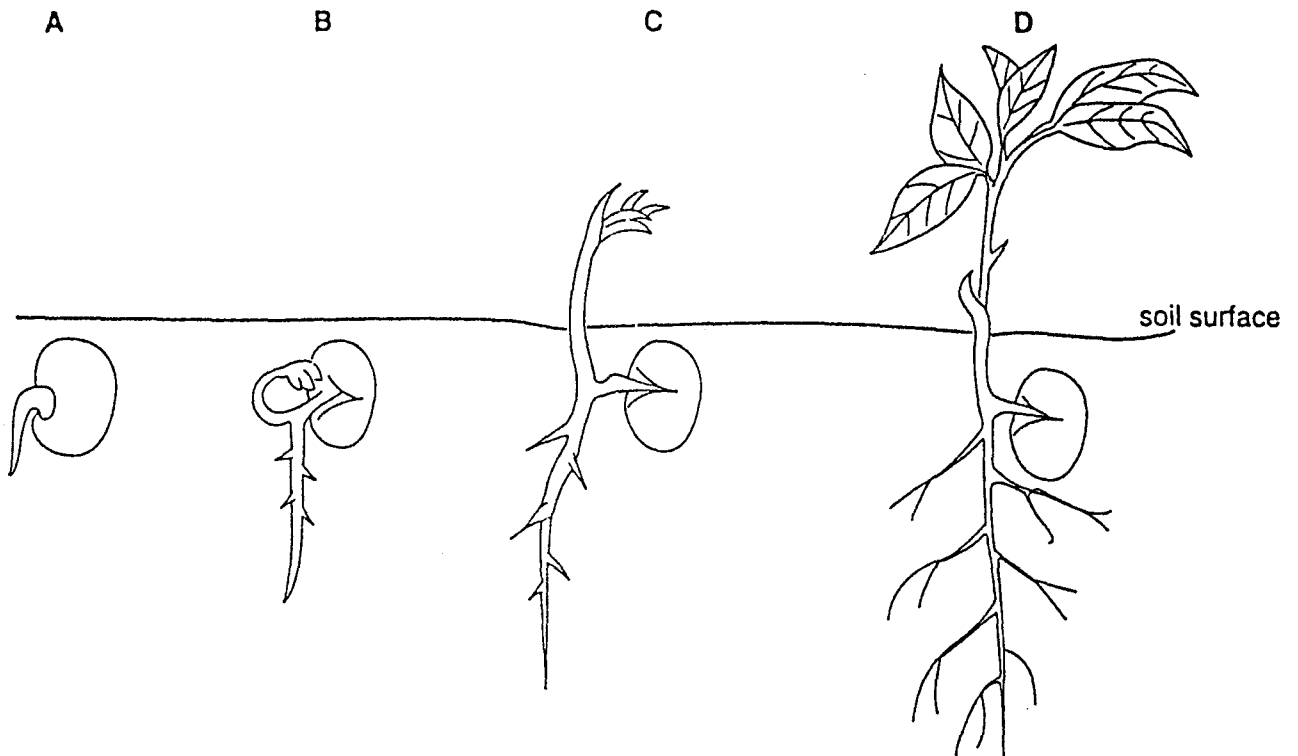
27 The diagrams show four methods of birth control.



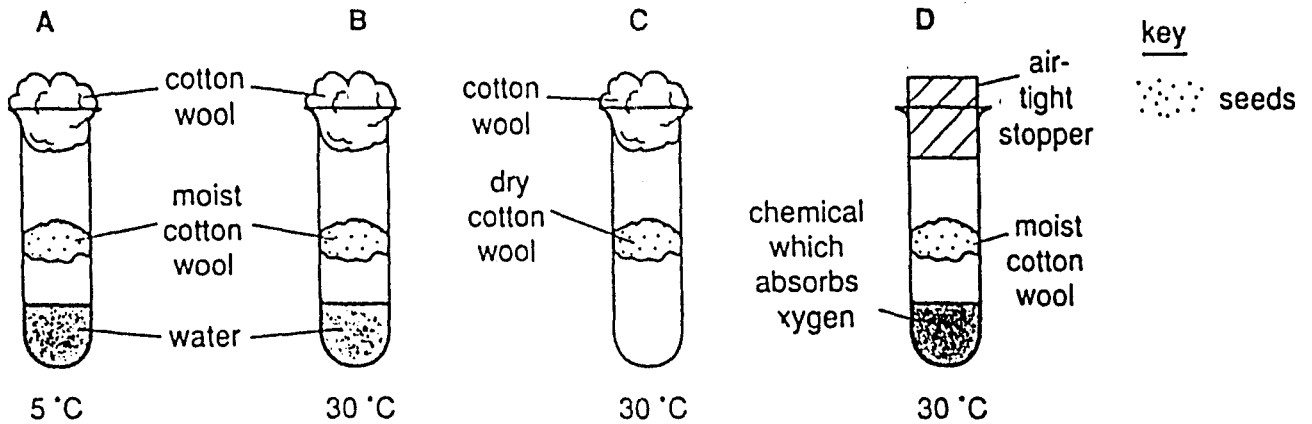
Which of these is a chemical method?

28 The drawings show various stages in the germination of a seed from a dicotyledonous plant.

During which stage does the seedling start to increase in dry mass?



29 Four tubes were set up as shown in the diagram.



In which tube would germination take place most rapidly?

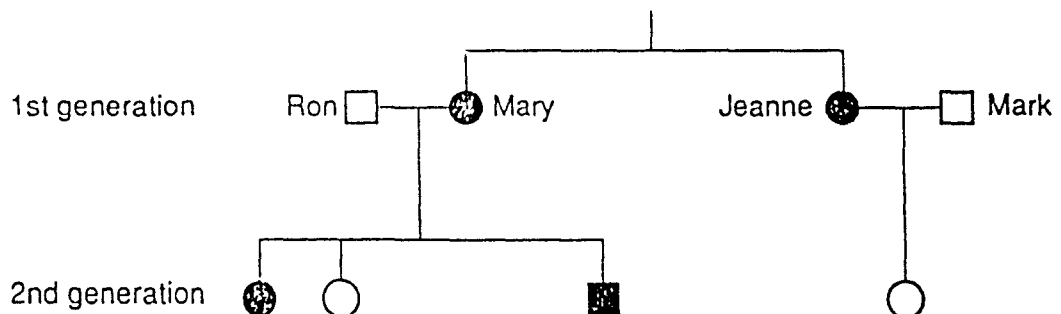
30 A cell has 20 chromosomes. It divides by meiosis to produce four cells.

How many chromosomes will there be in each new cell?

- A 5                      B 10                      C 20                      D 40

31 The diagram shows a family tree and the inheritance of the ability to taste a certain substance.

The allele for the ability to taste this substance is dominant.



- represents a male 'taster'                      □ represents a male 'non-taster'  
 ● represents a female 'taster'                      ○ represents a female 'non-taster'

Which statement about the genotypes of the sisters Mary and Jeanne is correct?

- A Mary is homozygous and Jeanne is heterozygous.  
 B Mary is heterozygous and Jeanne is homozygous.  
 C They are both homozygous.  
 D They are both heterozygous.

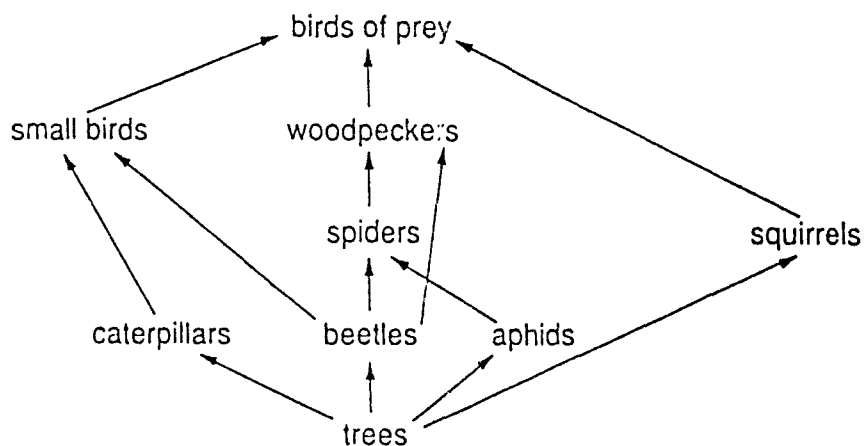


- 32 Eye colour may be determined by two alleles, B (brown) and b (blue). Brown colour is dominant over blue colour.

Which genotype is possible for an individual with blue eyes?

- A BB                      B Bb                      C b                      D bb

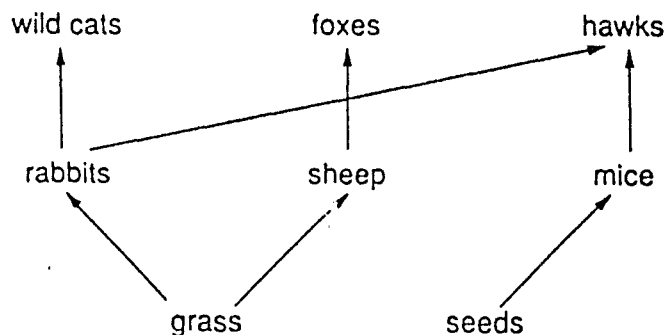
- 33 The diagram represents a food web in a forest.



Which is a food chain from this web?

- A trees → caterpillars → woodpeckers  
 B trees → beetles → spiders → squirrels  
 C trees → squirrels → birds of prey  
 D trees → aphids → spiders → small birds

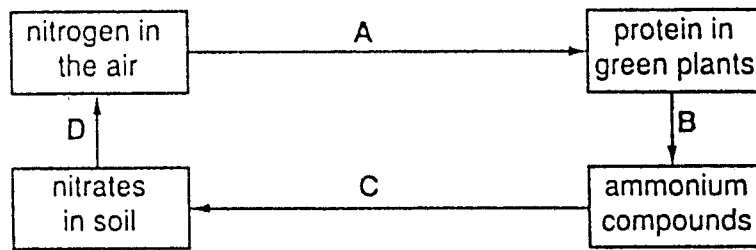
- 34 The diagram shows a food web.



Which type of organism is not represented in this food web?

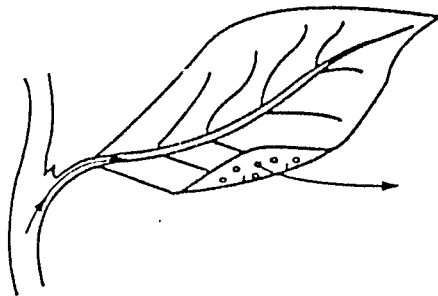
- A carnivores (meat eaters)  
 B decomposers  
 C herbivores (plant eaters)  
 D producers

35 The diagram shows a simplified nitrogen cycle.



Which arrow represents the activity of nitrogen-fixing bacteria?

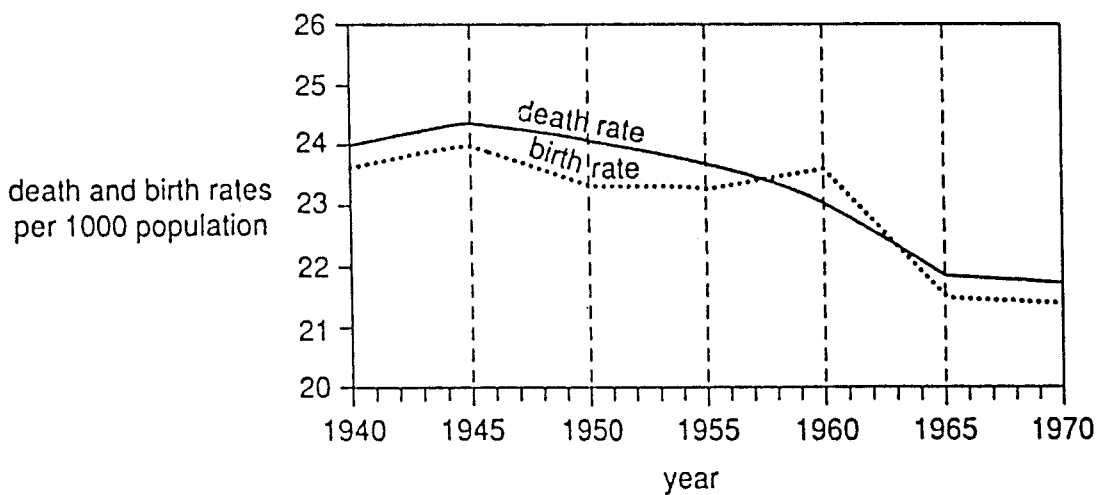
36 The diagram shows a leaf attached to the stem of a plant.



The arrows represent part of the

- A carbon cycle only.
- B carbon, nitrogen and water cycles.
- C nitrogen cycle only.
- D water cycle only.

37 The graph shows the death and birth rates in one country over a period of 30 years.



In which two years did the population remain at exactly the same size?

- A 1953 and 1968
- B 1955 and 1970
- C 1957 and 1963
- D 1965 and 1970

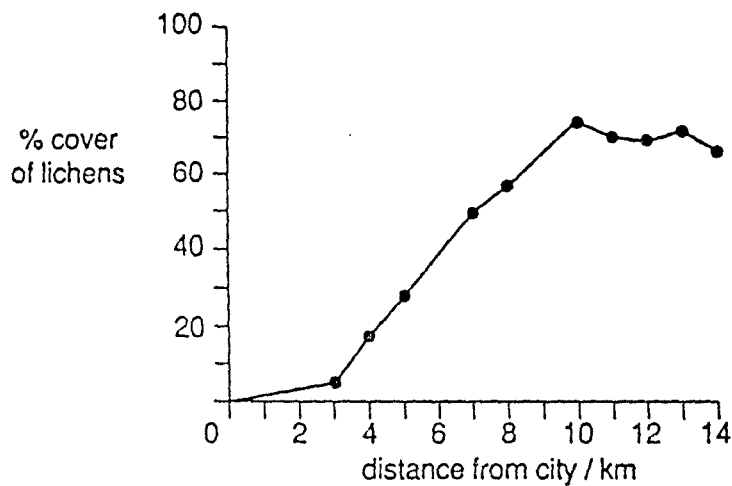
38 When sulphur dioxide dissolves in water in the atmosphere it causes acid rain.

Where does most of the sulphur dioxide come from?

- A fertilisers
- B herbicides
- C coal-fired power stations
- D sewage

39 Lichens are living organisms which often grow on trees. Sulphur dioxide slows down the growth of lichens.

The graph shows the average percentage of each tree covered by lichens at different distances from an industrial city.



At what distance from the city centre is the air most polluted by sulphur dioxide?

- A 3 km
- B 6 km
- C 10 km
- D 14 km

40 What are the effects on a river of pollution by sewage?

	concentration of dissolved oxygen	numbers of bacteria
A	decreases	decrease
B	decreases	increase
C	increases	decrease
D	increases	increase

International General Certificate of Secondary Education  
UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE

BIOLOGY

0610/1

PAPER 1 Multiple Choice

Thursday

8 JUNE 1995

Morning

45 minutes

Additional materials:

Multiple Choice answer sheet

Soft clean eraser

Soft pencil (type B or HB is recommended)

TIME 45 minutes

INSTRUCTIONS TO CANDIDATES

Do not open this booklet until you are told to do so.

Write your name, Centre number and candidate number on the answer sheet in the spaces provided unless this has already been done for you.

There are **forty** questions in 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 **very carefully** the instructions on the answer sheet.

INFORMATION FOR CANDIDATES

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.

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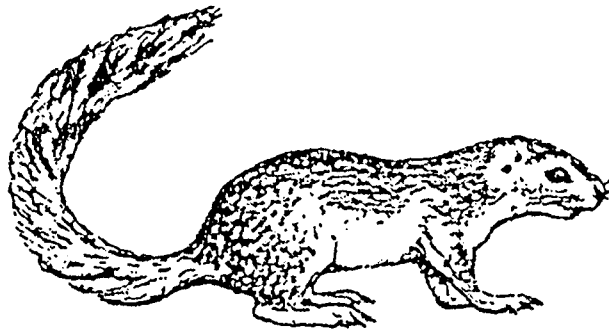
This question paper consists of 16 printed pages.

1 A person picks up the telephone after hearing it ring.

Which characteristics of living organisms is the person showing by this action?

- A excretion and reproduction
- B growth and respiration
- C movement and irritability (response)
- D nutrition and respiration

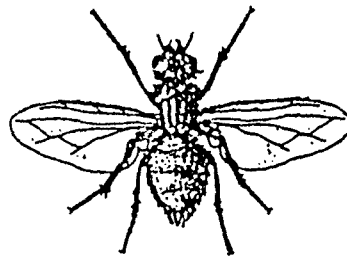
2 The drawing shows a ground squirrel.



Which feature identifies this animal as a mammal?

- A eye
- B four limbs
- C fur
- D tail

3 The diagram shows an animal.

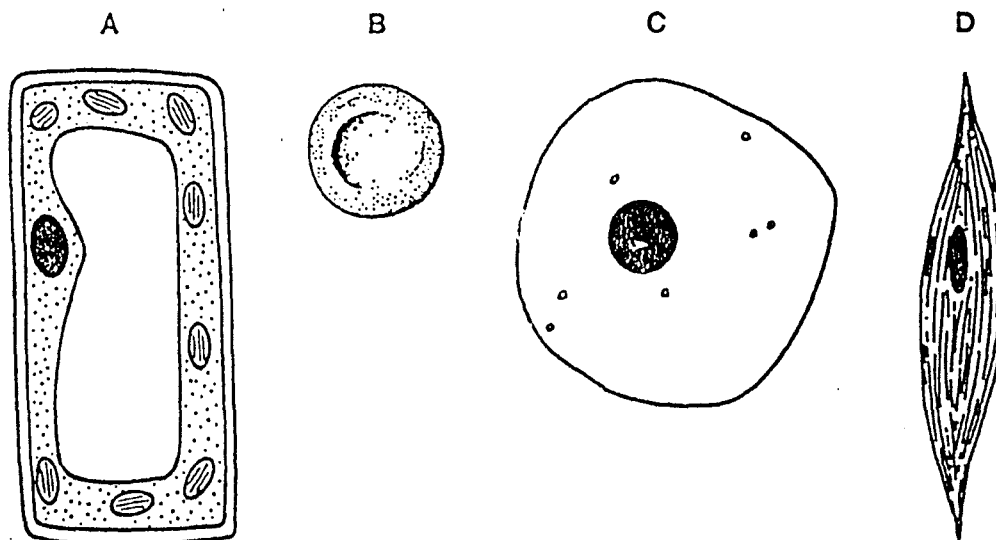


Using the key, what is the identity of the animal?

- 1 wings present ..... 2
- wings absent ..... 3
- 2 one pair of wings ..... animal A
- two pairs of wings ..... animal B
- 3 legs, three pairs ..... animal C
- legs, four pairs ..... animal D

4 The diagram shows four cells.

Which cell performs the function of contraction?



5 The table shows some features possessed by living cells.

	<i>large central vacuole</i>	<i>chloroplasts</i>	<i>cellulose cell wall</i>
P	✓	✓	✓
Q	x	✓	✓
R	x	x	✓
S	x	x	x

key

✓ feature present

x feature absent

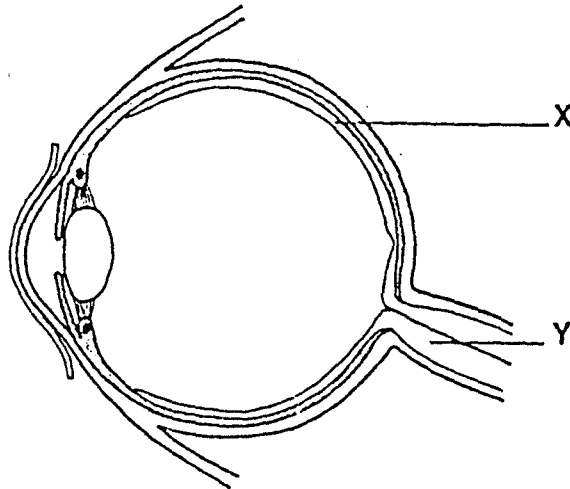
Which combination of features identifies a palisade cell and a liver cell?

	<i>palisade cell</i>	<i>liver cell</i>
A	P	Q
B	P	S
C	Q	R
D	Q	S

6 At which level of organisation is the kidney?

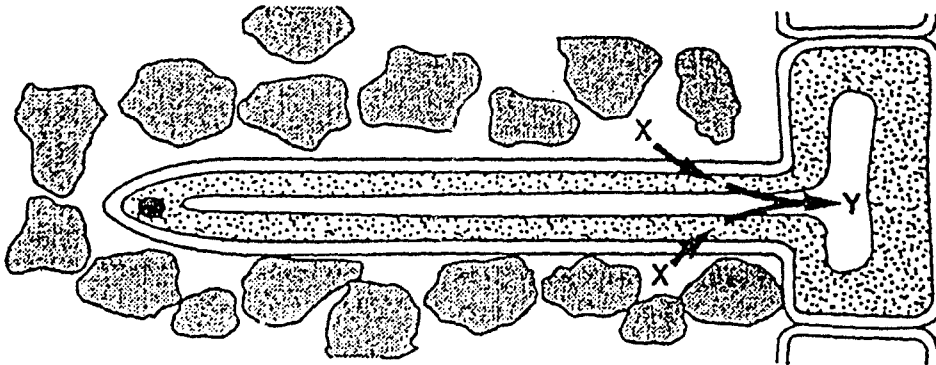
- A cell
- B organ
- C organ system
- D tissue

- 7 The diagram shows a section through an eye.



What are structures X and Y?

- A organs in an organ system
  - B organs in a tissue
  - C organ systems in an organ
  - D tissues in an organ
- 8 The arrows in the diagram show the diffusion of oxygen into a root hair cell from X to Y.

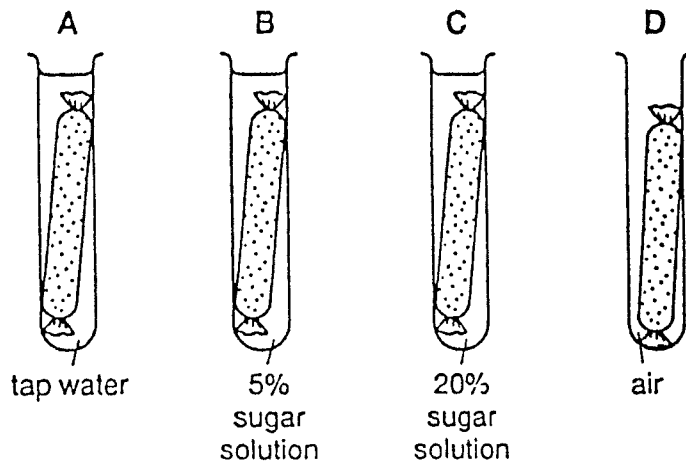


What causes this diffusion of oxygen?

- A a higher concentration of carbon dioxide at X than at Y
- B a lower concentration of carbon dioxide at X than at Y
- C a higher concentration of oxygen at X than at Y
- D a lower concentration of oxygen at X than at Y

- 9 The diagram shows four identical pieces of tubing made from a partially permeable membrane. The pieces of tubing were filled with 5% sugar solution and left as shown for six hours.

Which piece of tubing showed an increase in volume?



- 10 An enzyme is a

- A fat.
- B mineral salt.
- C protein.
- D vitamin.

- 11 In an experiment, four test-tubes containing salivary amylase and starch were set up under the conditions shown in the table.

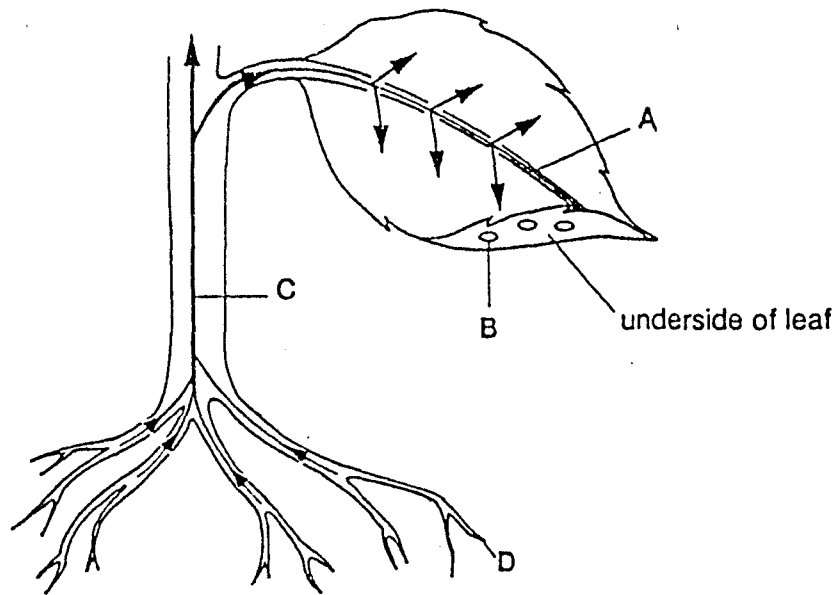
In which test-tube was the starch broken down most quickly?

	<i>test-tube</i>			
	A	B	C	D
<i>pH</i>	3	3	7	7
<i>temperature / °C</i>	20	37	20	37



12 The diagram shows the pathway of water through a plant.

Where does transpiration take place?

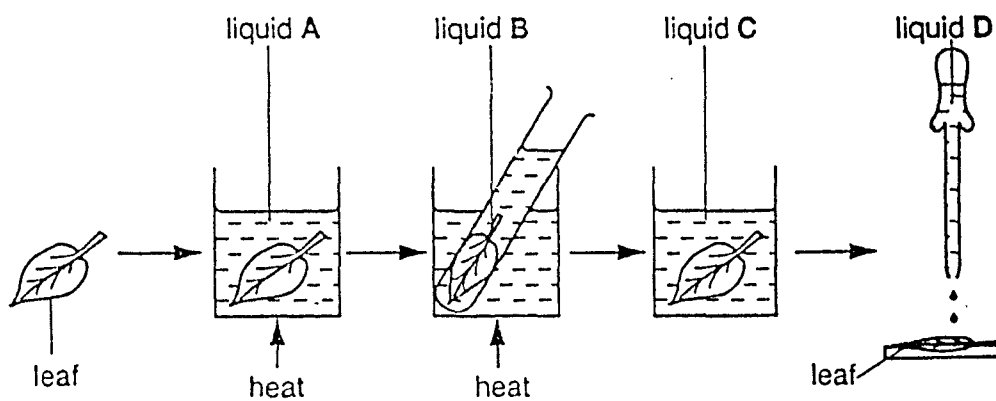


13 Which substance in the leaf of a green plant contains magnesium?

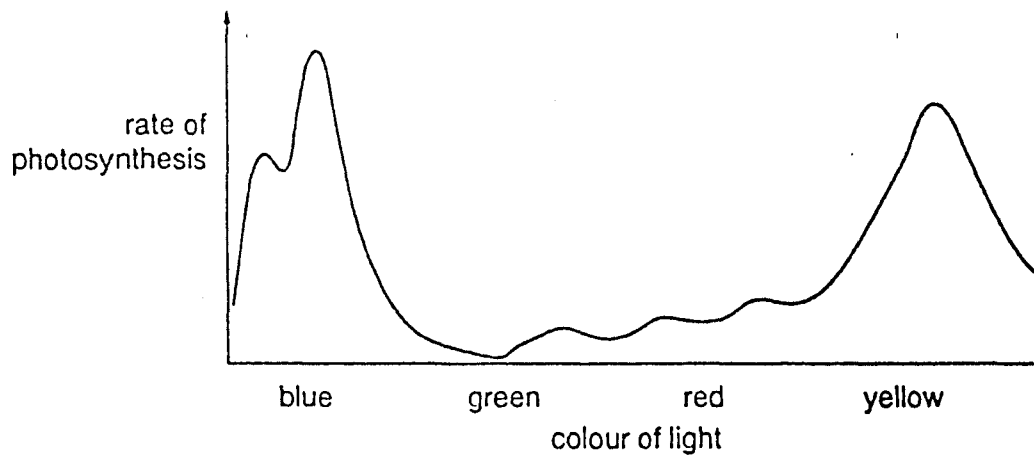
- A chlorophyll
- B fat
- C glucose
- D starch

14 The diagram shows the stages in testing a green leaf for starch.

Which liquid could be alcohol (methylated spirits)?

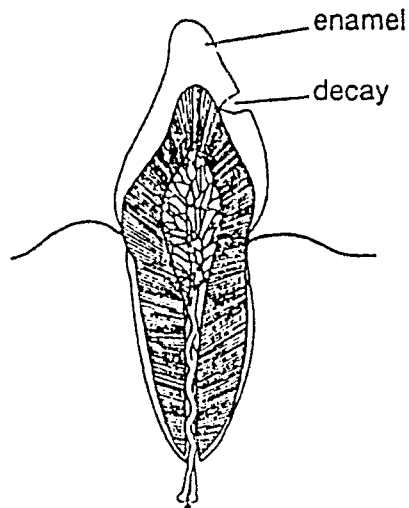


- 15 The graph shows the rate of photosynthesis of a green plant when exposed to light of different colours.



In which colour of light would plants synthesise most slowly?

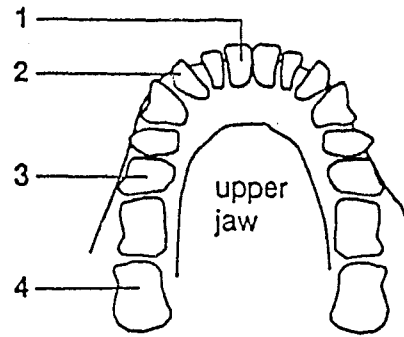
- A blue
  - B green
  - C red
  - D yellow
- 16 The diagram shows a tooth which shows signs of decay.



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

- A acid
- B saliva
- C sugar
- D toothpaste

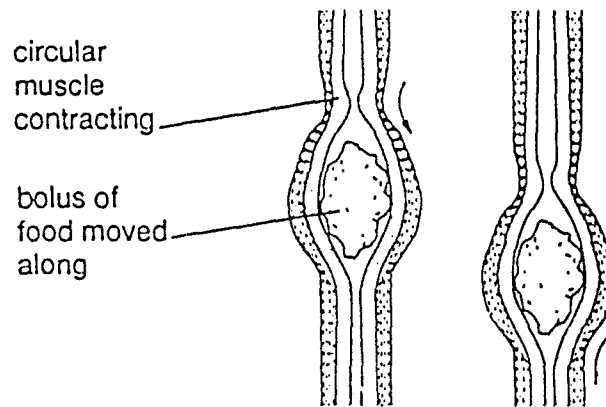
17 The chart shows the human teeth of the upper jaw.



Which teeth are used mainly for cutting pieces of food?

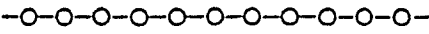
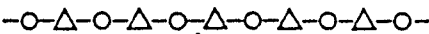

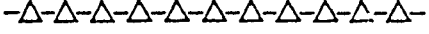
- A 1 and 2      B 1 and 3      C 2 and 4      D 3 and 4

18 Which process is shown in the diagrams of the oesophagus?







- A assimilation  
 B chewing  
 C egestion  
 D peristalsis

19 Which of the following shows the structure of a fat?

- A   
 B   
 C   
 D 

key

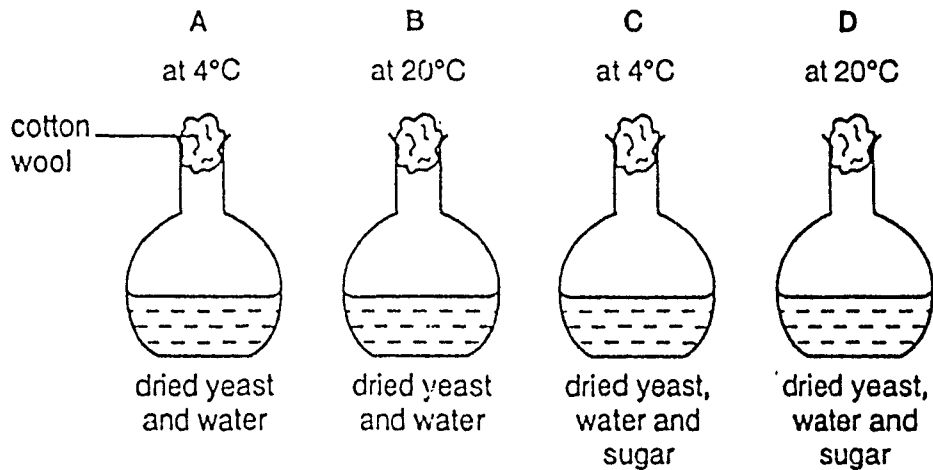
-  = glucose  
 = amino acid  
 = glycerol  
 = fatty acid

20 Which substance is produced by anaerobic respiration in muscles?

- A ethanol (alcohol)
- B glucose
- C lactic acid
- D oxygen

21 Four flasks were sterilised and set up as shown.

Which flask will show signs of fermentation (anaerobic respiration) after several hours?



22 What happens in the skin of someone who is running a race on a hot day?

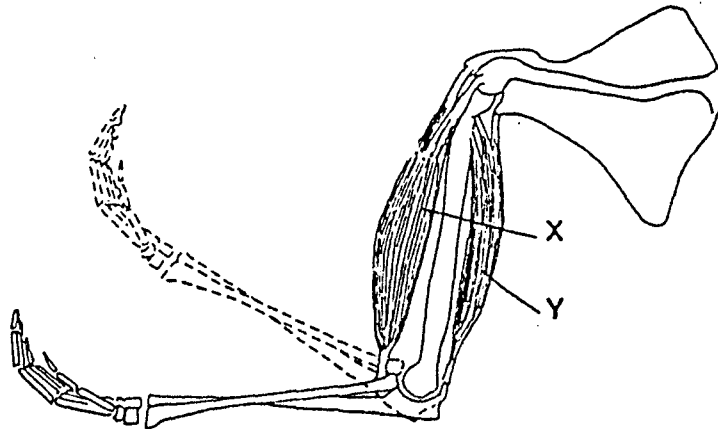
	<i>vasodilation</i>	<i>vasoconstriction</i>	<i>sweating</i>
<b>A</b>	x	✓	✓
<b>B</b>	x	✓	x
<b>C</b>	✓	x	✓
<b>D</b>	✓	x	x

key

✓ process occurs

x process does not occur

23 The diagram shows muscles in a human arm.

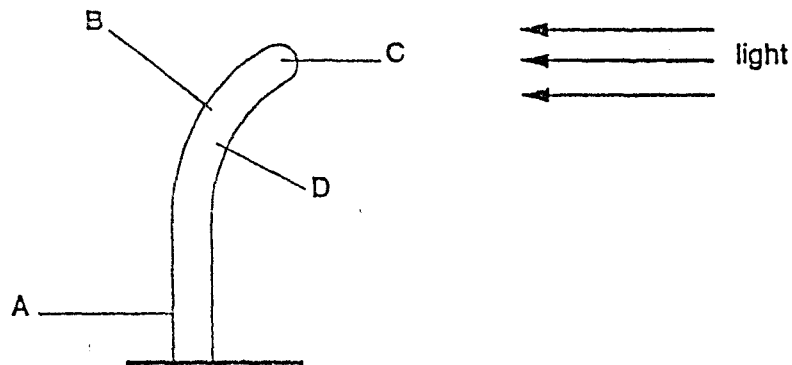


What happens to muscle X and muscle Y when the lower arm is raised?

	X	Y
A	contracts	contracts
B	contracts	relaxes
C	relaxes	contracts
D	relaxes	relaxes

24 The diagram shows the shoot of a plant growing towards light shining from one side.

In which part of the shoot do the cells have the fastest rate of growth?



25 Which method of contraception will also help to prevent the spread of AIDS?

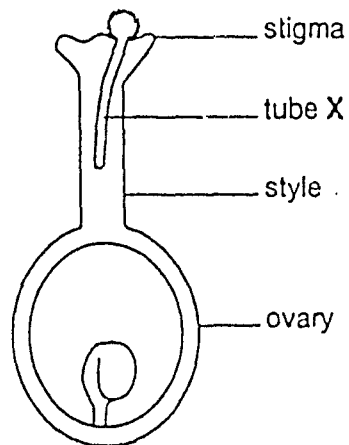
- A condom/sheath
- B contraceptive pill
- C intra-uterine device (IUD/loop)
- D sterilisation

26 New plants sometimes grow from the buds of parent plants.

This is an example of

- A asexual reproduction.
- B fertilisation.
- C fruit development.
- D sexual reproduction.

27 The diagram shows the carpel of a flower just after pollination.

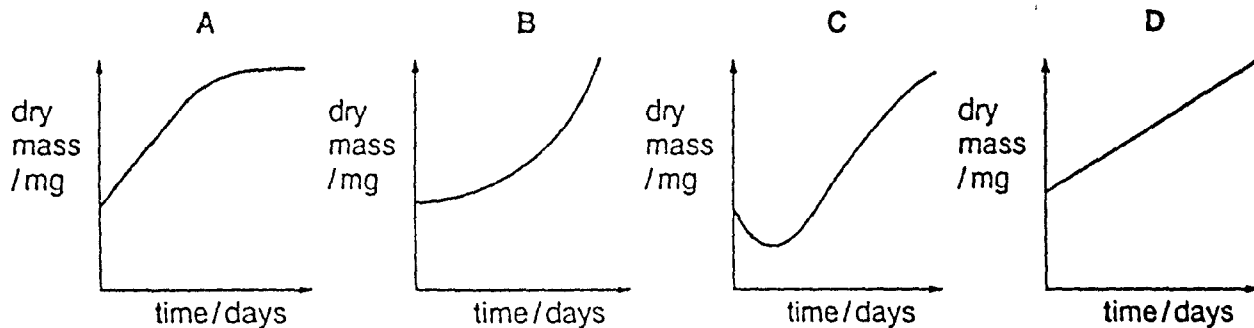


What passes along tube X?

- A a male gamete
  - B an ovule
  - C a pollen grain
  - D a seed
- 28 What causes the radicle of a young seedling to grow in length?
- A a decrease in rate of respiration
  - B an increase in rate of photosynthesis
  - C meiosis and cell elongation
  - D mitosis and cell elongation

29 When a seed germinates, it uses up stored food before its shoot appears above the ground.

Which diagram represents the changes in dry mass of a seed during germination and seedling development?



30 What are the chromosomes for the two sexes in human beings?

	<i>female</i>	<i>male</i>
A	XX	XY
B	XX	YY
C	XY	XX
D	YY	XY

31 In a cross between heterozygous parents, what would be the proportions of genotypes expected in the offspring?

	<i>homozygous dominant</i>		<i>heterozygous</i>		<i>homozygous recessive</i>
A	2	:	1	:	1
B	2	:	1	:	2
C	1	:	2	:	1
D	1	:	1	:	2

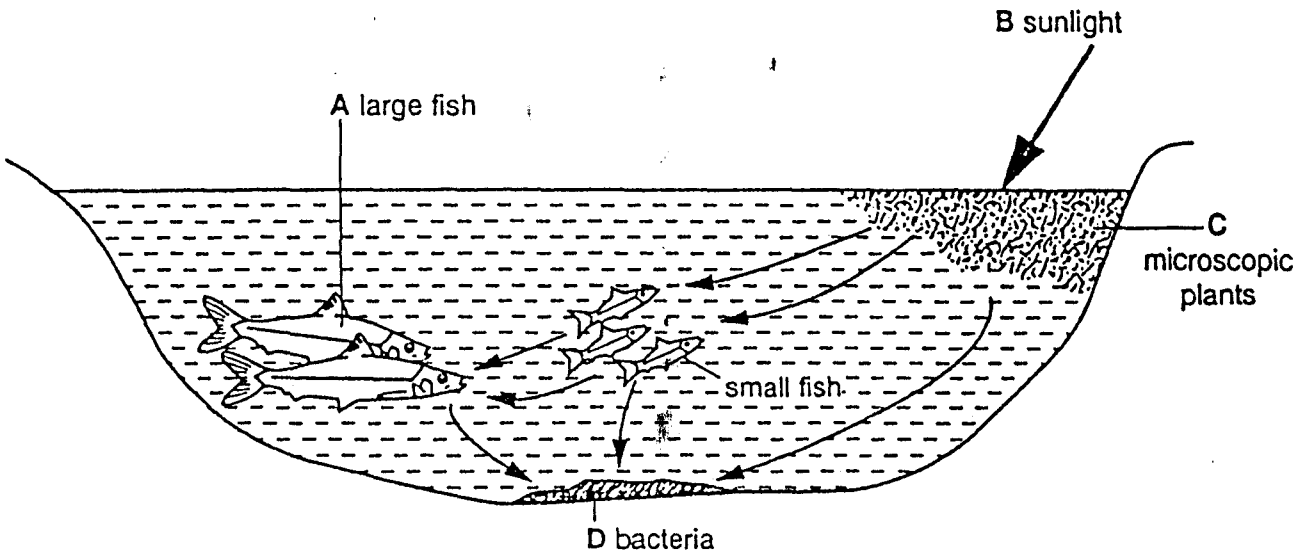
32 Pure breeding, tall pea plants are crossed with pure breeding, short pea plants. The resulting offspring ( $F_1$ ) are all tall:

Which terms describe the  $F_1$  generation?

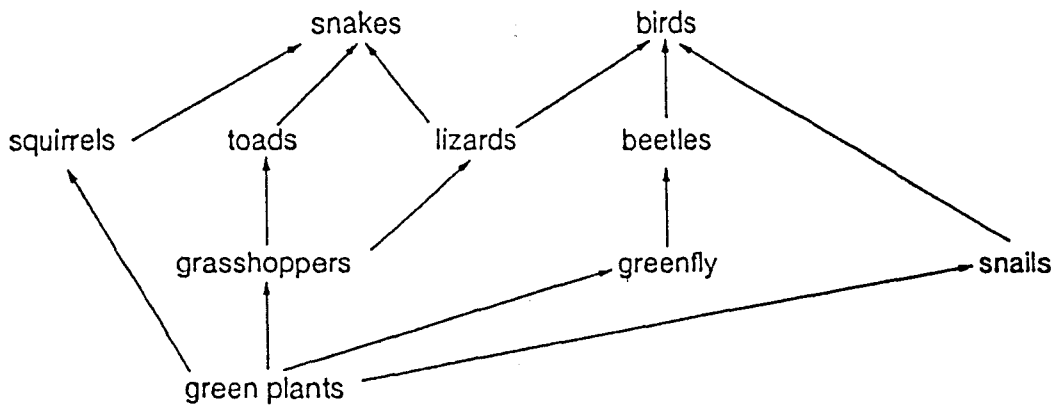
- A heterozygous, with shortness dominant
- B heterozygous, with tallness dominant
- C homozygous dominant
- D homozygous recessive

33 The diagram shows some of the organisms in a food web in a pond.

What is the main source of energy for this food web?



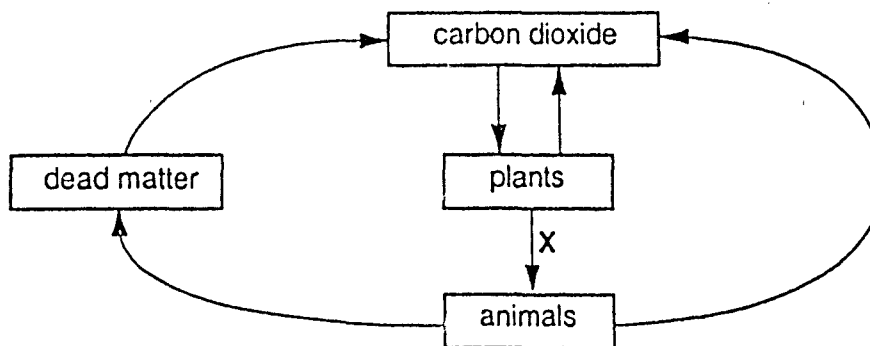
34 In the food web shown, which organism is most likely to increase in number if the number of snakes increases?



- A birds
- B grasshoppers
- C lizards
- D squirrels



35 The diagram shows part of the carbon cycle.

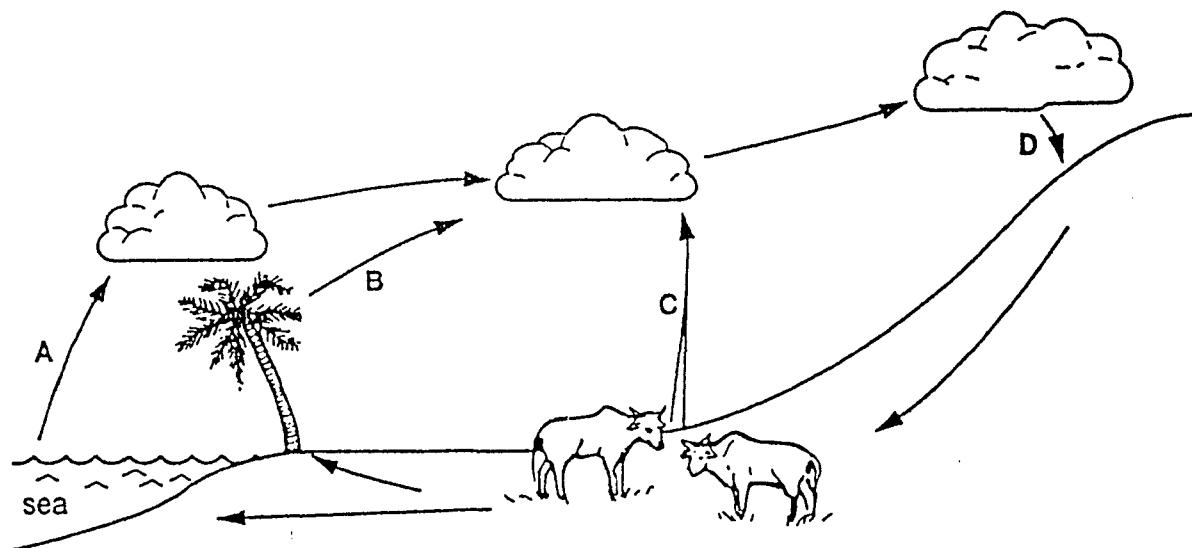


What does arrow X represent?

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

36 The diagram represents stages in the water cycle.

At which stage is the water in liquid form?



37 The table shows factors affecting change of population in four countries.

Which country has the greatest rate of population increase?

country	number of births per thousand	number of deaths per thousand	number of immigrants entering country per thousand	number of emigrants leaving country per thousand
A	15	16	6	9
B	15	17	9	6
C	16	15	7	7
D	17	15	9	7

38 Four types of water pollution that may affect rivers are listed.

Which pollutant is a pesticide?

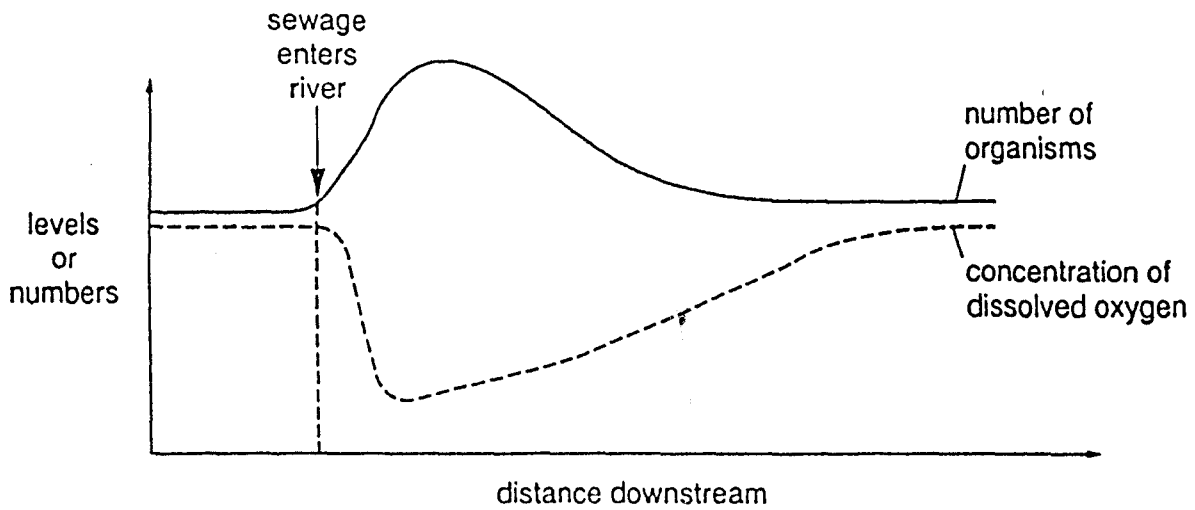
<i>pollutant</i>	<i>source of pollution</i>	<i>effects</i>
A	farming	causes excessive plant growth followed by decay
B	farming	poisons animals including humans
C	industry	kills water plants and fish
D	industry	dissolves in rain, making rivers acidic

39 Four sets of possible environmental changes resulting from human activities are listed.

Which set of changes is most likely as a result of deforestation?

<i>set of changes</i>	<i>risk of landslides</i>	<i>CO<sub>2</sub> content of air</i>
A	increased	increased
B	increased	decreased
C	decreased	increased
D	decreased	decreased

40 The graph shows how untreated sewage affects a river.



Which type of organisms are referred to in the graph?

- A bacteria
- B fish
- C floating plants
- D rooted plants

International General Certificate of Secondary Education  
UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE

BIOLOGY

0610/1

PAPER 1 Multiple Choice

Wednesday 22 NOVEMBER 1995 Morning 45 minutes

Additional materials:

Multiple Choice answer sheet

Soft clean eraser

Soft pencil (type B or HB is recommended)

TIME 45 minutes

INSTRUCTIONS TO CANDIDATES

Do not open this booklet until you are told to do so.

Write your name, Centre number and candidate number on the answer sheet in the spaces provided unless this has already been done for you.

There are forty questions in 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 very carefully the instructions on the answer sheet.

INFORMATION FOR CANDIDATES

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.

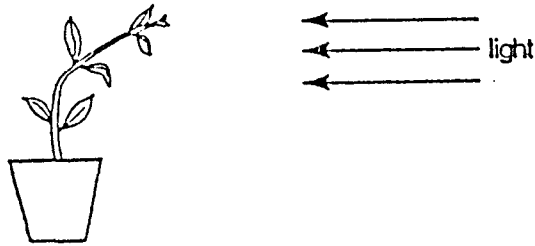
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This question paper consists of 16 printed pages.

1 Which of the following is a chemical reaction releasing energy in all living organisms?

- A excretion
- B movement
- C reproduction
- D respiration

2 The diagram shows a plant which has received light from one side only.



Which characteristics is the plant showing?

- A excretion and growth
  - B growth and irritability (response)
  - C irritability (response) and reproduction
  - D reproduction and nutrition
- 3 The table shows the characteristics of four animals.

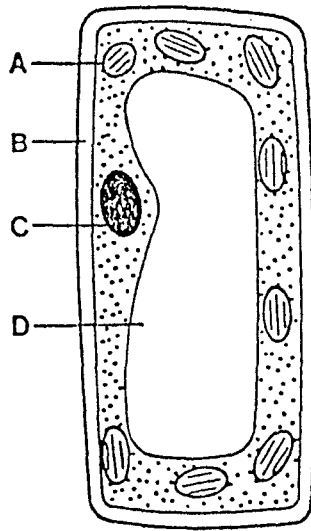
Which animal is a fish?

animal	characteristics		
	fins	fur	scales
A	✓	x	x
B	x	✓	x
C	x	x	✓
D	✓	x	✓

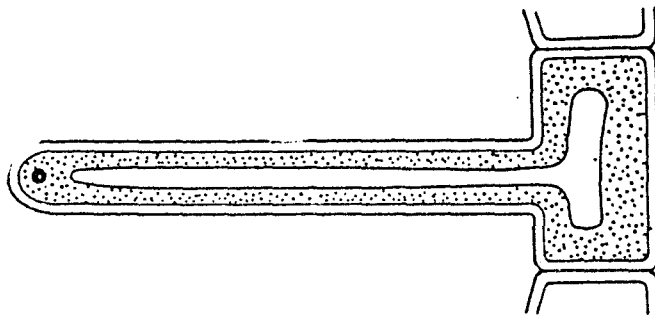
key  
 ✓ = present  
 x = absent

4 The diagram shows a plant cell.

In which part does photosynthesis take place?



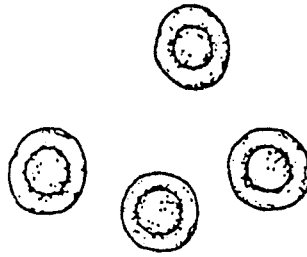
5 The diagram shows a cell.



Why is it 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.

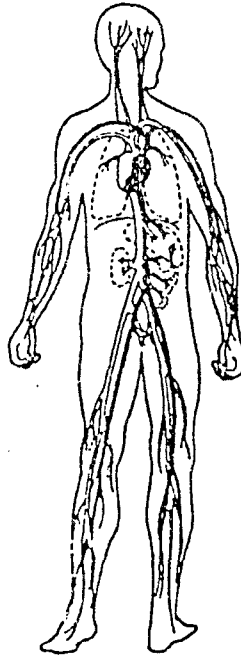
- 6 The diagram shows some cells from the human body.



What is the function of these cells and to which organ system do they belong?

- |   | <i>function</i> | <i>organ system</i> |
|---|-----------------|---------------------|
| A | absorption      | digestive           |
| B | response        | nervous             |
| C | support         | muscular            |
| D | transport       | circulatory         |

- 7 The diagram shows some blood vessels in the human body.



The structures shown are all parts of the same

- A cell.
- B organ.
- C organ system.
- D tissue.

8 Which structure is adapted for the diffusion of gases?

- A alveolus
- B diaphragm
- C oesophagus
- D trachea

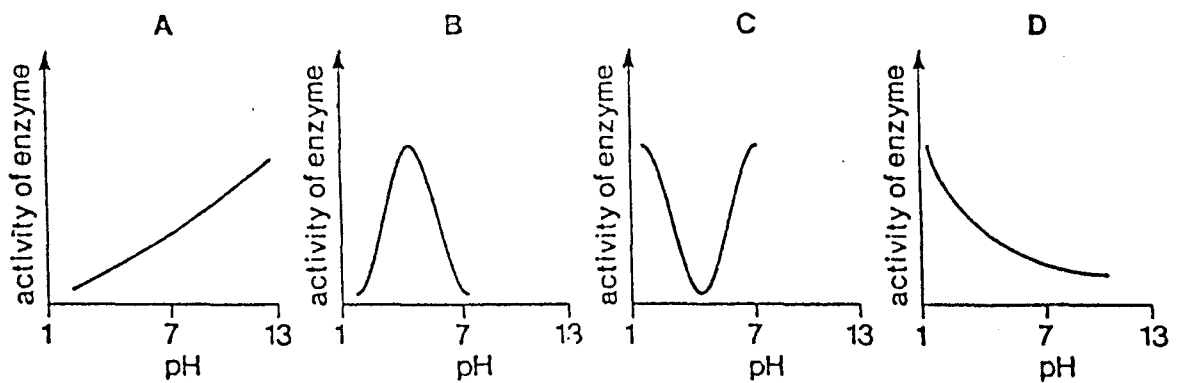
9 The diagrams show a cell before and after it was placed in a concentrated salt solution.



Why did the cell change shape?

- A Salt solution entered the cell.
  - B The cell membrane burst.
  - C Water entered the cell by osmosis.
  - D Water moved out of the cell.
- 10 What helps proteins to change into polypeptides?
- A antibodies
  - B auxins
  - C enzymes
  - D hormones

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





12 The following substances are found in the leaf of a plant.

Which one is obtained mainly from the soil?

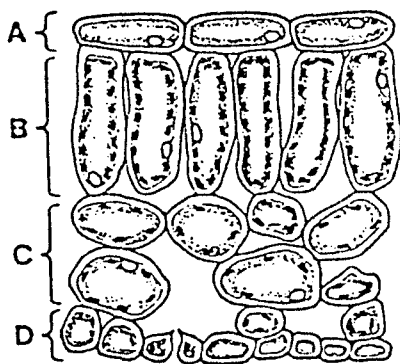
- A carbon dioxide
- B chlorophyll
- C glucose
- D mineral salts

13 By which process does a plant lose water to the atmosphere?

- A photosynthesis
- B respiration
- C translocation
- D transpiration

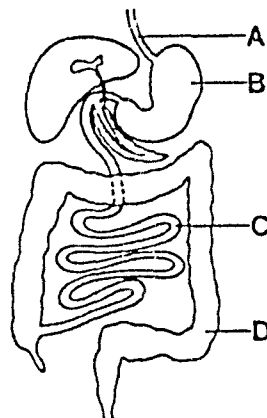
14 The diagram shows a section through a leaf.

During photosynthesis, where would the greatest conversion of light energy to chemical energy take place?



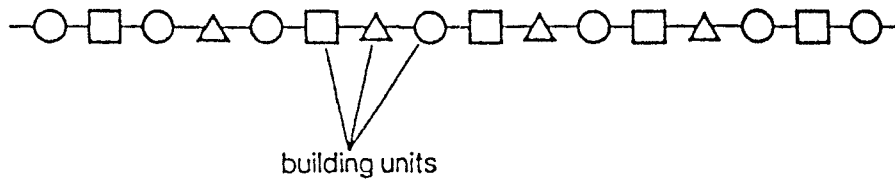
15 The diagram shows the human alimentary canal.

In which structure is most digested food absorbed?



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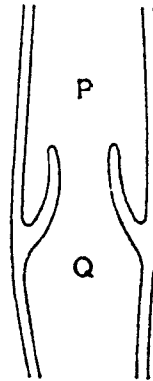
16 The diagram shows the structure of a protein molecule.



What are the building units of a protein molecule?

- A amino acids
- B fatty acids
- C mineral salts
- D simple sugars

17 The diagram shows a section through a blood vessel.



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

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

18 The results of food tests carried out on four substances are listed.

Which substance was a reducing sugar, e.g. glucose?

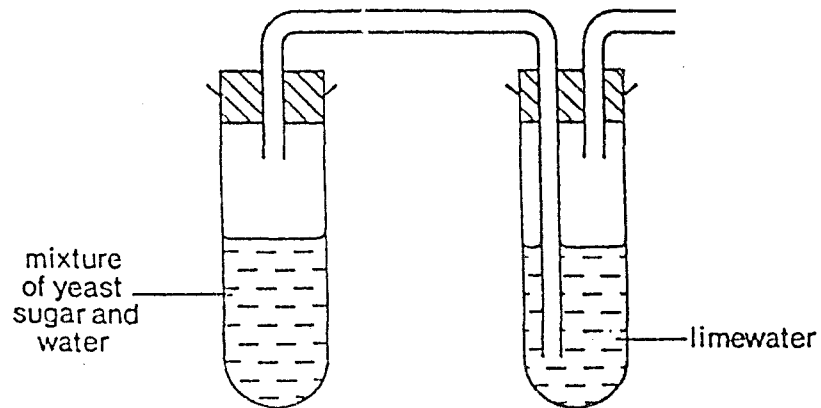
substance	iodine test	Benedict's reagent	biuret reagent	ethanol
A	blue-black	blue	blue	clear
B	brown	brick-red	blue	clear
C	brown	blue	violet	clear
D	brown	blue	blue	milky

19 A girl breathes in air, holds her breath for 30 seconds, and then breathes out.

Compared with the air she breathes in, the air she breathes out contains more

- A carbon dioxide and water vapour.
- B nitrogen and water vapour.
- C oxygen and carbon dioxide.
- D oxygen and nitrogen.

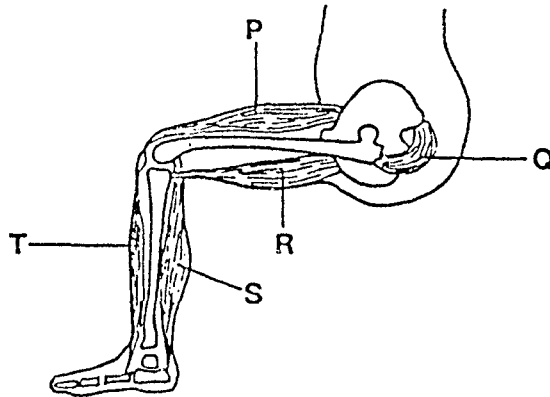
20 The apparatus shown was set up and left for one hour.



Which gas caused the limewater to go cloudy?

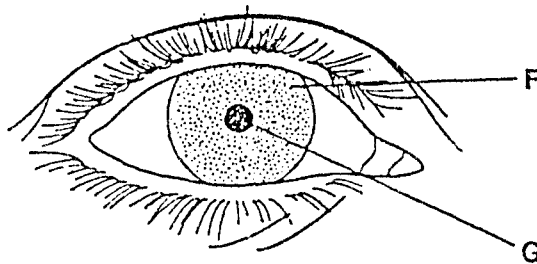
- A carbon dioxide
- B hydrogen
- C oxygen
- D sulphur dioxide

- 21 What is the definition of excretion?
- A the breakdown of starch molecules
  - B the liberation of energy from food
  - C the release of faeces from the body
  - D the removal of the waste products of metabolism
- 22 The diagram shows the muscles of the human leg.



Which muscles form antagonistic pairs?

- A P with Q; R with S
  - B P with R; S with T
  - C P with S; Q with R
  - D P with T; R with S
- 23 The diagram shows the eye of a person in a brightly lit room.



What happens to F and G when this person moves into a dimly lit room?

- | F                 | G               |
|-------------------|-----------------|
| A becomes larger  | becomes smaller |
| B becomes smaller | stays the same  |
| C becomes smaller | becomes larger  |
| D stays the same  | stays the same  |

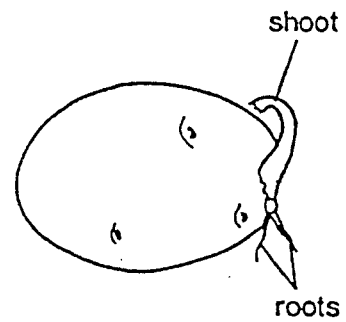
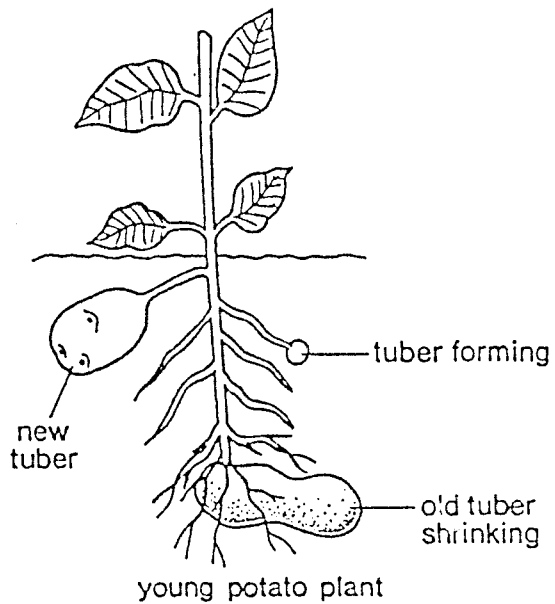
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[Turn over

24 Pollination involves the transfer of pollen grains to which part of the flower?

- A anther
- B nectary
- C petal
- D stigma

25 The diagram shows reproduction in a potato plant.

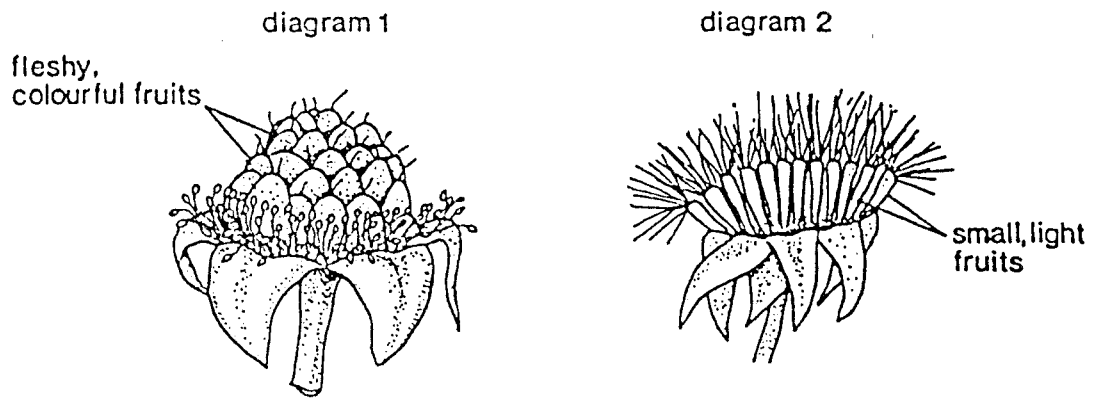


new tuber shooting

Which process is shown?

- A gamete production
- B sexual reproduction
- C spore formation
- D vegetative reproduction

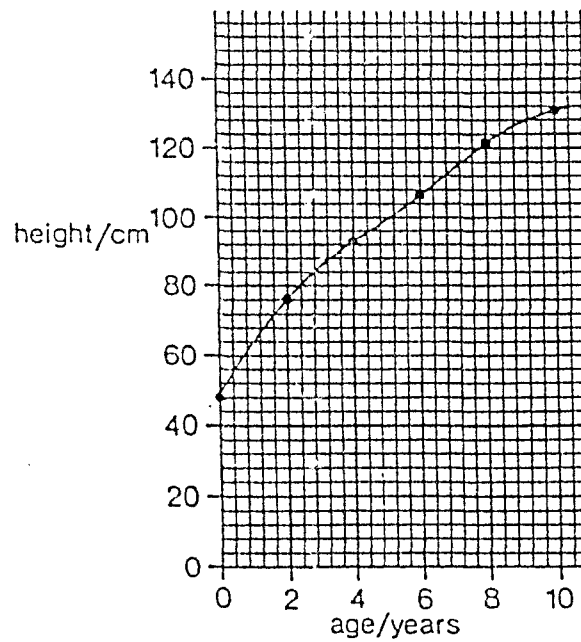
26 The diagrams show two kinds of fruit.



How are the seeds of these fruits dispersed?

- |   | <i>diagram 1</i> | <i>diagram 2</i> |
|---|------------------|------------------|
| A | birds            | mammals          |
| B | mammals          | birds            |
| C | mammals          | wind             |
| D | wind             | mammals          |

27 The graph shows the height of a child, from birth to the age of 10.



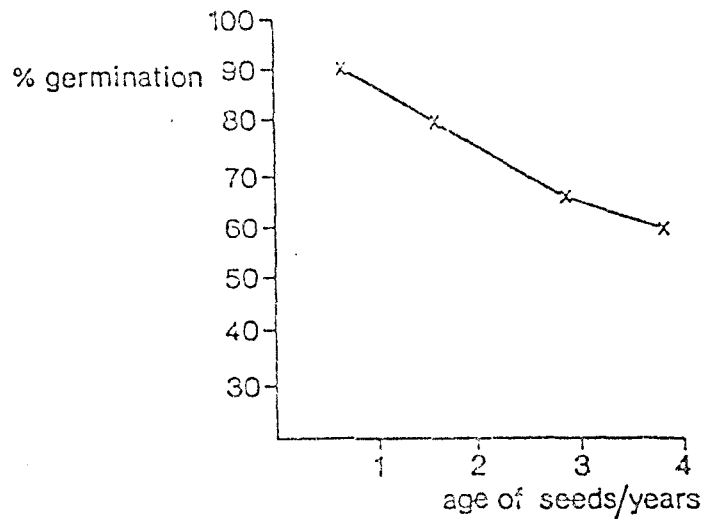
What was the length of the baby at birth?

- A 20 cm      B 48 cm      C 60 cm      D 130 cm

28 What are the best conditions for the germination of most seeds?

	<i>oxygen</i>	<i>light</i>	<i>water</i>	<i>temperature</i>
A	absent	present	present	20 °C
B	absent	present	present	4 °C
C	present	absent	present	20 °C
D	present	present	absent	4 °C

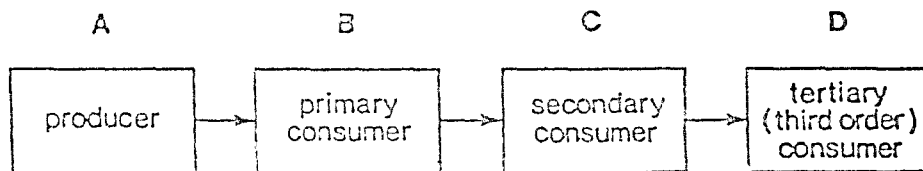
29 The graph shows the effect of age on the germination of some seeds.



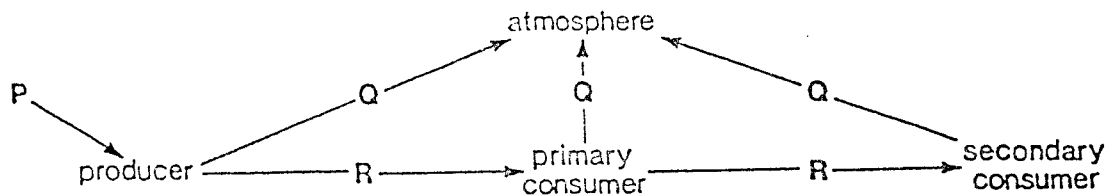
What can be concluded from this graph?

- A Older seeds germinate best.
  - B Older seeds do not germinate.
  - C Younger seeds always germinate.
  - D Younger seeds germinate best.
- 30 Within a group of humans, what is an example of continuous variation?
- A adult height
  - B blood groups
  - C Down's syndrome
  - D two sexes

- 31 In living organisms, males and females can always be distinguished by their different
- A amount of muscle.
  - B body colour.
  - C gametes.
  - D sizes.
- 32 Two pea plants, heterozygous for the same pair of alleles, were crossed and produced 300 offspring.
- Approximately how many of the offspring would be expected to show the dominant phenotype?
- A 75      B 150      C 225      D 300
- 33 The diagram shows the types of organisms in a typical food chain.
- Which type of organism obtains its food by photosynthesis?



- 34 The diagram shows the flow of energy in a food chain.

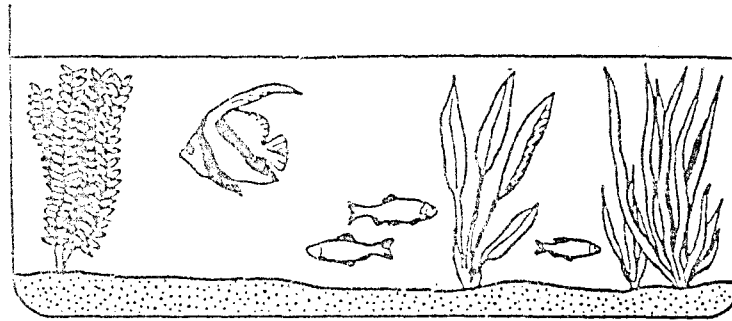


What are the types of energy P, Q and R?

- |   | P        | Q        | R        |
|---|----------|----------|----------|
| A | chemical | light    | heat     |
| B | heat     | chemical | light    |
| C | light    | heat     | chemical |
| D | solar    | chemical | heat     |



35 Oxygen concentrations were measured in this aquarium.



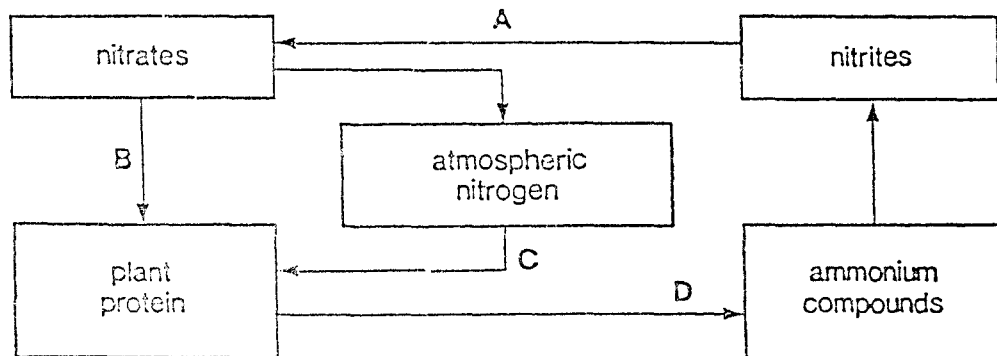
The oxygen concentration increased during daylight and decreased at night.

Which processes caused these results?

- | <i>O<sub>2</sub> increase</i><br>(day) | <i>O<sub>2</sub> decrease</i><br>(night) |
|--|--|
| A decay                                | nutrition                                |
| B movement                             | photosynthesis                           |
| C nutrition                            | decay                                    |
| D photosynthesis                       | respiration                              |

36 The diagram shows a simplified nitrogen cycle.

Which arrow represents the process that does not involve bacteria?



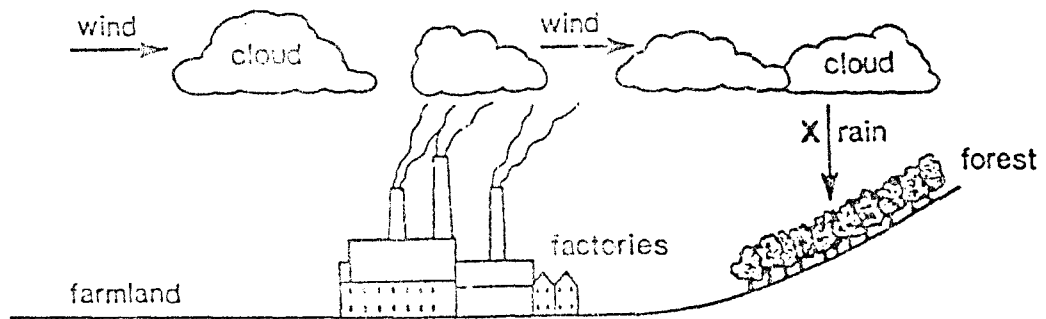
37 The table shows the population of rabbits on an island, over five years.

year	population size
1	5200
2	5800
3	6400
4	6900
5	230

What could have caused the change in population size between years 4 and 5?

- A less pollution
- B more predators
- C plenty of food
- D resistance to disease

38 The diagram shows the use of an area of land.

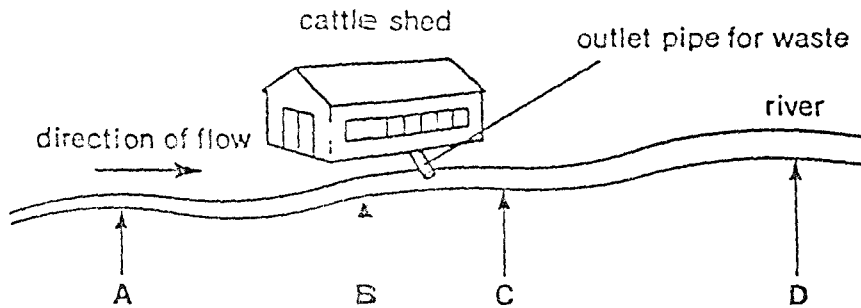


Which pollutant is likely to be found in the rain at X?

- A herbicide
- B inorganic waste
- C pesticide
- D sulphur dioxide

39 The diagram shows a cattle shed near a river.

At which point will the concentration of nitrogen compounds in the river water be highest?



40 The table records the levels of radioactive substances for a lake into which waste radioactive substances were discharged.

sample taken from:	concentration of radioactive substances/arbitrary units
water	1
mud	20
water plants	300
small fish	1000
large fish	3000

The table shows that the concentration of radioactivity

- A decreased along a food chain.
- B increased along a food chain.
- C was higher in producers than in consumers.
- D was the same in producers and consumers.

International General Certificate of Secondary Education  
UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE

**BIOLOGY**

**0610/1**

PAPER 1 Multiple Choice

Thursday

6 JUNE 1996

Morning

45 minutes

Additional materials:

Multiple Choice answer sheet

Soft clean eraser

Soft pencil (type B or HB is recommended)

TIME 45 minutes

**INSTRUCTIONS TO CANDIDATES**

Do not open this booklet until you are told to do so.

Write your name, Centre number and candidate number on the answer sheet in the spaces provided unless this has already been done for you.

There are forty questions in 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 very carefully the instructions on the answer sheet.

**INFORMATION FOR CANDIDATES**

Each correct answer will score one mark. A mark will not be deducted for a wrong answer.

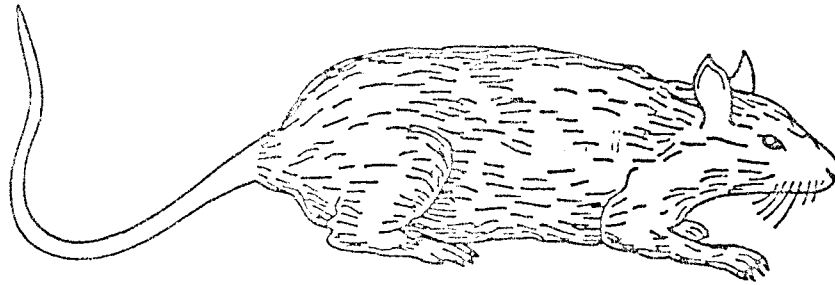
Any rough working should be done in this booklet.

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This question paper consists of 15 printed pages and 1 blank page.

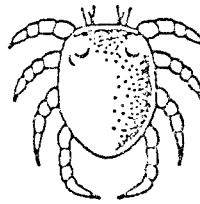
- 1 Two characteristics of all living organisms are
- A breathing and reproduction.
  - B reproduction and respiration.
  - C respiration and photosynthesis.
  - D photosynthesis and excretion.

2 The diagram shows some external features of a rat.

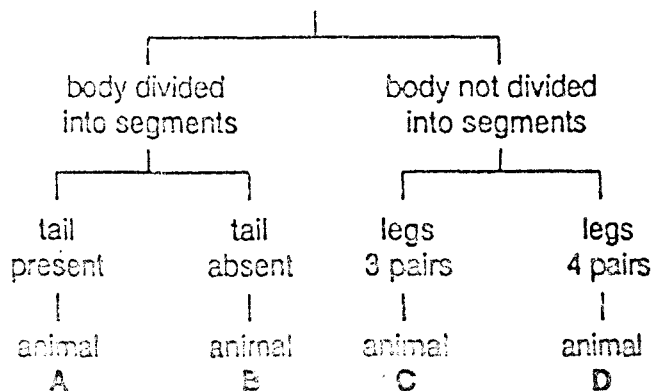


Which features, seen in the diagram, show that a rat is a mammal?

- A diaphragm and lungs
  - B fur and whiskers
  - C legs and tail
  - D milk and sweat production
- 3 The diagram shows a pond animal.

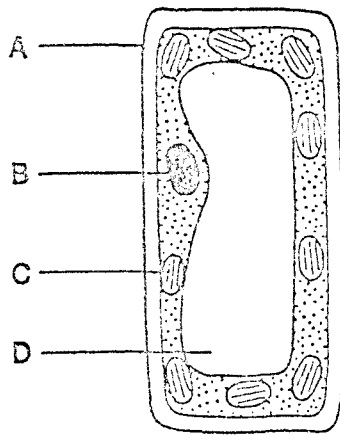


Using the key, which pond animal is it?



- 4 The diagram shows the structure of a palisade cell from a leaf.

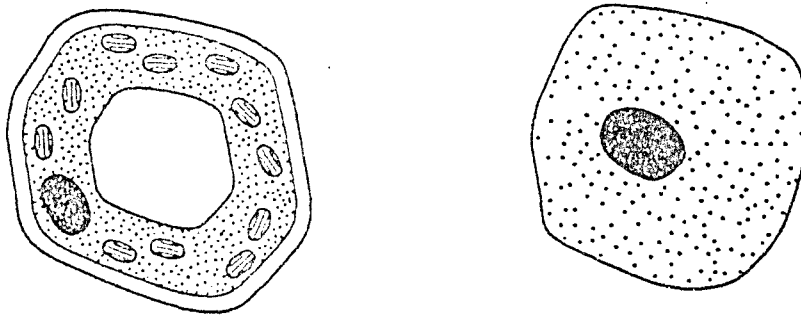
Which structure contains chlorophyll?



- 5 Which term is used to describe a group of palisade cells?

- A organ
- B organ system
- C organism
- D tissue

- 6 The diagram shows two cells.



Which two parts are found in both cells?

- A cell membrane and cell wall
- B cell wall and vacuole
- C vacuole and nucleus
- D nucleus and cell membrane

7 Which of the following describes red blood cells?

- |   | <i>shape</i> | <i>nucleus</i> |
|---|--------------|----------------|
| A | circular     | absent         |
| B | circular     | present        |
| C | irregular    | absent         |
| D | irregular    | present        |

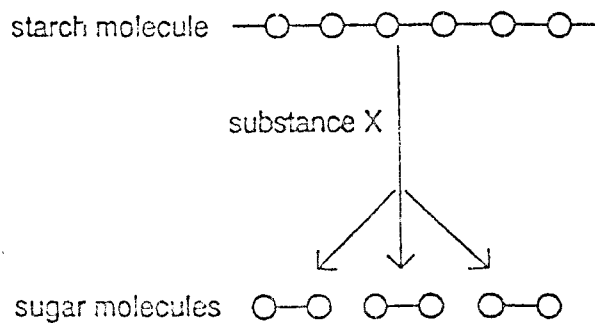
8 Which substance passes through a membrane by osmosis?

- A cell sap
- B mineral salts
- C oxygen
- D water

9 By which process does oxygen pass out of a leaf?

- A diffusion
- B egestion
- C translocation
- D transpiration

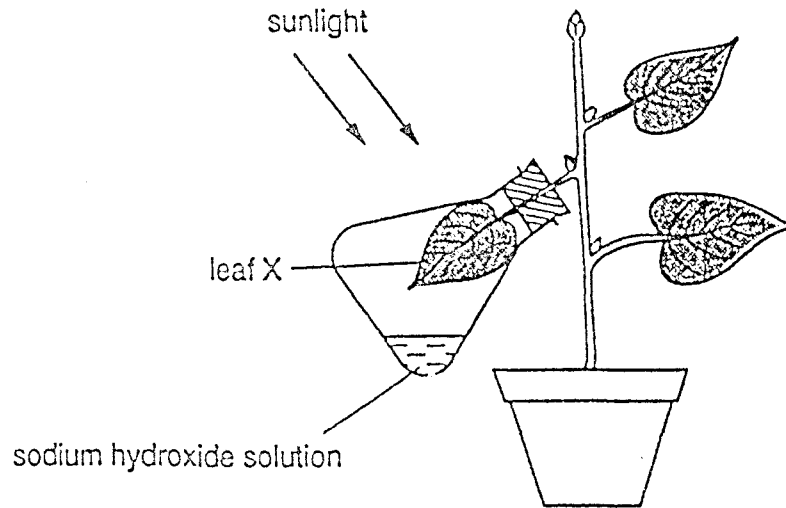
10 The diagram shows how a starch molecule in a leaf is broken down into smaller sugar molecules with the help of substance X.



What is substance X?

- A a carbohydrate
- B a hormone
- C a vitamin
- D an enzyme

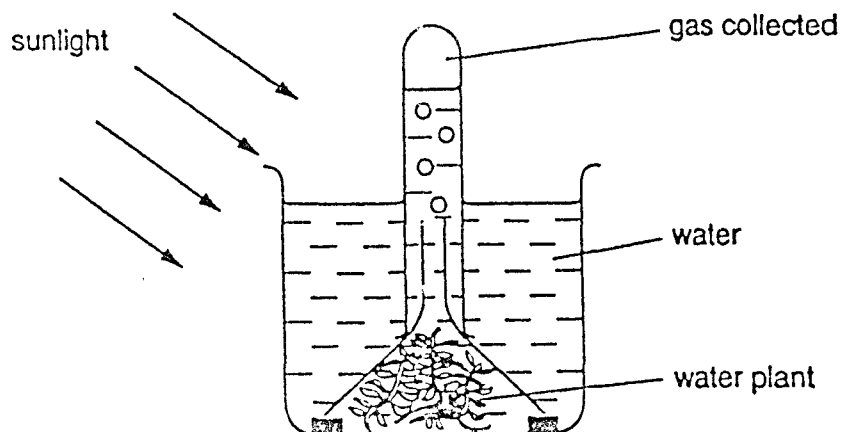
- 11 The diagram shows an experiment which was set up to investigate one of the requirements for photosynthesis.



Several hours later, no starch was found in leaf X.

Which requirement for photosynthesis was being investigated?

- A carbon dioxide
  - B chlorophyll
  - C sunlight
  - D water
- 12 The diagram shows gas being collected from a water plant in bright sunlight.



Which gas is being collected?

- A carbon dioxide
- B nitrogen
- C oxygen
- D water vapour



- 13 The table shows the average number of chloroplasts in four different types of cell taken from a leaf.

Which of the following is an epidermal cell?

<i>cell</i>	<i>average number of chloroplasts per cell</i>
A	920
B	370
C	47
D	0

- 14 What is made during photosynthesis?

- A carbon
- B chlorophyll
- C sugar
- D water

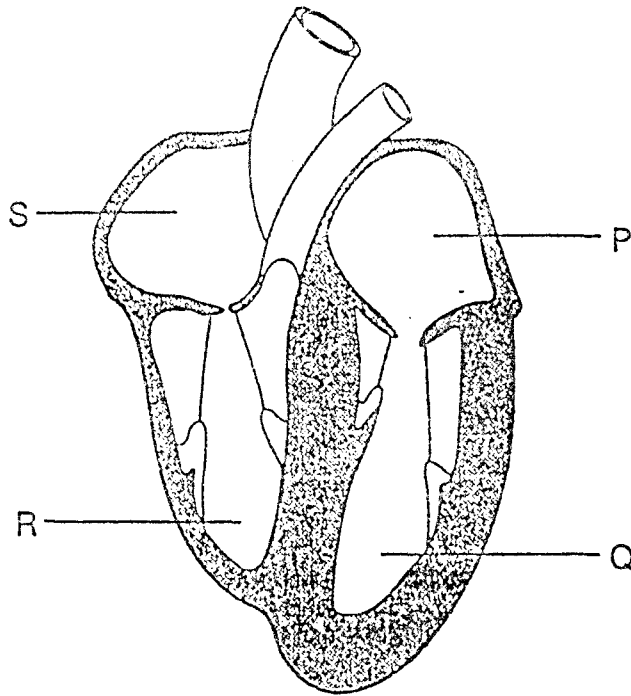
- 15 The table shows the percentage of students from two schools who have one or more decayed teeth.

	<i>percentage of students with decayed teeth</i>
school X	30
school Y	60

What might explain these results?

- A There is less calcium in the diet at school X than at school Y.
- B There is less fluoride in drinking water at school X than at school Y.
- C There is less sugar in the diet at school X than at school Y.
- D There is less vitamin D in the diet at school X than at school Y.

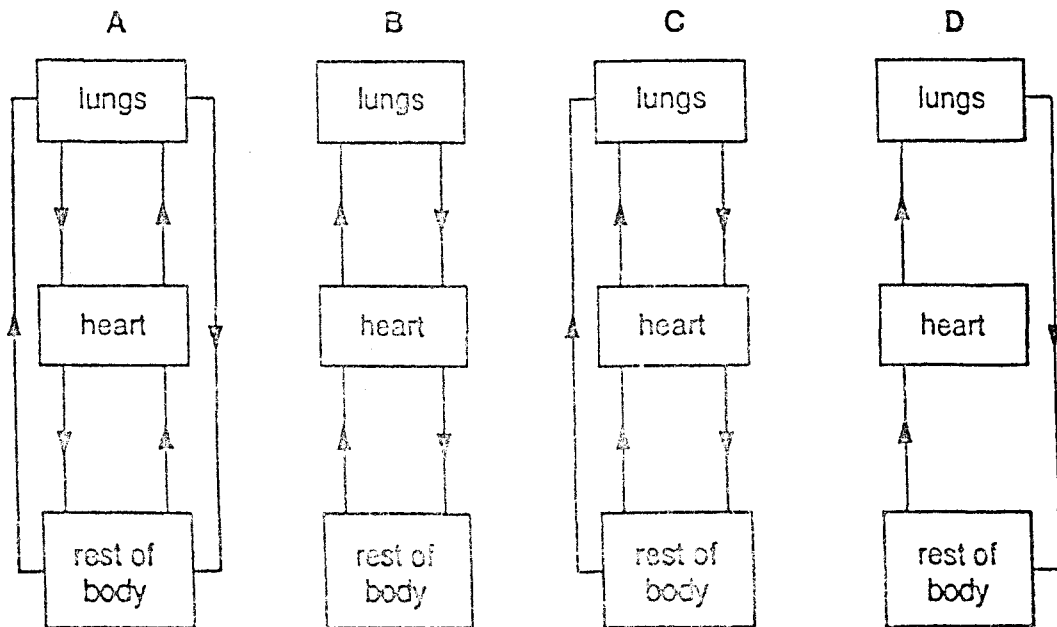
16 The diagram shows the four chambers of a human heart.



When blood returns to the heart from a leg, in which order does the blood pass through these chambers?

- A P → Q → S → R
- B Q → P → R → S
- C R → S → Q → P
- D S → R → P → Q

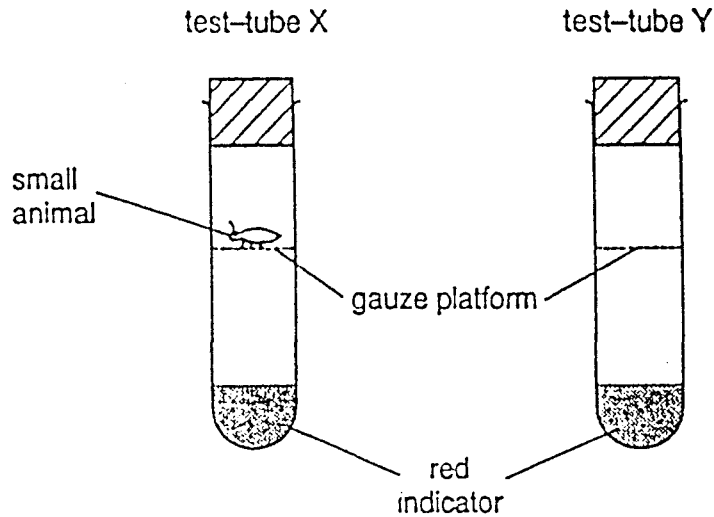
17 Which diagram best shows the double circulatory system of a mammal?



18 How much oxygen is expired (breathed out) from human lungs?

- A 30%      B 21%      C 16%      D 10%

19 An experiment was set up as shown.



The red indicator turns yellow when the amount of carbon dioxide increases.

After several hours, the indicator in test-tube X turned yellow. The indicator in test-tube Y remained red.

Which biological process caused the colour change?

- A digestion  
B respiration  
C sweating  
D transpiration

20 What happens when a person's body temperature rises above 37 °C?

	<i>sweating</i>	<i>vasodilation</i>	<i>vasoconstriction</i>
A	no	no	yes
B	no	yes	no
C	yes	no	yes
D	yes	yes	no

21 The table shows the composition of the urine of four people.

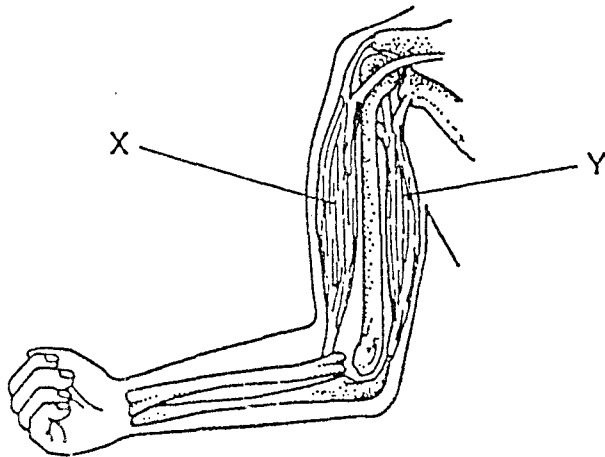
Which person is most likely to have been eating a lot of protein on a hot, dry, day?

person	urea content of urine	water content of urine
A	high	high
B	high	low
C	low	high
D	low	low

22 Which of the following is a simple reflex action?

- A A cat jumps over a fence when chased by a dog.
- B A girl waves back to a friend who is waving to her.
- C The pupil of the eye becomes very small in bright sunlight.
- D The skin bruises after a hard blow.

23 The diagram shows a human arm.



What happens to muscles X and Y when the arm is straightened?

- |   | X         | Y         |
|---|-----------|-----------|
| A | contracts | contracts |
| B | contracts | relaxes   |
| C | relaxes   | contracts |
| D | relaxes   | relaxes   |

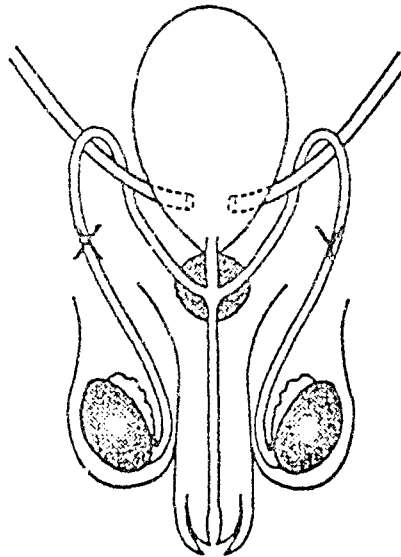
24 In human reproduction, where does fertilisation usually take place?

- A ovary
- B oviduct
- C uterus
- D vagina

25 In a flower, what is the function of an anther?

- A catching pollen grains from other flowers
- B making scent to attract insects
- C producing pollen grains
- D scattering seeds

26 The diagram shows the male reproductive system.



Which process is stopped by cutting and tying the tubes at X and Y?

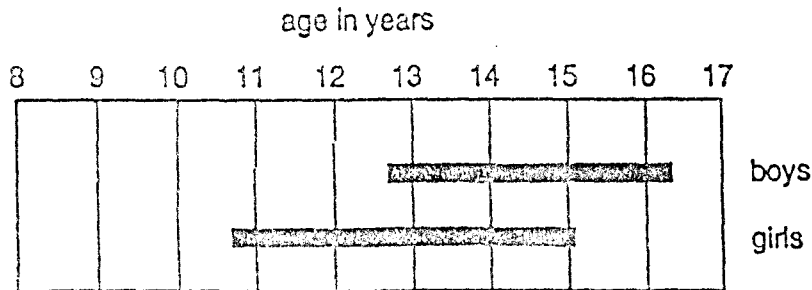
- A formation of fluids in the prostate gland
- B movement of sperms to the urethra
- C production of sperms in the testes
- D release of hormones from the testes

27 What is used to show that beans contain starch?

- A Benedict's solution
- B biuret test
- C ethanol and water
- D iodine solution

- 28 All humans have a 'growth spurt' (when rate of growth is high).

The diagram shows the range of ages at which the growth spurt usually occurs in boys and in girls.



- Which conclusion can be drawn from this diagram?
- A Boys are usually taller than girls.
  - B Boys usually grow faster than girls.
  - C The growth spurt usually occurs later in boys.
  - D The growth spurt usually lasts longer in boys.
- 29 In which of the following is mitosis the only form of cell division to occur?
- A anther
  - B ovary
  - C root tip
  - D testis
- 30 A heterozygous tall pea plant,  $Tt$ , is self-fertilised.
- What are the offspring most likely to be?
- A all tall plants
  - B all plants of medium height
  - C one tall plant to three short plants
  - D three tall plants to one short plant
- 31 What is unlikely to be affected by the environment?
- A blood group
  - B body mass
  - C health
  - D height

Questions 32 and 33 refer to the diagram which shows a food chain.



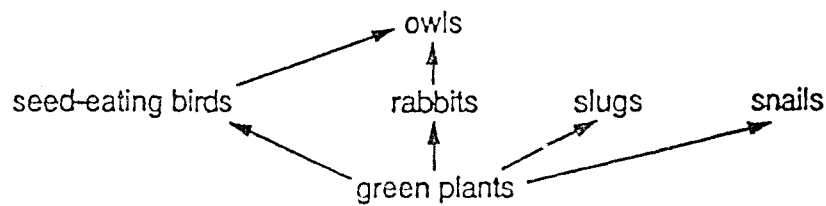
32 Which organism is a producer?

- A greenfly
- B insect-eating bird
- C ladybird
- D lettuce

33 If the hawks were removed from the food chain, what is most likely to happen to the numbers of other organisms in the chain?

- |   | <i>greenflies</i> | <i>ladybirds</i> | <i>insect-eating birds</i> |
|---|-------------------|------------------|----------------------------|
| A | decrease          | increase         | decrease                   |
| B | decrease          | increase         | increase                   |
| C | increase          | decrease         | decrease                   |
| D | increase          | decrease         | increase                   |

34 The diagram shows part of a food web.

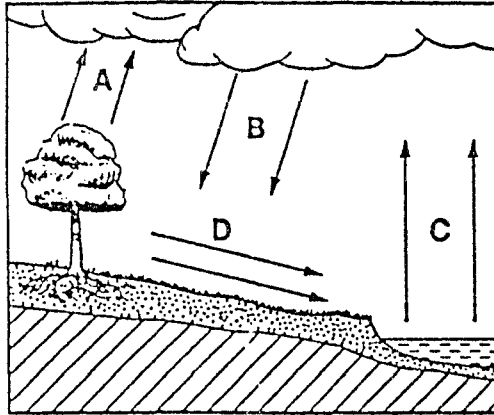


What are the carnivores in this food web?

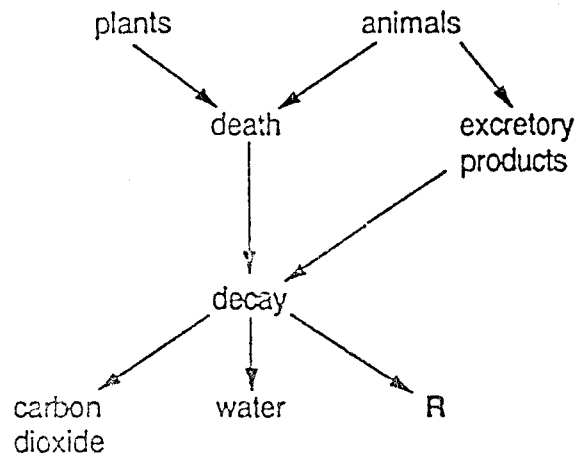
- A owls
- B rabbits
- C seed-eating birds
- D snails

35 The diagram shows part of the water cycle.

Which arrows represent transpiration?



36 The diagram shows part of the process of recycling natural materials during organic decay.



What is R?

- A mineral salts
- B nitrogen
- C oxygen
- D proteins



37 The table shows the age structure of the population of four countries.

Which figures show the age structure of a developing country?

country	age group		
	0-14	15-64	65+
A	21%	66%	13%
B	29%	62%	9%
C	35%	60%	5%
D	46%	51%	3%

38 Which of the following is a gas, released by the burning of coal, that is most likely to cause the death of trees?

- A carbon dioxide
- B nitrogen
- C oxygen
- D sulphur dioxide

39 A certain pollutant causes the loss of colour from a type of green plant.

How will this pollutant affect this type of plant over a long period of time?

- A Colourless mutants will survive.
- B Larger leaves will be produced.
- C The plants will die.
- D There will be no long-lasting effects.

40. Different pesticides were tested to see how poisonous they were to fish.

Scientists found the concentration of pesticide that killed 50% of the fish within four days.

The table shows the results of the tests.

<i>pesticide</i>	<i>concentration/ p.p.m. that killed 50% of the fish</i>
DDT	0.03
dieldrin	0.01
malathion	12.20
parathion	2.11

Which pesticide was the most dangerous to the fish?

- A DDT
- B dieldrin
- C malathion
- D parathion

International General Certificate of Secondary Education  
UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE  
**BIOLOGY** **0610/1**

PAPER 1 Multiple Choice

Wednesday 20 NOVEMBER 1996 Morning 45 minutes

Additional materials:

- Multiple Choice answer sheet
- Soft clean eraser
- Soft pencil (type B or HB is recommended)

**TIME** 45 minutes

**INSTRUCTIONS TO CANDIDATES**

**Do not open this booklet until you are told to do so.**

Write your name, Centre number and candidate number on the answer sheet in the spaces provided unless this has already been done for you.

There are forty questions in 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 very carefully the instructions on the answer sheet.

**INFORMATION FOR CANDIDATES**

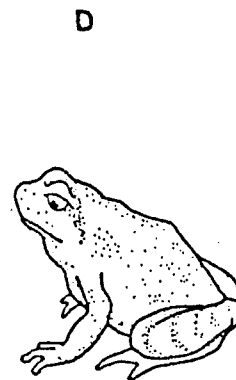
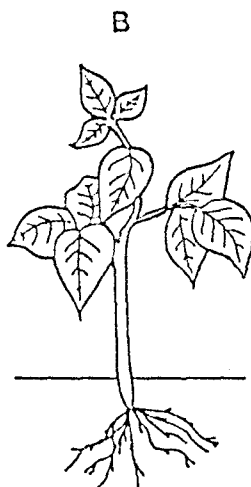
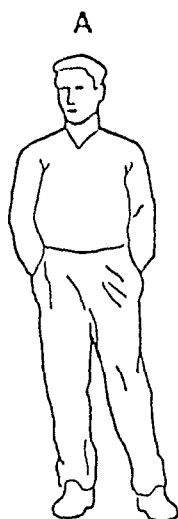
Each correct answer will score one mark. A mark will not be deducted for a wrong answer.

Any rough working should be done in this booklet.

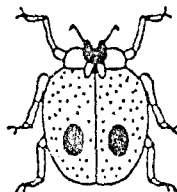
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This question paper consists of 15 printed pages and 1 blank page.

1 Which diagram shows an organism able to reproduce sexually, respire and carry out photosynthesis?



2 The diagram shows an organism.



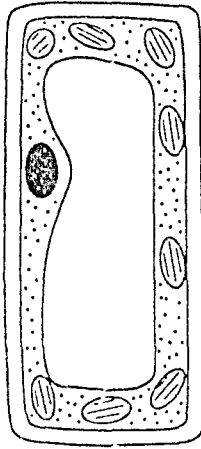
Using the key, what is this organism?

- 1 legs 6 ..... go to 2
- legs more than 6 ... organism A
- 2 stripes present ..... organism B
- stripes absent ..... go to 3
- 3 spots present ..... organism C
- spots absent ..... organism D

3 In the table, which is an animal cell?

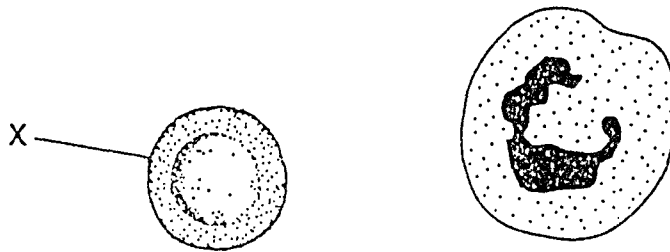
	<i>characteristic of cell</i>					
	<i>cell membrane</i>	<i>cell wall</i>	<i>chloroplasts</i>	<i>cytoplasm</i>	<i>nucleus</i>	
cell A	✓	X	X	✓	✓	<i>key</i> ✓ present X absent
cell B	✓	✓	✓	✓	✓	
cell C	X	✓	X	X	X	
cell D	✓	✓	X	✓	✓	

- 4 The diagram shows a palisade cell from a leaf.



How does a palisade cell differ from other cells in the same plant?

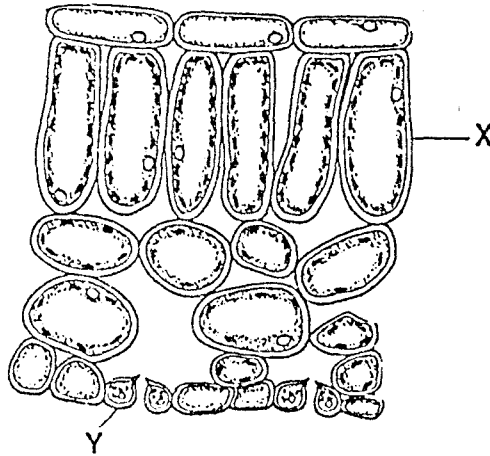
- A It has a cell wall.
  - B It has a nucleus.
  - C It has a smaller vacuole.
  - D It has more chloroplasts.
- 5 The diagram shows two types of human blood cells.



What is the function of cell X?

- A to clot blood
- B to digest bacteria
- C to produce antibodies
- D to transport oxygen

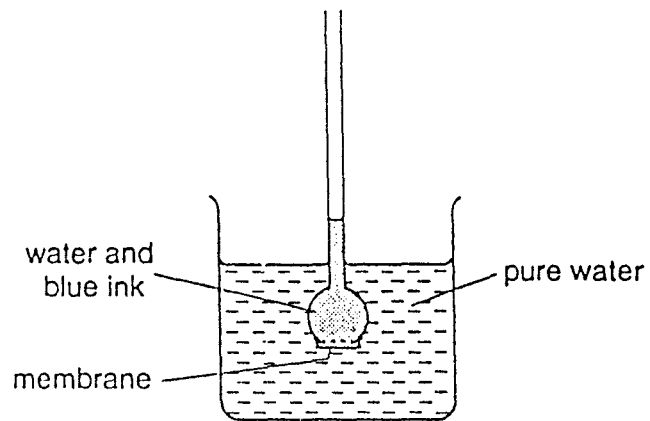
6 The diagram shows part of a leaf in cross-section.



Structures X and Y are both part of the same

- A cell.
- B organ.
- C tissue.
- D vessel.

7 The apparatus was set up as shown.



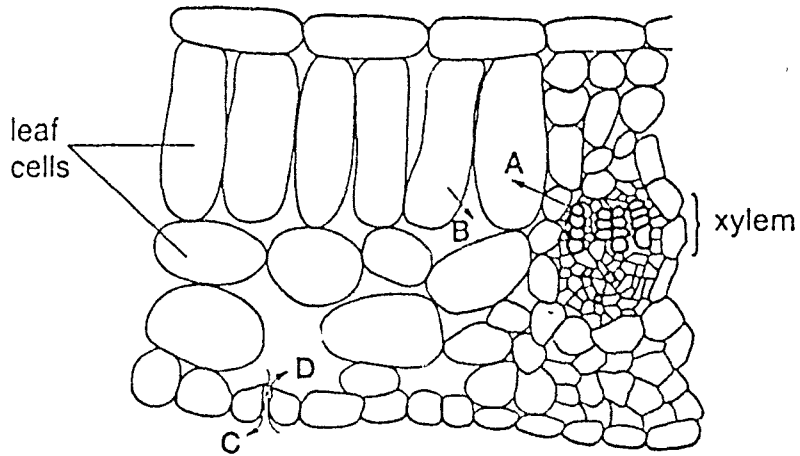
Some hours later, the water in the beaker had turned blue.

Which process caused this colour change?

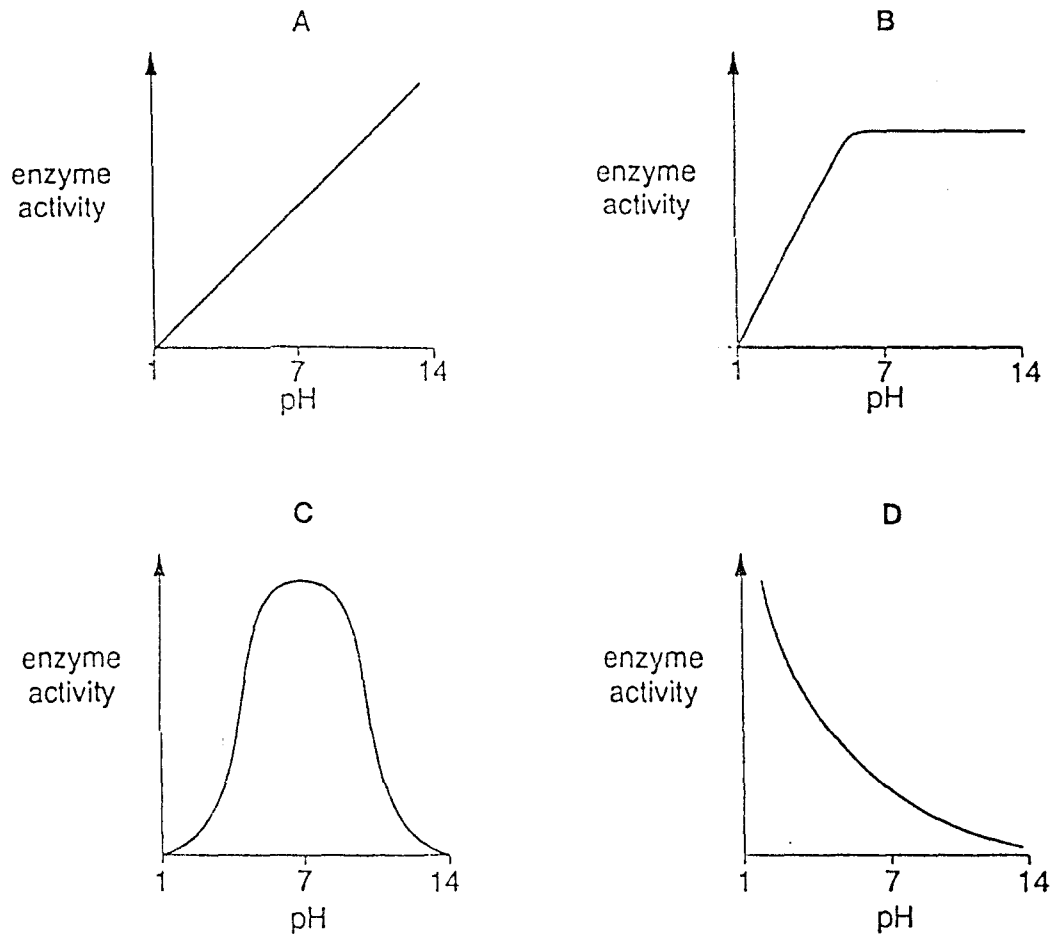
- A absorption
- B assimilation
- C diffusion
- D osmosis

8 The diagram shows part of a section through a leaf.

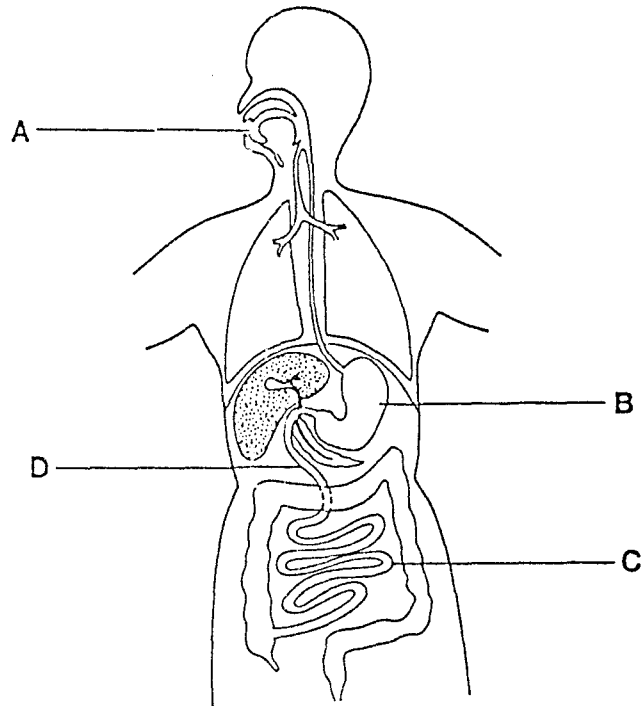
Which arrow represents the diffusion of carbon dioxide during photosynthesis?



9 Which graph shows the effect of pH on enzyme activity?



- 10 The diagram shows the human digestive system.  
Pepsin is an enzyme that works in acid conditions.  
In which part of the gut does this enzyme work?



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- 11 What are the raw materials and the products of photosynthesis?

<i>raw materials</i>	<i>products</i>
A carbon dioxide and simple sugars	water and oxygen
B carbon dioxide and water	oxygen and simple sugars
C water and oxygen	carbon dioxide and simple sugars
D water and simple sugars	oxygen and carbon dioxide

- 12 Which chemical element is found only in proteins?

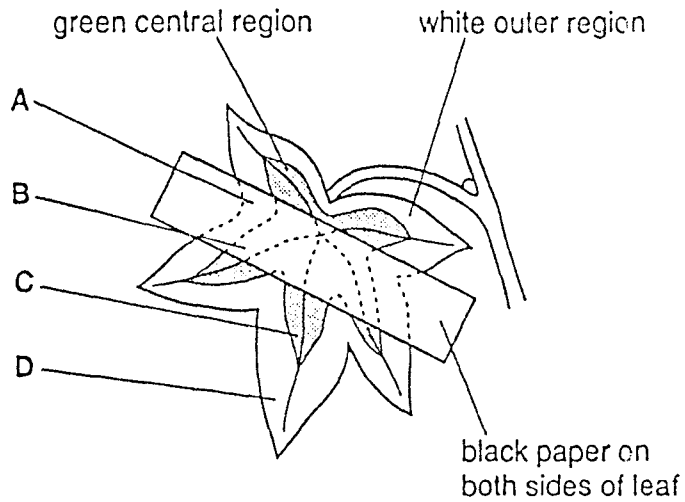
- A carbon
- B hydrogen
- C nitrogen
- D oxygen



- 13 A plant with variegated leaves was completely destarched by placing it in a dark cupboard for 48 hours.

Black paper was then fixed on one leaf as shown and the plant was exposed to light.

After 24 hours, which region of the leaf contained starch?



- 14 Where is bile made?

- A duodenum
- B liver
- C pancreas
- D stomach

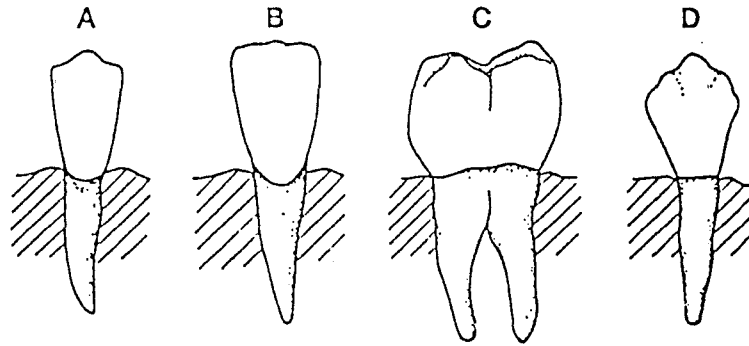
- 15 The diagram shows how a large molecule may be broken into simpler units.



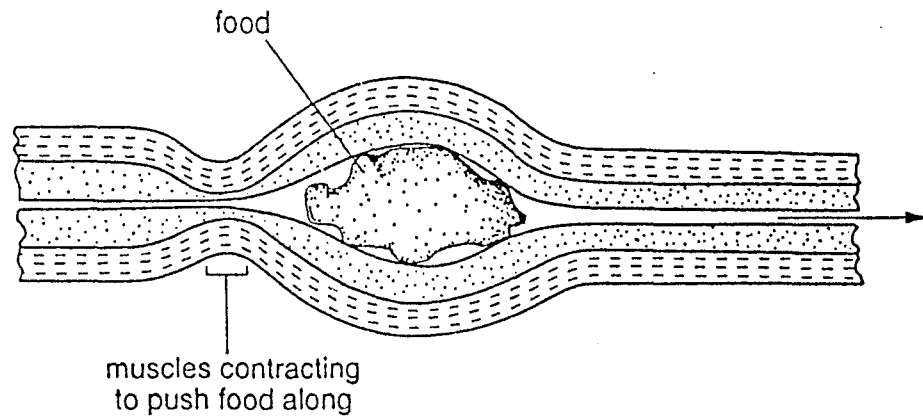
How is this change best described?

- A absorption
- B digestion
- C egestion
- D ingestion

16 Which type of tooth is found near the centre at the front of the human jaw?



17 The diagram shows how food is moved along the human intestine.



What is this process called?

- A accommodation
- B absorption
- C digestion
- D peristalsis

18 Which of the following describes a vein?

*valves present*      *amount of muscle tissue in wall*

- A yes      a lot
- B yes      a little
- C no      a lot
- D no      a little

19 Which organ in the human body contains alveoli?

- A heart
- B kidney
- C lung
- D ovary

20 The table shows some of the differences between air breathed in and air breathed out.

<i>gas</i>	<i>percentage volume in air breathed in</i>	<i>percentage volume in air breathed out</i>
oxygen	21.00	16.00
carbon dioxide	0.04	4.00

What is the reason for these differences?

- A Carbon dioxide is used up by body cells during aerobic respiration.
- B Carbon dioxide is used up by body cells during anaerobic respiration.
- C Oxygen is used up by body cells during aerobic respiration.
- D Oxygen is used up by body cells during anaerobic respiration.

21 What does the kidney remove from the blood?

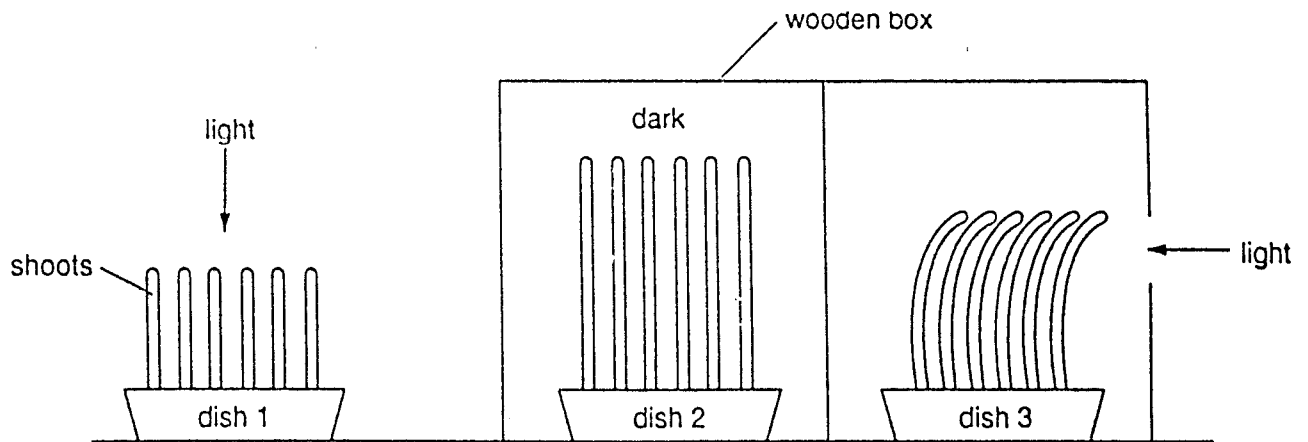
- |   |              |             |
|---|--------------|-------------|
|   | <i>water</i> | <i>urea</i> |
| A | all          | some        |
| B | none         | some        |
| C | some         | all         |
| D | some         | none        |

22 A person looks at a distant, dim object, then looks at a much closer, bright object.

What happens to the pupil and lens in each eye?

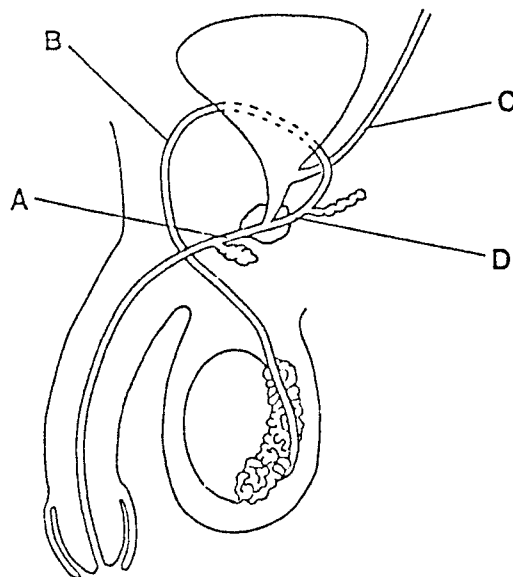
- |   |                      |                     |
|---|----------------------|---------------------|
|   | <i>pupil becomes</i> | <i>lens becomes</i> |
| A | larger               | thicker             |
| B | larger               | thinner             |
| C | smaller              | thicker             |
| D | smaller              | thinner             |

- 23 The diagram shows the results of an experiment to investigate the effect of light on young shoots.



What explains the result in dish 3?

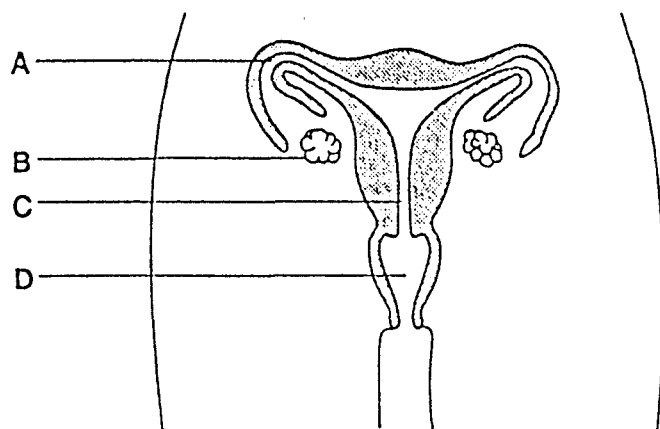
- A Auxin decreases the rate of growth of the shoot.
  - B Auxin is produced only in the light.
  - C The tip of the coleoptile produces auxin.
  - D There is more auxin on the dark side of the shoot.
- 24 The diagram shows a section of the reproductive organs of a human male.
- Which tube carries both sperm and urine?



© Don Mackean (adapted).

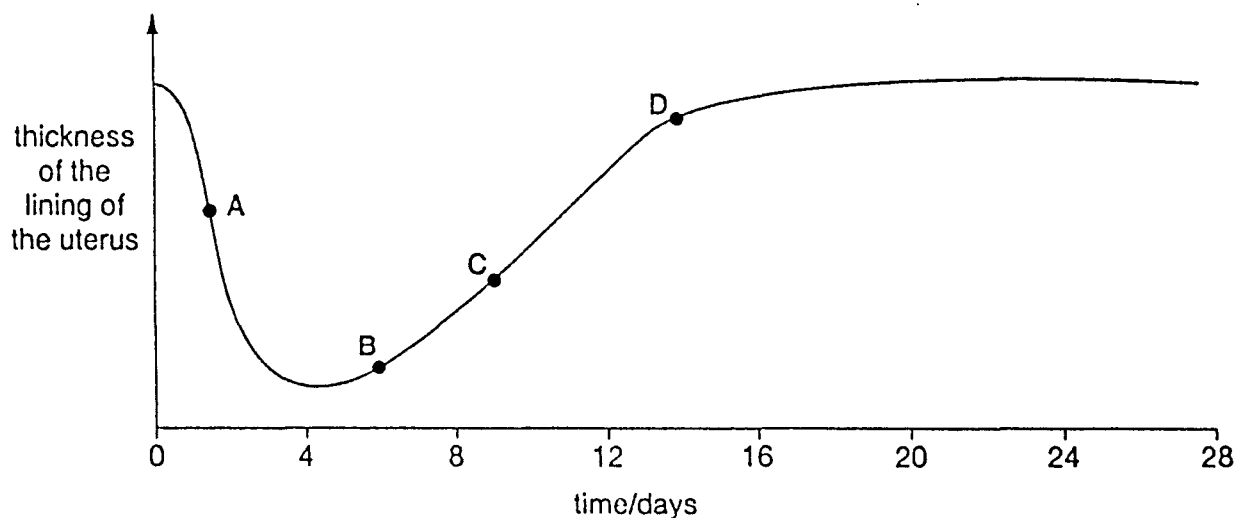
25 The diagram shows the human female reproductive system.

If a woman uses an IUD (coil or loop) as a contraceptive, where would it be placed?



26 The graph shows the changes that take place in the thickness of the uterus lining during a woman's menstrual cycle.

At which point is menstruation occurring?

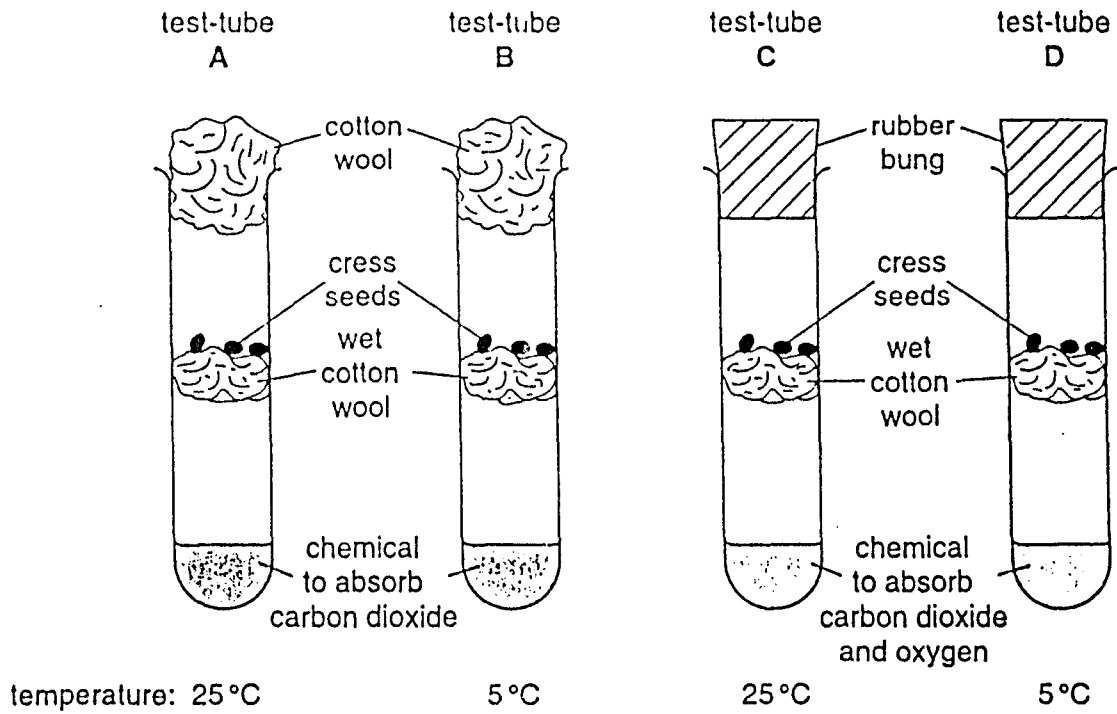


27 Which structure in the seed becomes the shoot after germination?

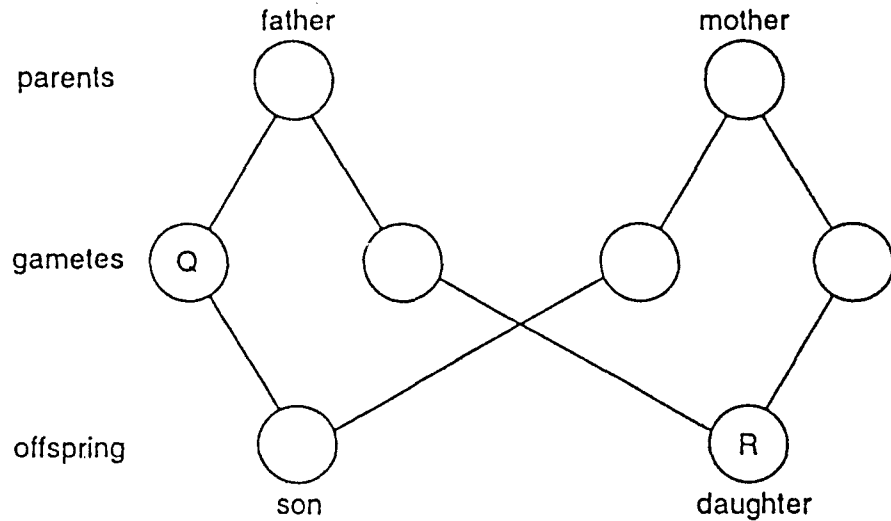
- A cotyledon
- B plumule
- C radicle
- D testa

28 The diagram shows an experiment to investigate the factors affecting the germination of cress seeds. All test-tubes are kept in the dark.

In which test-tube will the seeds germinate most quickly?



29 The diagram shows the fusion of gametes to produce a son and a daughter.



What are the sex chromosomes in gamete Q and daughter R?

- |   |   |    |
|---|---|----|
|   | Q | R  |
| A | X | XX |
| B | X | XY |
| C | Y | XX |
| D | Y | XY |

- 30 A female fruit fly with short wings mated with a male fruit fly with long wings. All the  $F_1$  generation had long wings.

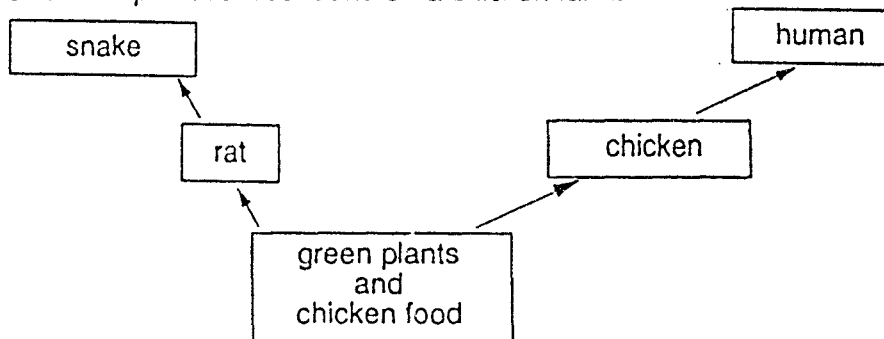
The allele for short wings must be

- A dominant.  
 B recessive.  
 C undergoing meiosis.  
 D undergoing mutation.
- 31 The stigmas of heterozygous tall plants were dusted with pollen from pure-breeding short plants of the same species. The resulting seeds were collected and grown to produce the next generation.

What were the approximate percentages of tall and short offspring?

	percentage of tall	percentage of short
A	25	75
B	50	50
C	75	25
D	100	0

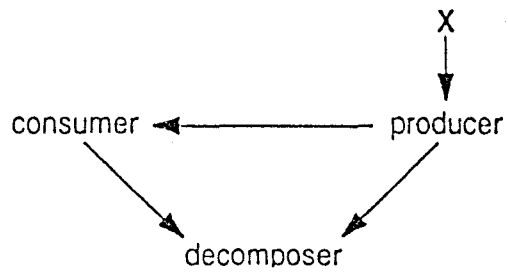
- 32 The diagram shows a simple food web found on a chicken farm.



Which of the following is a carnivore in this food web?

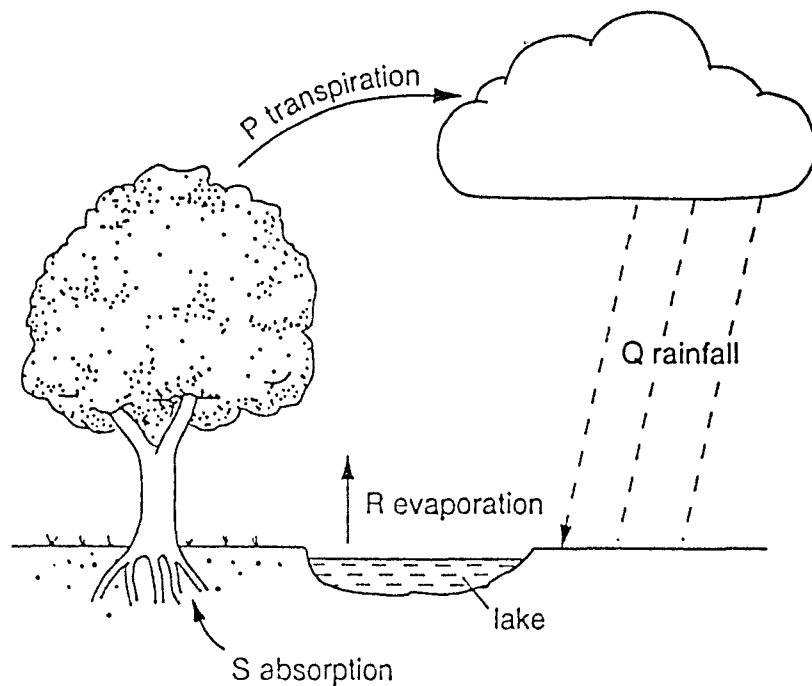
- A chicken  
 B green plant  
 C rat  
 D snake
- 33 Which of the following is an example of a food chain?
- A carbohydrate  $\rightarrow$  fat  $\rightarrow$  protein  
 B egg  $\rightarrow$  larva  $\rightarrow$  adult  
 C flower  $\rightarrow$  fruit  $\rightarrow$  seed  
 D grass  $\rightarrow$  antelope  $\rightarrow$  lion

- 34 The arrows in the diagram show the flow of energy through a simple food web.



What does X represent?

- A mineral salts
  - B oxygen
  - C sunlight
  - D water
- 35 Which process releases carbon dioxide into the atmosphere?
- A decomposition
  - B lightning
  - C photosynthesis
  - D transpiration
- 36 The diagram shows part of the water cycle.



Which processes will be slowed down by an increase in humidity?

- A P and Q
- B P and R
- C Q and R
- D Q and S



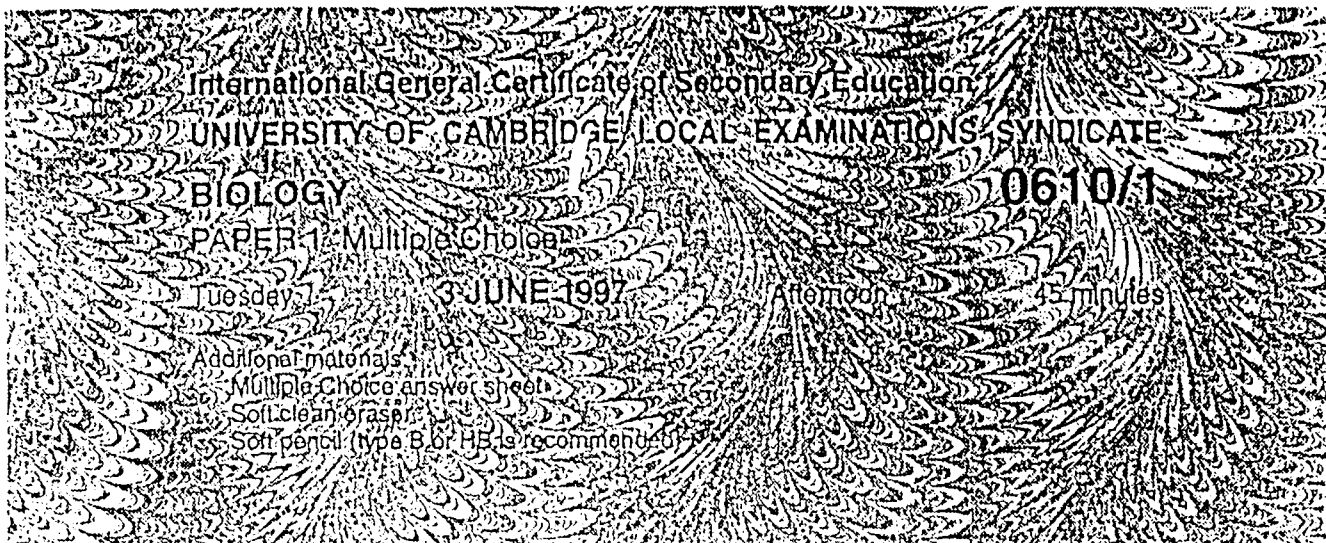
- 37 In terms of human populations, what is a high birth rate most likely to lead to?
- A fewer old people
  - B increased rate of population growth
  - C less risk of disease
  - D low infant mortality
- 38 What is reduced when untreated sewage is released into rivers?
- A the amount of nitrate
  - B the availability of oxygen
  - C the concentration of carbon dioxide
  - D the number of bacteria.
- 39 Which two gases released by a coal-fired power station cause air pollution?
- A carbon dioxide and oxygen
  - B carbon dioxide and sulphur dioxide
  - C nitrogen and oxygen
  - D nitrogen and sulphur dioxide
- 40 The depth of topsoil was measured at a site in a rain forest. The site was then cleared for agricultural use. The depth of topsoil was measured again 10 years later.

The results are shown below.

original depth of topsoil	580 mm
depth after 10 years	220 mm

What is the most likely cause of the difference between these two results?

- A erosion
- B evaporation
- C pesticides
- D pollution



TIME 45 minutes

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There are forty questions in 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.

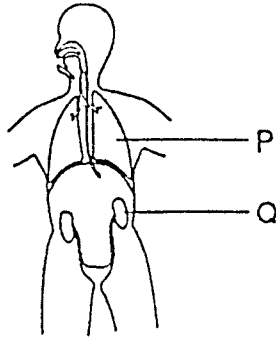
Read very carefully the instructions on the answer sheet.

### INFORMATION FOR CANDIDATES

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.

- 1 In the diagram, which characteristic activity of living organisms is carried out by both P and Q?

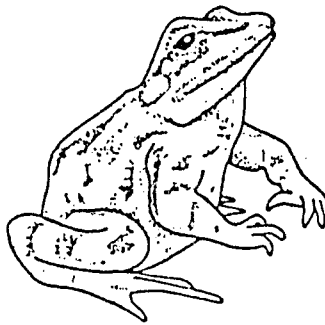


© Don Mackean (adapted).

- A excretion
  - B movement
  - C nutrition
  - D reproduction
- 2 The biological name of a coffee plant is *Coffea arabica*.  
Which information about the plant is given by this name?

- A family and genus
- B genus and species
- C species and variety
- D variety and family

- 3 The diagram shows a cold-blooded vertebrate which is found near water.



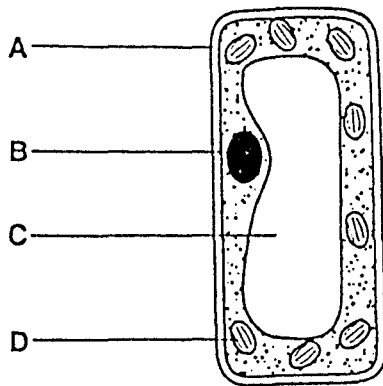
It has a smooth, moist skin and four limbs.

To which class does it belong?

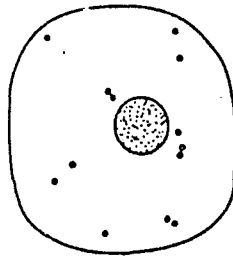
- A amphibians
- B fish
- C mammals
- D reptiles

- 4 The diagram shows a palisade cell from a plant.

Which structure contains a green substance?



- 5 The diagram shows a cell.

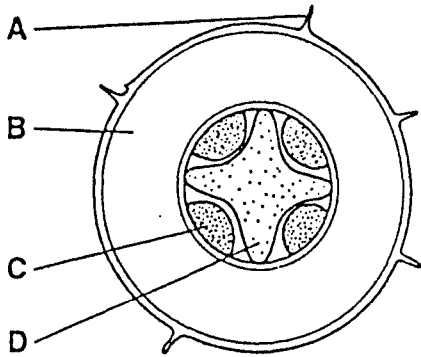


Which structure is **not** present?

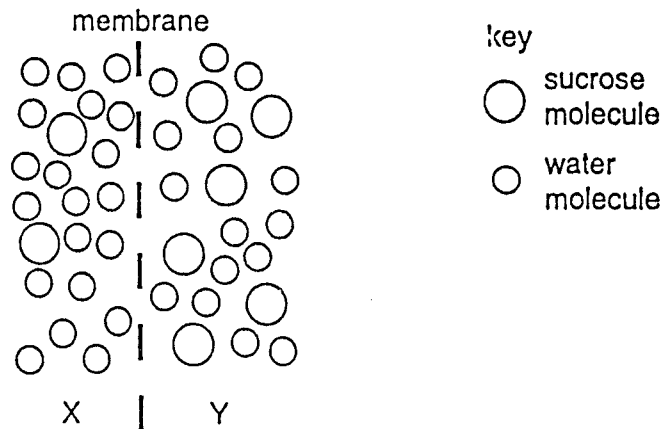
- A cell membrane.
  - B cell wall
  - C cytoplasm
  - D nucleus
- 6 Which substance is carried by red blood cells?
- A glucose
  - B oxygen
  - C urea
  - D water

7 The diagram shows a section through the root of a plant.

Which part has absorption as its main function?



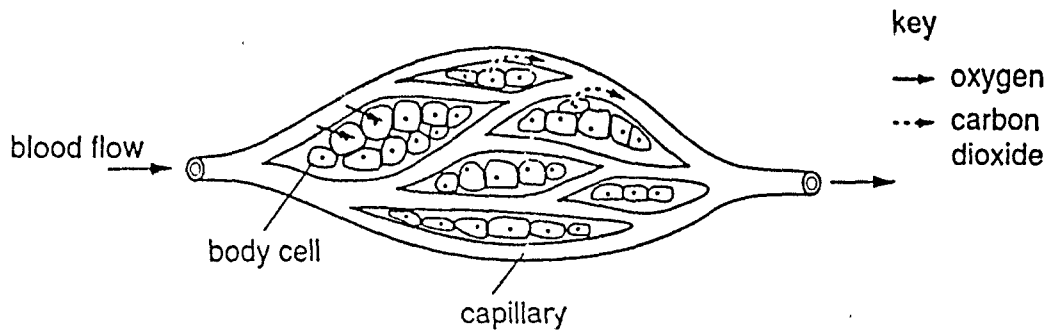
8 The diagram shows two liquids, X and Y, separated by a partially permeable membrane.



Which sentence describes the greatest movement of molecules during osmosis?

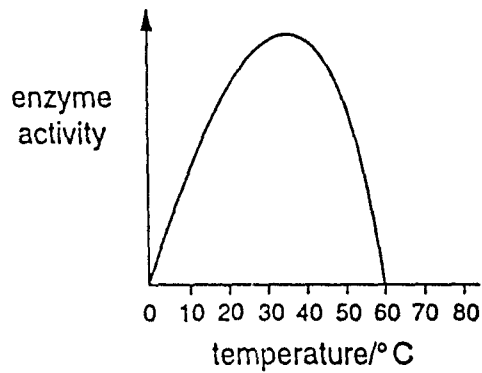
- A Sucrose molecules will move from X to Y.
- B Sucrose molecules will move from Y to X.
- C Water molecules will move from X to Y.
- D Water molecules will move from Y to X.

- 9 The arrows in the diagram show the movement of dissolved substances between the blood in capillaries and body cells.



By which process does this movement occur?

- A diffusion
  - B excretion
  - C osmosis
  - D respiration
- 10 The graph shows the effect of temperature on the activity of an enzyme.



At which temperature is the enzyme most active?

- A 15°C
- B 25°C
- C 35°C
- D 60°C

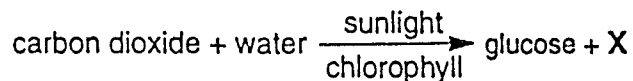
- 11 The four symbols represent different chemicals which can link up to form larger molecules.

<i>symbol</i>	<i>chemical</i>
+	amino acid
o	fatty acid
#	glucose
★	glycerol

Which molecule could be a protein?

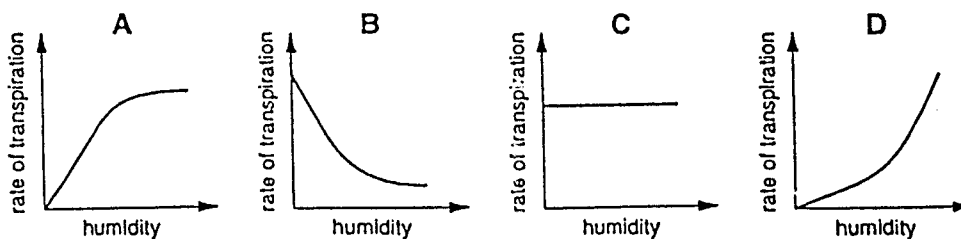
<i>symbol</i>	<i>chemical</i>
A	# — # — # — # — # — # — # — # — # — # —
B	+ — + — + — + — + — + — + — + — + — + —
C	★ — ★ — ★ — ★ — ★ — ★ — ★ — ★ — ★ — ★ —
D	o — o — o — o — o — o — o — o — o — o — o —

- 12 The word equation represents the process of photosynthesis.



What is X?

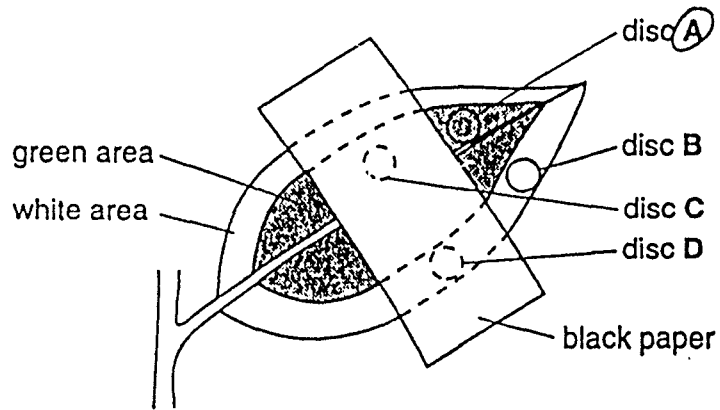
- A carbon dioxide
  - B nitrogen
  - C oxygen
  - D sulphur dioxide
- 13 Which graph shows most clearly what will happen to the rate of transpiration as humidity increases?



- 14 The diagram shows a leaf on a plant used in a photosynthesis experiment. At the start of the experiment there was no starch in the leaf.

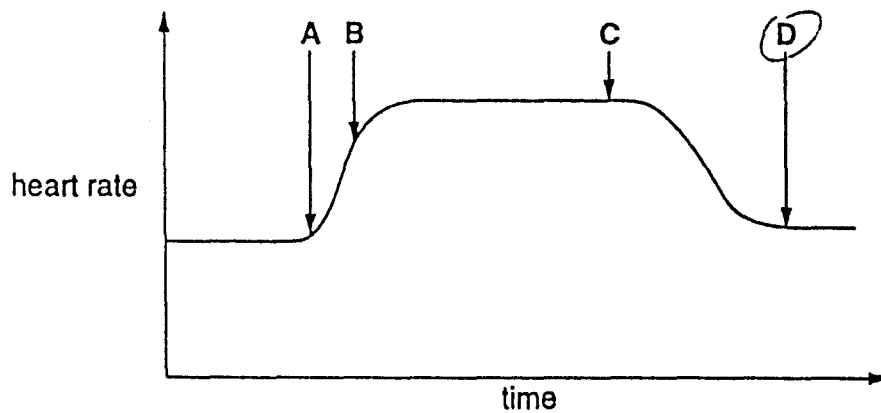
The plant was placed in bright light for 12 hours. Then four discs were cut from the leaf in the positions shown and were tested for starch.

Which disc contained starch?



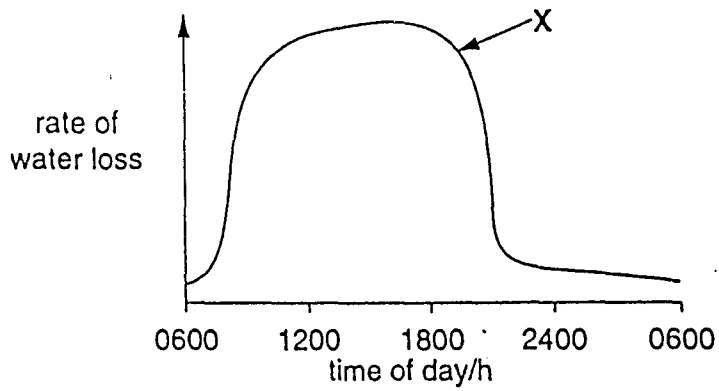
- 15 The graph shows a person's heart rate before, during and after a period of exercise.

At which point did the period of exercise stop?



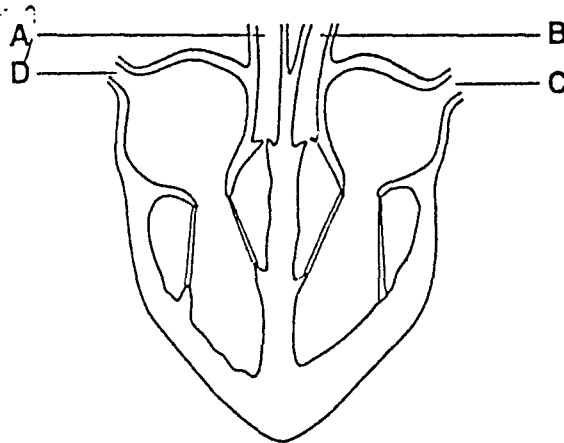


16 The graph shows the rate of water loss from a plant over 24 hours.



At point X, the stomata are

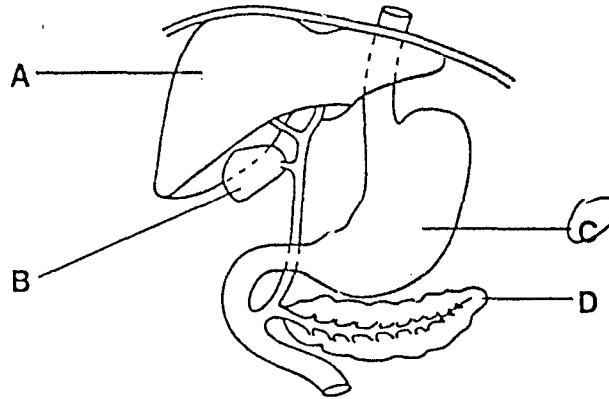
- A closing.
  - B fully closed.
  - C fully open.
  - D opening.
- 17 The diagram shows a section through a mammalian heart.
- Which part carries blood directly to the lungs?



© R. SOPER & S. TYRELL SMITH; *Modern Biology* (Macmillan).

18 The diagram shows part of the alimentary canal and associated organs.

Which structure secretes an enzyme that will help in the digestion of carbohydrates?



Questions 19 and 20 refer to an athlete, running a long-distance race.

19 Which substance is produced in large quantities in his leg muscles?

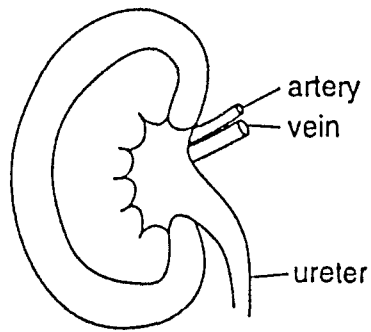
- A amino acid
- B lactic acid
- C oxyhaemoglobin
- D urea

20 During the race, the body temperature of the athlete begins to rise.

Which changes occur to help return the body temperature to normal?

- |   | <i>sweating</i> | <i>blood vessels<br/>in the skin</i> |
|---|-----------------|--------------------------------------|
| A | decreases       | constrict                            |
| B | decreases       | dilate                               |
| C | increases       | constrict                            |
| D | increases       | dilate                               |

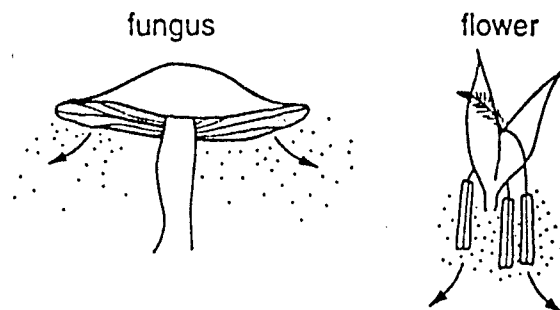
21 The diagram shows a section through a kidney.



Which substance is not usually found in the ureter?

- A glucose
  - B salts
  - C urea
  - D water
- 22 At night, the headlights of an approaching car shine into the eyes of a driver.
- How do the driver's eyes react to the bright light?
- A pupils become larger
  - B pupils become smaller
  - C lenses become thicker
  - D lenses become thinner
- 23 When looking at a picture, on which part of the eye is the image focused?
- A blind spot
  - B iris
  - C lens
  - D retina

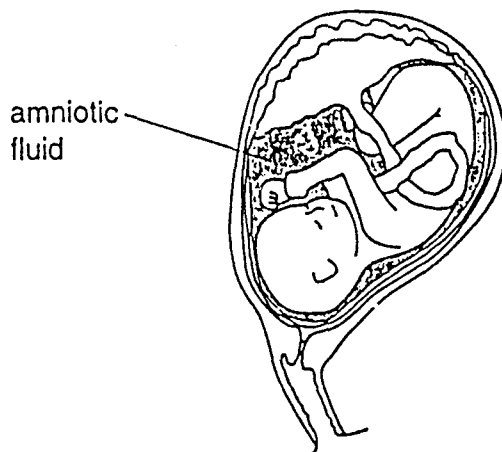
- 24 The diagram shows a fungus and a flower. They are both releasing structures associated with reproduction.



What are these structures?

- |   | <i>fungus</i> | <i>flower</i> |
|---|---------------|---------------|
| A | pollen        | pollen        |
| B | pollen        | spores        |
| C | spores        | spores        |
| D | spores        | pollen        |

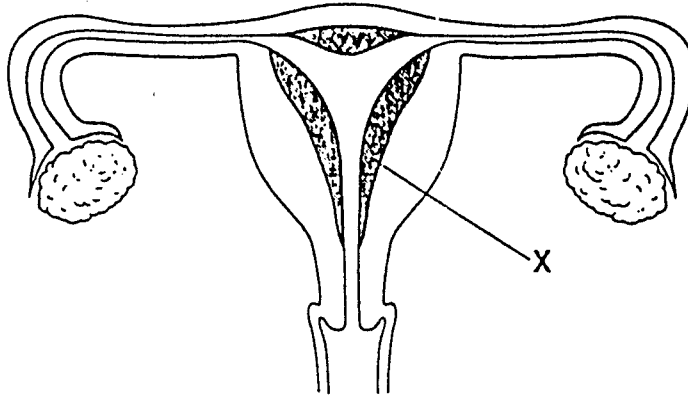
- 25 The diagram shows a fetus before birth.



What is the function of the amniotic fluid?

- A to carry oxygen to the fetus
- B to protect the fetus against shocks
- C to remove waste products from the fetus
- D to supply food and water to the fetus

26 The diagram shows the female reproductive organs.

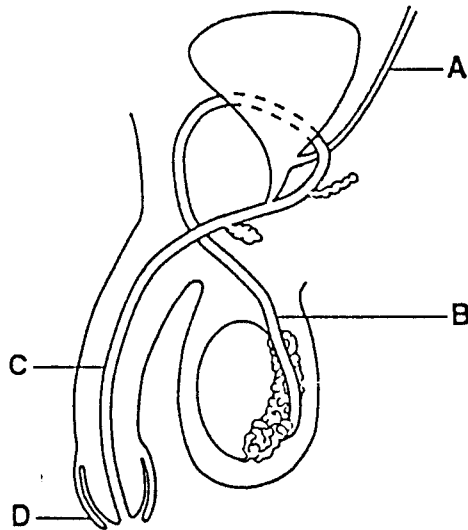


Which hormone is responsible for keeping structure X in a thickened condition?

- A insulin
- B oestrogen
- C progesterone
- D testosterone

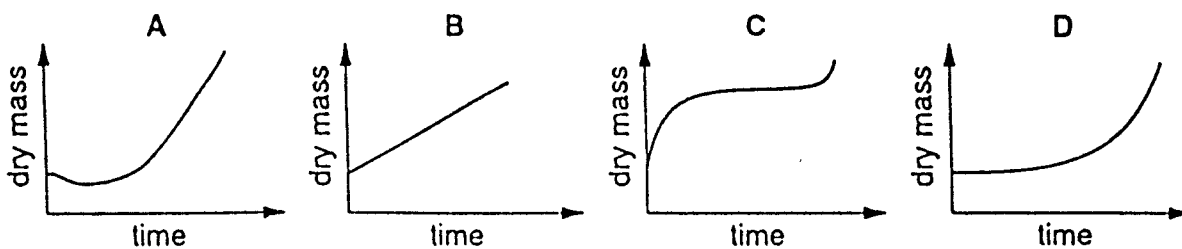
27 The diagram shows part of the male reproductive system.

Which part would be cut in an operation to make the male sterile?

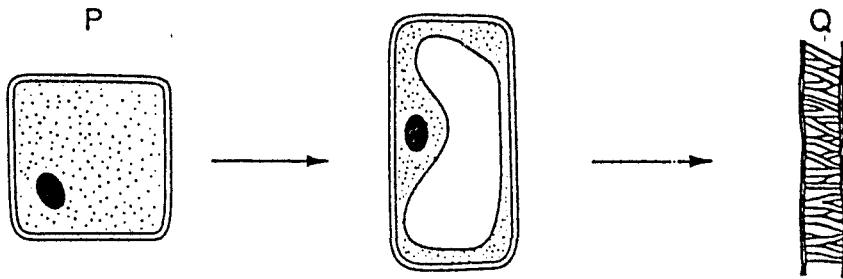


© Don Mackean (adapted).

28 Which graph shows the change in dry mass from the time a seed germinates until green leaves appear above the soil?



29 The diagrams show a plant cell P changing to become cell Q.



What do the changes between P and Q show?

- A development and germination
  - B germination and mitosis
  - C growth and development
  - D mitosis and growth
- 30 The table gives information about a human sperm and a human egg.

Which information is correct?

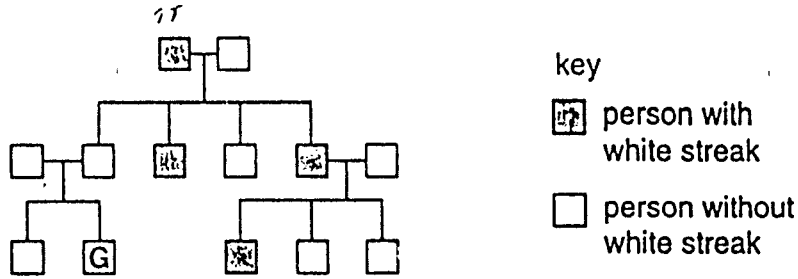
	<i>sperm</i>		<i>egg</i>	
	<i>where formed</i>	<i>chromosome number</i>	<i>where formed</i>	<i>chromosome number</i>
A	ovary	23	testis	23
B	testis	46	ovary	46
C	ovary	46	testis	46
D	testis	23	ovary	23

31 Which sex chromosomes are usually present in the body cells of a human female?

	<i>sex chromosomes</i>
A	X
B	Y
C	XY
D	XX

32 A white streak in dark hair is caused by the presence of a dominant allele.

The diagram shows how this white streak was inherited in a family.



What is the chance that G will inherit the white streak?

- A 100%
- B 75%
- C 25%
- D 0%

33 An example of a food chain is shown.

water plants → small fish → large fish

What is the source of energy for the water plants in this food chain?

- A small fish
- B sunlight
- C water
- D water plants

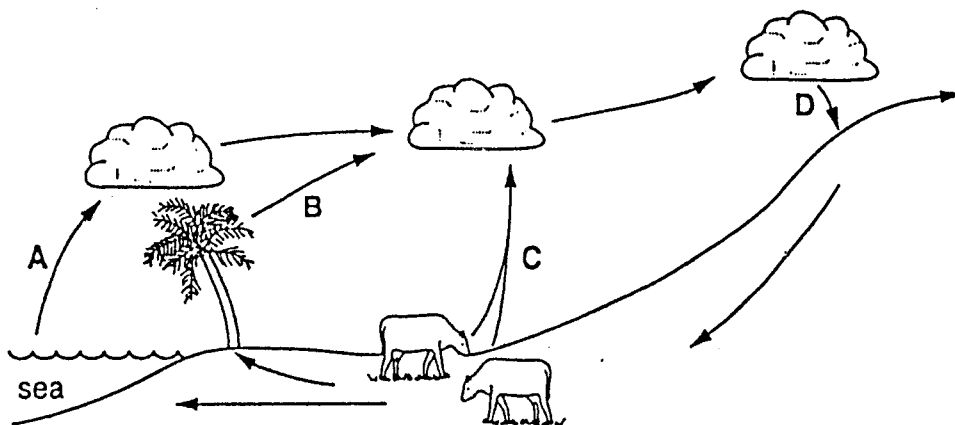
34 The diagram shows a food chain.

Which organism is the producer?

- A grass → rabbit → fox → flea

35 The diagram shows the water cycle.

Which arrow represents transpiration?

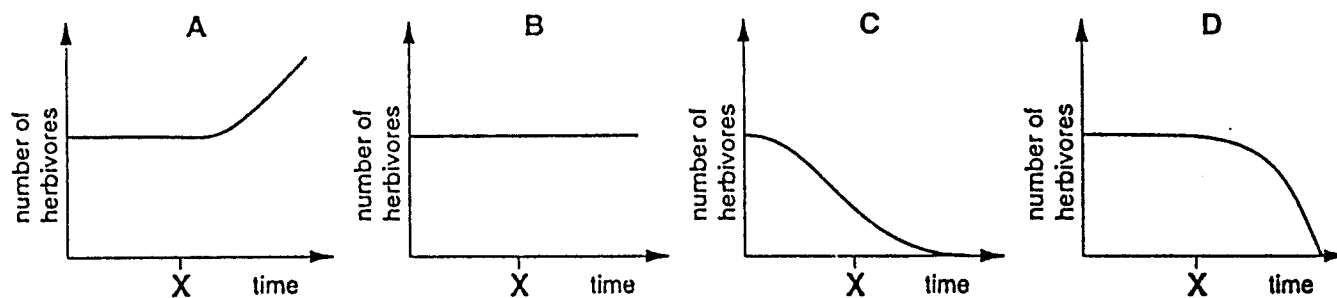


36 By which process does carbon enter a food chain?

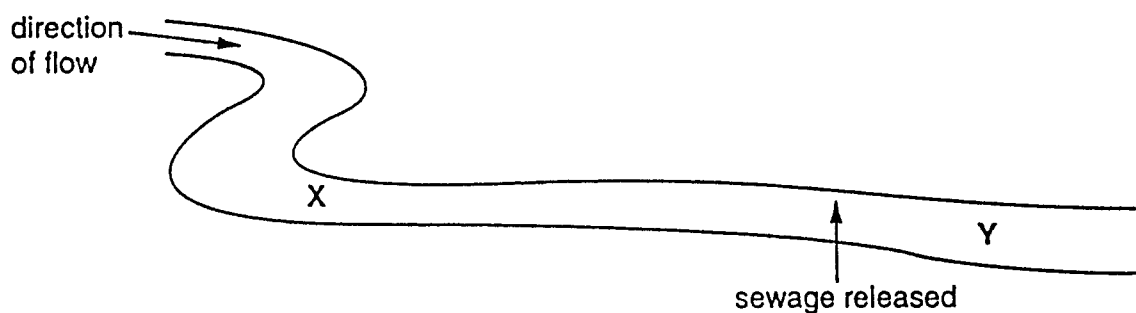
- A combustion
- B decomposition
- C photosynthesis
- D respiration

37 At time X in the graphs, the carnivores in the habitat are removed.

Which graph shows the effect of this on the herbivores in that habitat?



38 The diagram shows the point on a river where untreated sewage was released into it.



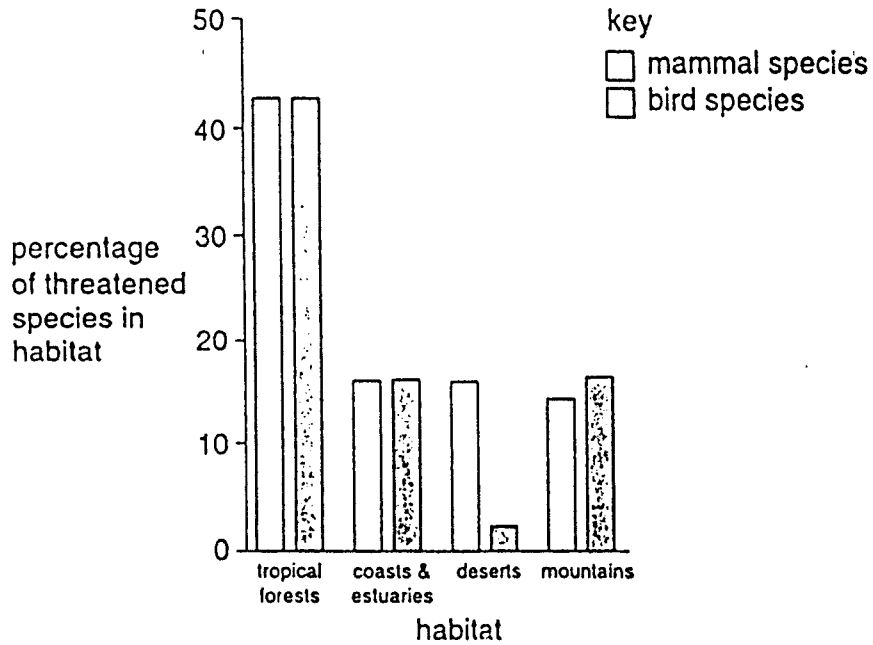
Many more fish were found in the river at X than at Y.

This is most likely to be because at Y there is a decrease in

- A bacteria.
- B carbon dioxide.
- C organic matter.
- D oxygen.



- 39 The bar chart shows the percentage of mammal species and bird species which are threatened with extinction in four habitats.



© Acknowledgement: WWF United Kingdom Data Support for Education Service.

In which habitat is a lower percentage of mammal species than bird species threatened with extinction?

- A coasts and estuaries
  - B deserts
  - C mountains
  - D tropical forests
- 40 Acid rain is formed when sulphur dioxide dissolves in water in the atmosphere.

Where does most of the sulphur dioxide come from?

- A chemical fertilisers
- B coal-fired power stations
- C liquid herbicides
- D sewage works

International General Certificate of Education  
UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE

**BIOLOGY**

**0610/1**

**PAPER 1 Multiple Choice**

Wednesday

**12 NOVEMBER 1997**

**45 minutes**

Additional materials:

Multiple Choice answer sheet

Soft clean eraser

Soft pencil (type B or HB is recommended)

**TIME** 45 minutes

### **INSTRUCTIONS TO CANDIDATES**

**Do not open this booklet until you are told to do so.**

Write your name, Centre number and candidate number on the answer sheet in the spaces provided unless this has already been done for you.

There are forty questions in 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 very carefully the instructions on the answer sheet.**

### **INFORMATION FOR CANDIDATES**

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.

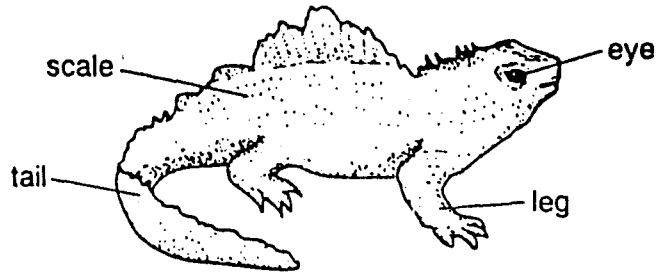
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This question paper consists of 16 printed pages.

**111**

[Turn over

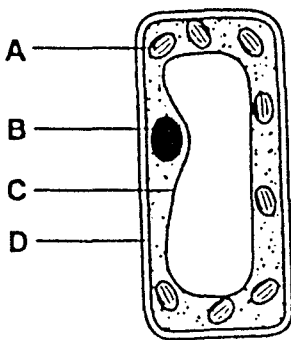
- 1 The diagram shows the external features of a lizard.



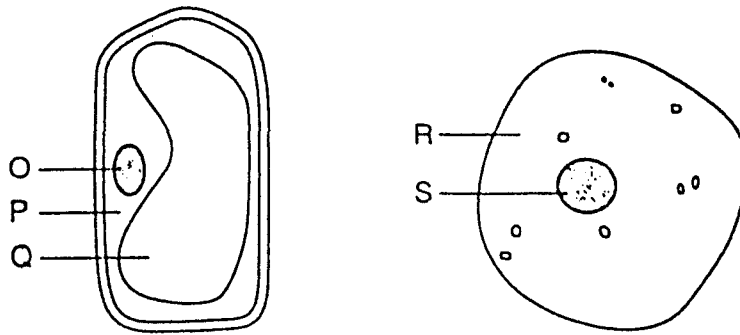
Which feature identifies this animal as a reptile?

- A two eyes
  - B dry scales
  - C four legs
  - D long tail
- 2 Which information is needed when classifying a frog using the binomial system?
- A class : amphibian
  - B genus : *Rana*
  - C kingdom : animal
  - D phylum : vertebrate
- 3 The diagram shows the structure of a palisade cell from the leaf of a plant.

Which structure is the nucleus?



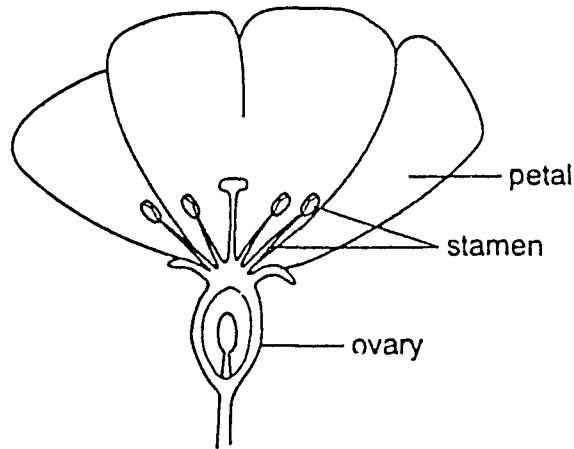
4 The diagram shows a plant cell and an animal cell.



Which two regions contain cytoplasm?

- A O and S      B P and R      C P and S      D Q and R

5 The diagram shows a half flower.



Using the following key, what type of flower is it?

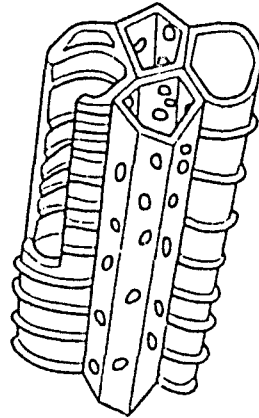
- 1 petals above the ovary ..... go to 2  
 petals below the ovary ..... go to 3
- 2 stamens less than ten ..... Type A  
 stamens more than ten ..... Type B
- 3 sepals absent ..... Type C  
 sepals present ..... Type D

- 6 The diagram shows some cells from the human body.



To which tissue do these cells belong?

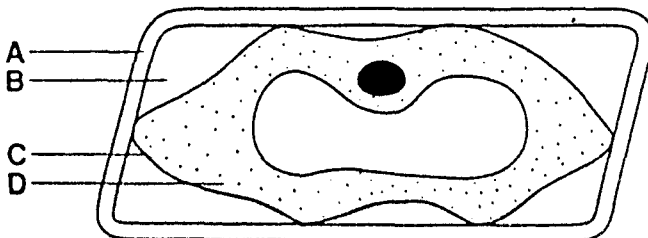
- A blood
  - B liver
  - C muscle
  - D nerve
- 7 The diagram shows a group of cells which are adapted for a particular purpose.



What is the function of these cells?

- A to carry oxygen
  - B to carry water
  - C to make food
  - D to store food
- 8 The diagram shows a plant cell which has lost water to its surroundings by osmosis.

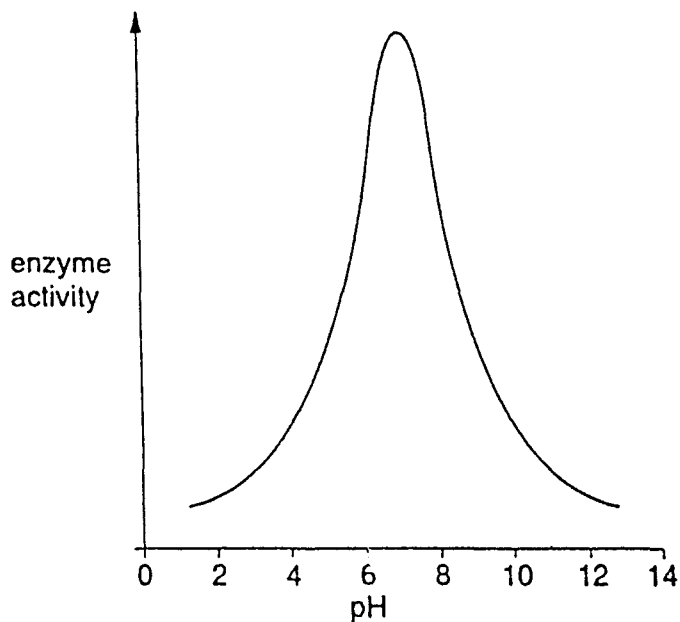
Which part is the partially permeable membrane?



9 By which process do oxygen molecules move down a concentration gradient?

- A breathing
- B diffusion
- C osmosis
- D respiration

10 The graph shows the effect of pH on the activity of an enzyme.



At which pH is this enzyme most active?

- A 2
- B 6
- C 7
- D 12

11 The table shows two properties of four different chemicals.

Which chemical is an enzyme?

<i>chemical</i>	<i>molecular structure includes nitrogen</i>	<i>destroyed by temperatures above 65°C</i>
A	✓	✓
B	✓	x
C	x	✓
D	x	x

*key*

✓ = true

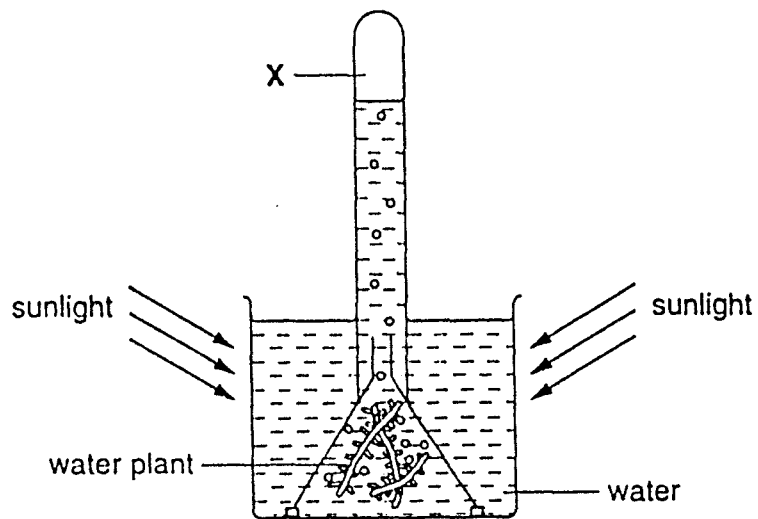
x = false

12 When a plant shoot is placed in a solution of dye, the dye moves up the stem.

Under which conditions will the dye move fastest?

	<i>temperature</i>	<i>humidity</i>
A	high	high
B	high	low
C	low	high
D	low	low

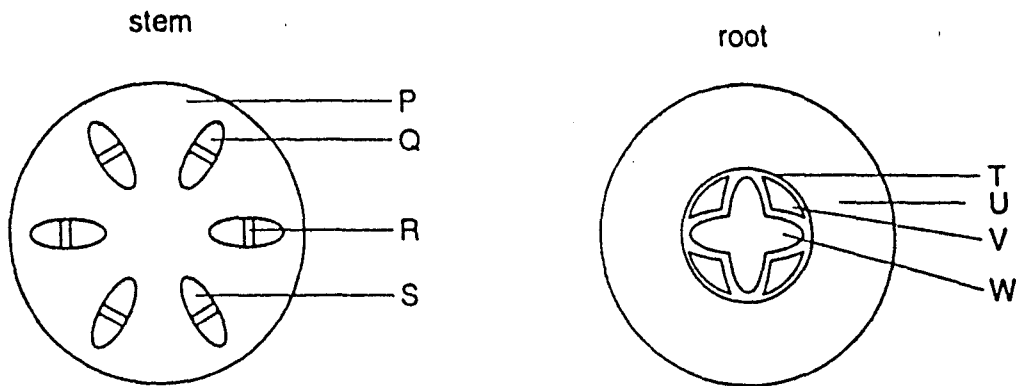
13 The diagram shows apparatus which had been placed in sunlight for several hours.



Compared with atmospheric air, the gas collected at X has

- A the same composition.
- B more carbon dioxide.
- C more oxygen.
- D more nitrogen.

14 The diagrams show cross-sections through a stem and a root of a flowering plant.



Which pair of lines labels similar tissues?

- A P and T      B Q and U      C R and V      D S and W

15 Where are carbohydrates made in a green leaf?

- A cell vacuoles  
 B chloroplasts  
 C phloem  
 D xylem

16 A person ate food X. Food X was not affected by enzymes in the mouth, but was digested by enzymes in the stomach.

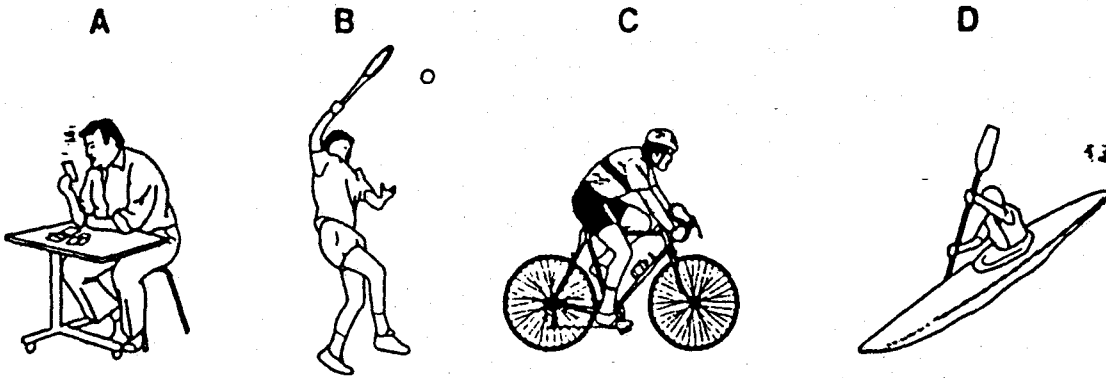
What was food X?

- A carbohydrate  
 B fat  
 C mineral salt  
 D protein

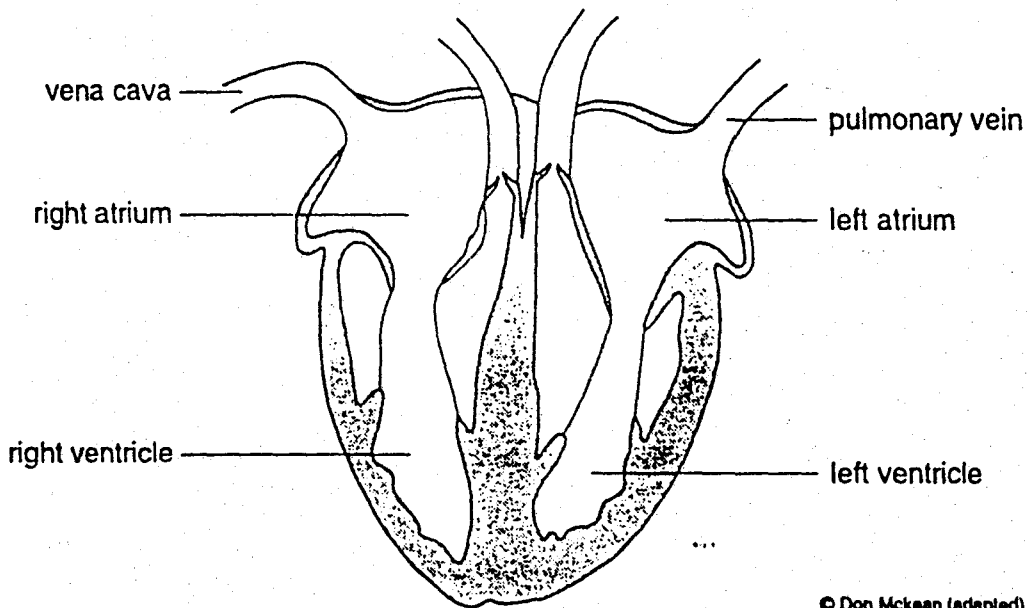


17 The diagrams show how four people often spend their leisure time.

Which person is most at risk from heart disease?



18 The diagram shows a vertical section through the heart.

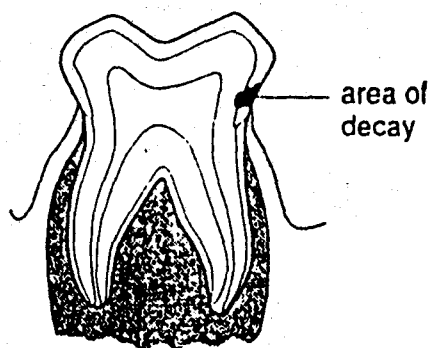


© Don McKean (adapted).

In which structure does the blood contain the most oxygen?

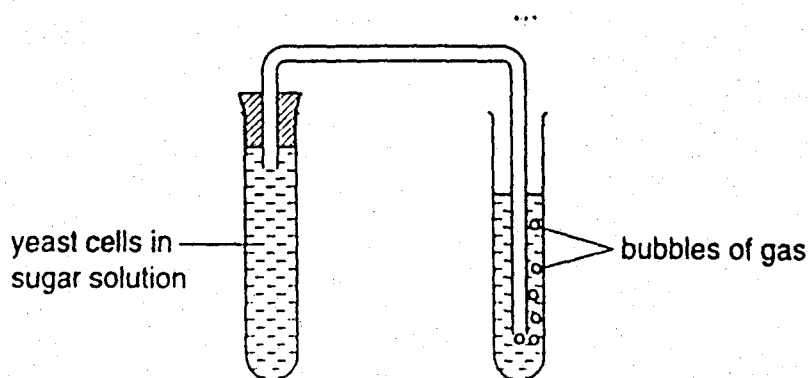
- A pulmonary vein
- B right atrium
- C right ventricle
- D vena cava

19 The diagram shows a human tooth with an area of decay.



What is likely to have caused the decay?

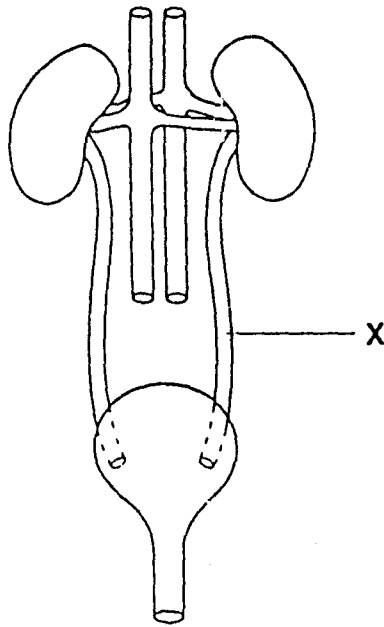
- A acids released by bacteria
  - B digestion of the tooth by bacteria
  - C excess of fat in the food
  - D lack of protein in the food
- 20 Which substance is broken down to release energy during respiration?
- A carbon dioxide
  - B glucose
  - C protein
  - D water
- 21 The diagram shows yeast cells carrying out respiration in a sugar solution.



Which gas is released?

- A carbon dioxide
- B nitrogen
- C oxygen
- D sulphur dioxide

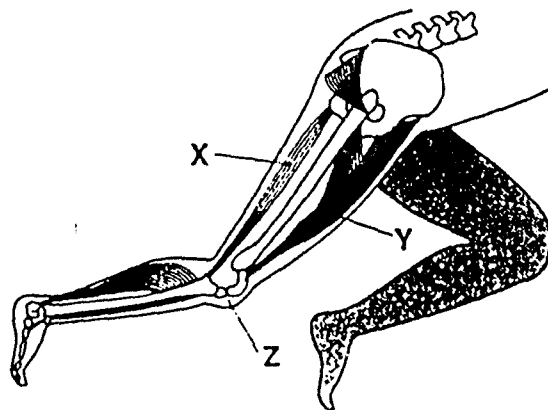
22 The diagram shows the excretory system of a female mammal.



What is tube X?

- A ureter
- B urethra
- C uterus
- D vein

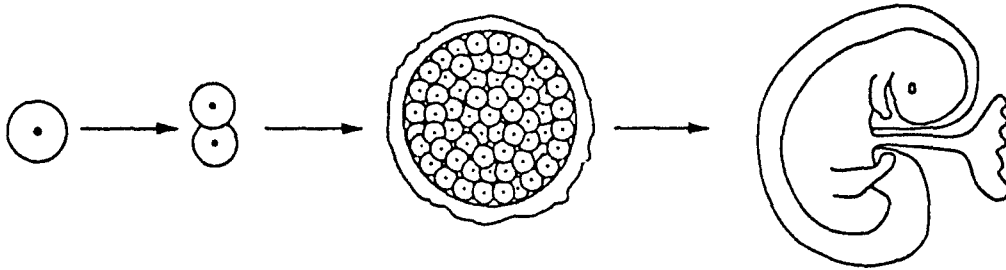
23 The diagram shows some bones and muscles in the leg of a human.



What happens to muscle Y and to the leg at joint Z, when muscle X contracts?

- | <i>muscle Y</i> | <i>leg at joint Z</i> |
|-----------------|-----------------------|
| A contracts     | bends                 |
| B contracts     | straightens           |
| C lengthens     | bends                 |
| D lengthens     | straightens           |

- 4 Which part of the eye contains cells which are sensitive to light?
- A iris  
B lens  
C pupil  
D retina
- 25 How many days after the start of menstruation, is intercourse most likely to lead to pregnancy?
- A 4    B 10    C 14    D 28
- 26 The diagram shows stages in the life of a human from zygote to fetus.



Which processes occur during these stages?

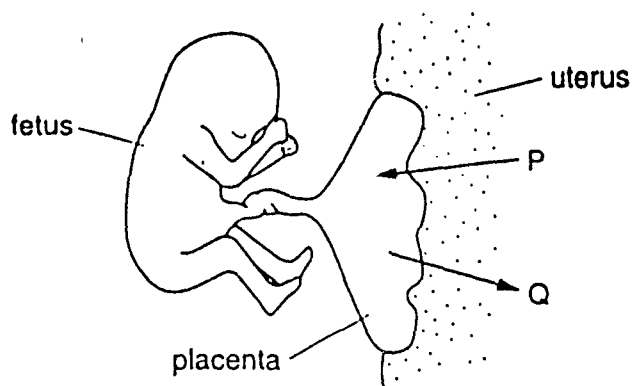
	<i>fertilisation</i>	<i>growth</i>	<i>development</i>
<b>A</b>	✓	x	✓
<b>B</b>	✓	x	x
<b>C</b>	x	✓	x
<b>D</b>	x	✓	✓

key

✓ = occurs

x = does not occur

27 The diagram shows a human fetus attached by the placenta to the uterus wall of its mother.



Which substances pass in the direction of arrow P and arrow Q?

- | <i>arrow P</i>            | <i>arrow Q</i>              |
|---------------------------|-----------------------------|
| A carbon dioxide, glucose | oxygen, amino acids         |
| B carbon dioxide, urea    | oxygen, glucose             |
| C oxygen, glucose         | carbon dioxide, urea        |
| D oxygen, urea            | carbon dioxide, amino acids |

28 An experiment was carried out to show some conditions necessary for germination.

In which dish will the seeds germinate?

<i>dish</i>	<i>water</i>	<i>temperature</i> <i>/ °C</i>
A	absent	0
B	absent	10
C	present	10
D	present	0

29 What is the dry mass of a plant?

- A Its mass, after all the organic matter has been removed from it by heating.
- B Its mass, after all the water has been removed from it by heating.
- C Its mass, after it has not been watered for several days.
- D Its mass, after its leaves and roots have been gently dried.

30 What is the result of division of the nucleus by meiosis?

	<i>chromosome number halved</i>	<i>genetic variation</i>
--	-------------------------------------	------------------------------

- |   |     |     |
|---|-----|-----|
| A | yes | no  |
| B | yes | yes |
| C | no  | no  |
| D | no  | yes |

31 In a pea plant, the allele for round seeds (R) is dominant to the allele for wrinkled seeds (r).

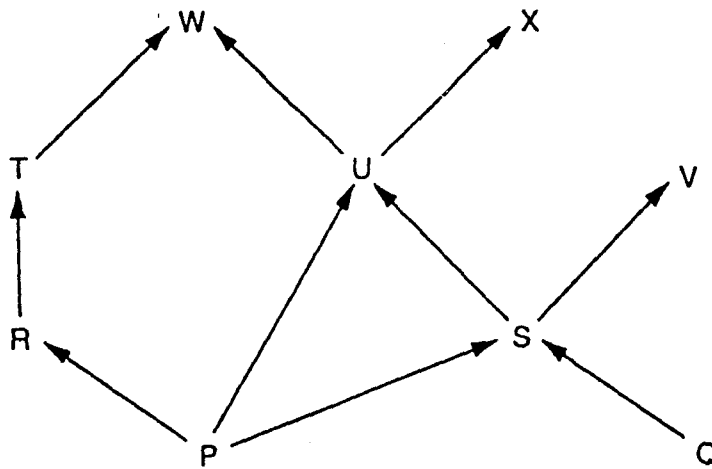
If plants with the genotype Rr are crossed, what are the likely proportions of offspring?

- A all with round seeds
- B all with wrinkled seeds
- C 1 with round seeds : 1 with wrinkled seeds
- D 3 with round seeds : 1 with wrinkled seeds

32 What name is given to a sudden change in a gene or chromosome?

- A allele
- B genotype
- C mutation
- D phenotype

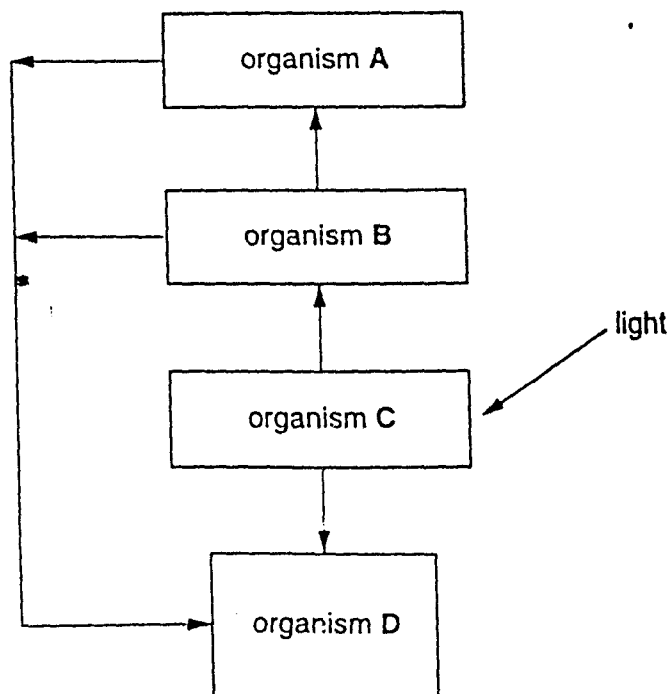
- 33 The diagram represents a food web. The letters represent organisms, and the arrows show the direction of the flow of energy.



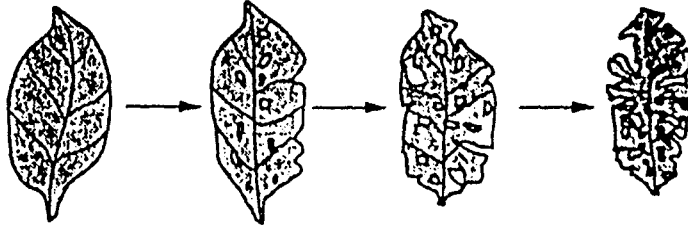
Which statement is correct?

- A P and Q are decomposers.
  - B P and Q are herbivores.
  - C W and X are consumers.
  - D W and X are producers.
- 34 The diagram shows the flow of energy in a food chain.

Which organism is the producer in the food chain?

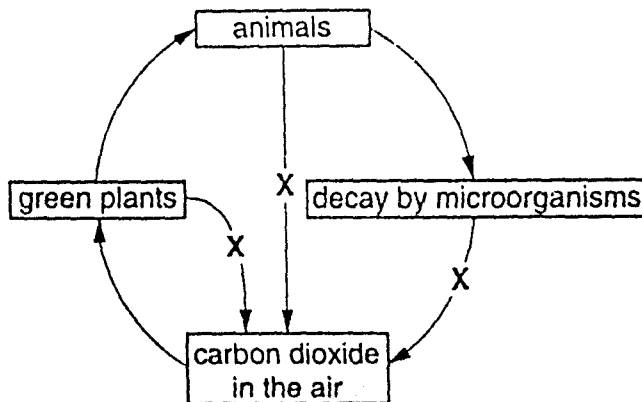


- 35 The diagram shows changes in the appearance of a leaf, as it lies on damp ground, over a period of time.



Which type of organism is most likely to have caused these changes?

- A a carnivore
  - B a decomposer
  - C a predator
  - D a producer
- 36 The diagram shows part of the carbon cycle.

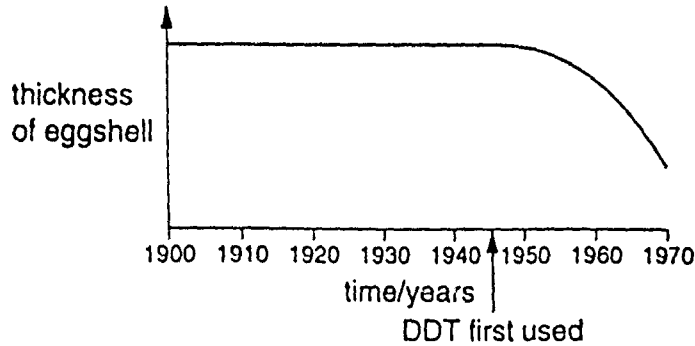


What could X represent?

- A death
  - B digestion
  - C photosynthesis
  - D respiration
- 37 The numbers in a population would rise, if there was an increase in the
- A amount of food available.
  - B number of deaths.
  - C number of its predators.
  - D spread of disease.



- 38 The graph shows the average thickness of eggshells of birds of prey between 1900 and 1970. The arrow shows when the pesticide DDT was first used.



Which statement is correct?

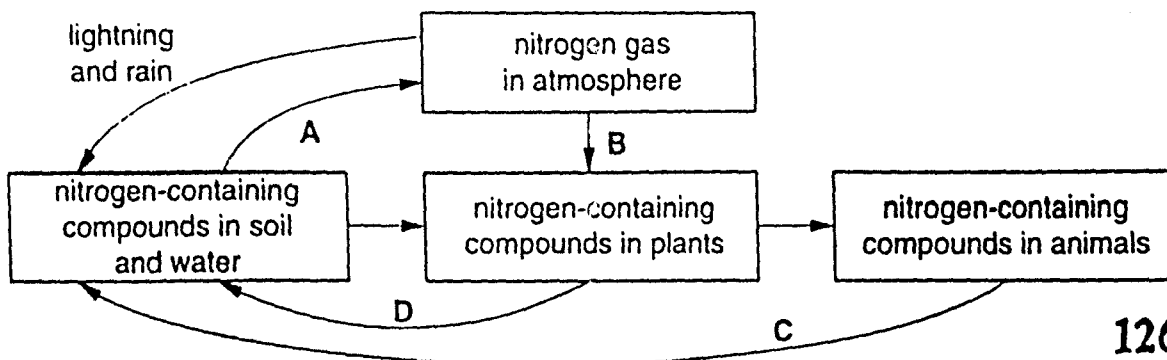
- A DDT had no effect on the thickness of eggshells.
  - B DDT made eggshells thinner.
  - C DDT only affected the eggshells of birds of prey.
  - D Eggshells were becoming thinner before DDT was first used.
- 39 The table shows the amount of carbon dioxide in the atmosphere in three different years.

year	1930	1980	1990
carbon dioxide / parts per million	300	330	370

What is the most likely cause of this change?

- A destruction of rain forests
  - B increased use of fertilisers containing nitrogen
  - C pollution of air by sulphur dioxide
  - D rise in the sea-level
- 40 The diagram shows part of the nitrogen cycle.

Where does human sewage enter the cycle?



**International General Certificate of Secondary Education  
UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE**

**BIOLOGY**

**0610/1**

**PAPER 1 Multiple Choice**

**Tuesday**

**2 JUNE 1998**

**Afternoon**

**45 minutes**

**Additional materials:**

Multiple Choice answer sheet

Soft clean eraser

Soft pencil (type B or HB is recommended)

**TIME** 45 minutes

**INSTRUCTIONS TO CANDIDATES**

**Do not open this booklet until you are told to do so.**

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There are forty questions in 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 very carefully the instructions on the answer sheet.**

**INFORMATION FOR CANDIDATES**

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.

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This question paper consists of 16 printed pages.

**127**

- 1 The table shows some characteristics of four animals.

Which animal is a fish?

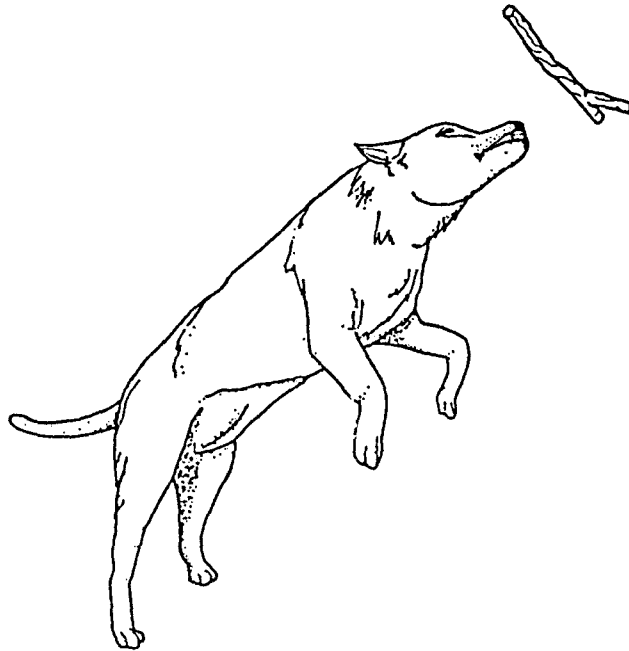
<i>animal</i>	<i>characteristics</i>		
	<i>fins</i>	<i>hair</i>	<i>scales</i>
A	✓	×	×
B	×	✓	×
C	×	×	✓
D	✓	×	✓

key

✓ = present

×

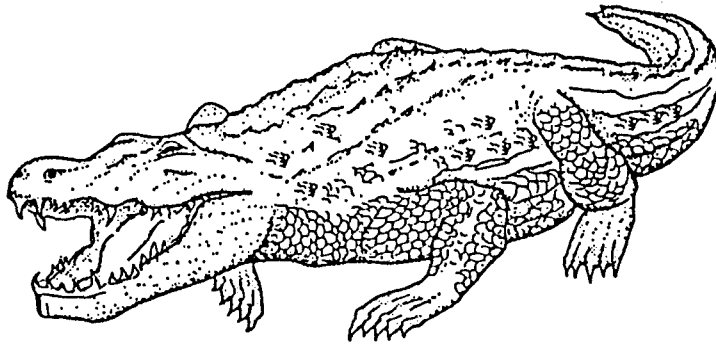
- 2 The diagram shows a dog about to catch a stick.



Which characteristics of living organisms does this action involve?

- A excretion and reproduction
- B growth and respiration
- C movement and irritability
- D nutrition and irritability

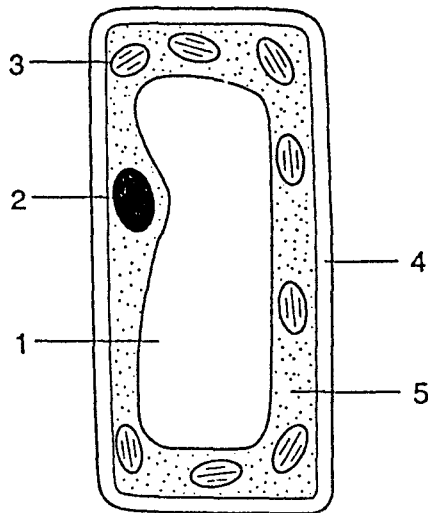
3 The diagram shows a vertebrate animal.



Using the key, to which class does the animal belong?

- 1 animal has four legs.....go to 2
- animal has two legs.....class A
- 2 body covered with hair .....class B
- body not covered with hair .....go to 3
- 3 scales absent .....class C
- scales present.....class D

4 The diagram shows the structure of a palisade cell.



Which features are also found in a liver cell?

- A 1 and 2
- B 2 and 5
- C 3 and 4
- D 4 and 5

5 Which structures are found in the root hair cells of a plant?

	<i>cell wall</i>	<i>chloroplast</i>	<i>vacuole</i>
A	✓	✓	✓
B	✓	✓	x
C	✓	x	✓
D	x	✓	✓

key

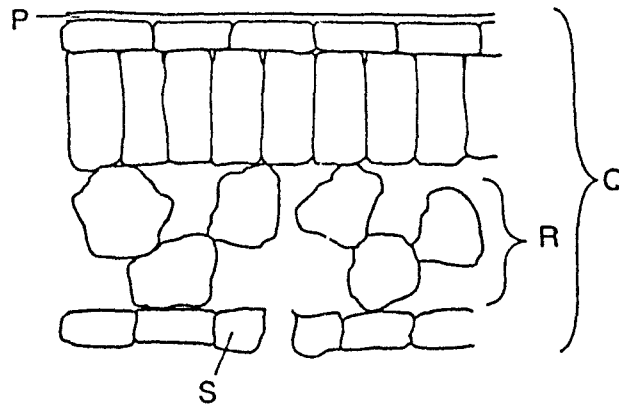
✓ = structure present

x = structure absent

6 Which term is used for a group of similar cells which have the same function?

- A an organ
- B an organism
- C a system
- D a tissue

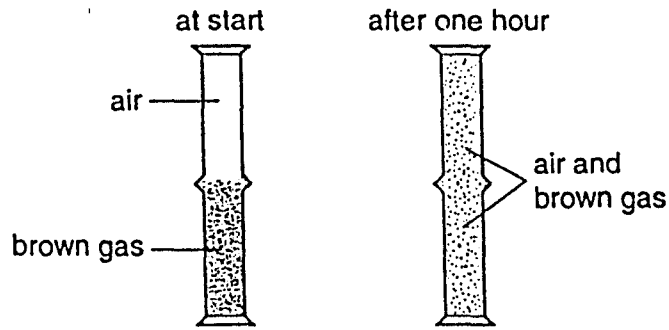
7 The diagram shows a section through a leaf.



Which structure is an organ and which is a tissue?

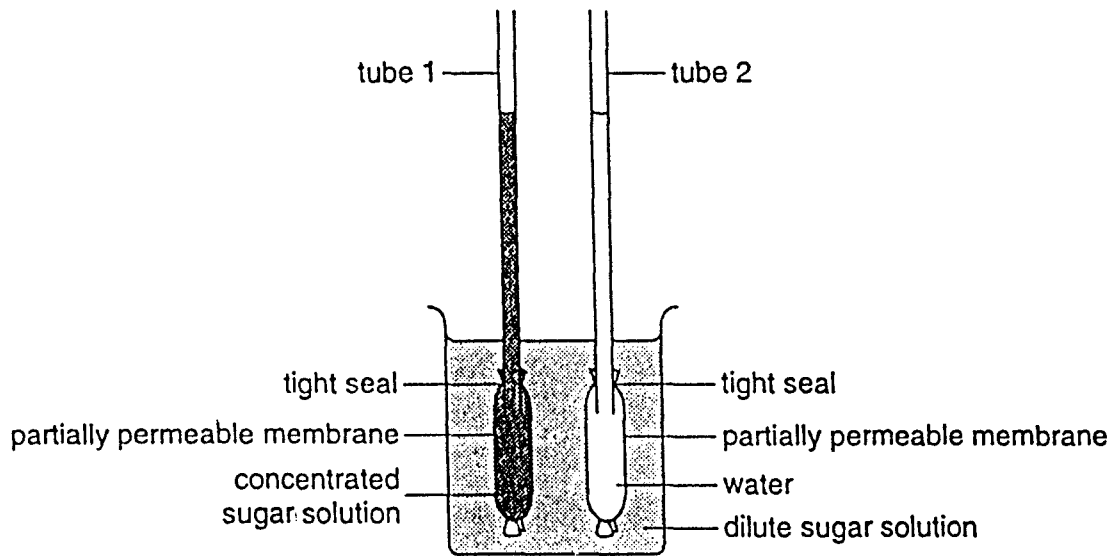
	<i>organ</i>	<i>tissue</i>
A	P	S
B	Q	R
C	R	P
D	S	Q

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



Which process has taken place?

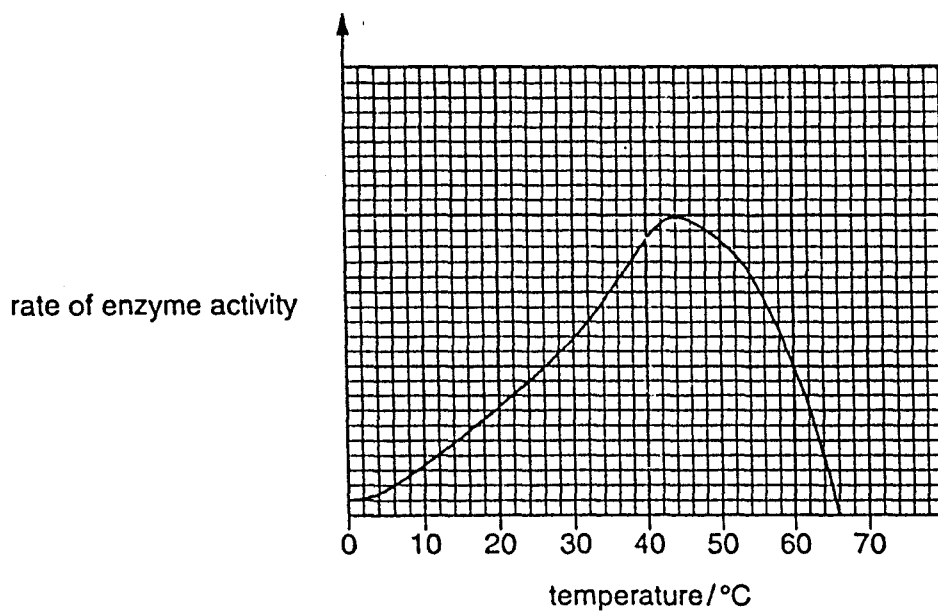
- A absorption
  - B diffusion
  - C evaporation
  - D osmosis
- 9 The diagram shows apparatus set up to demonstrate osmosis.



What happens to the liquid levels in the tubes after one hour?

- |   | <i>tube 1</i> | <i>tube 2</i> |
|---|---------------|---------------|
| A | falls         | rises         |
| B | no change     | rises         |
| C | rises         | falls         |
| D | rises         | no change     |

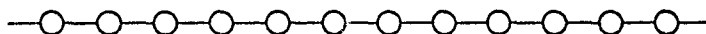
10 The graph shows the effect of temperature on the rate of activity of an enzyme.



Which statement is correct?

- A Enzyme activity is greatest at 65 °C.
- B Enzyme activity is slowest at 10 °C.
- C Enzyme activity stops at 42 °C.
- D Enzyme activity is the same at 26 °C and 60 °C.

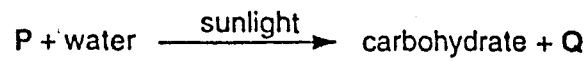
11 The diagram shows part of a starch molecule.



Which diagram shows the effect of the enzyme amylase on this molecule?

- A
- B
- C
- D

12 An equation for photosynthesis is shown.

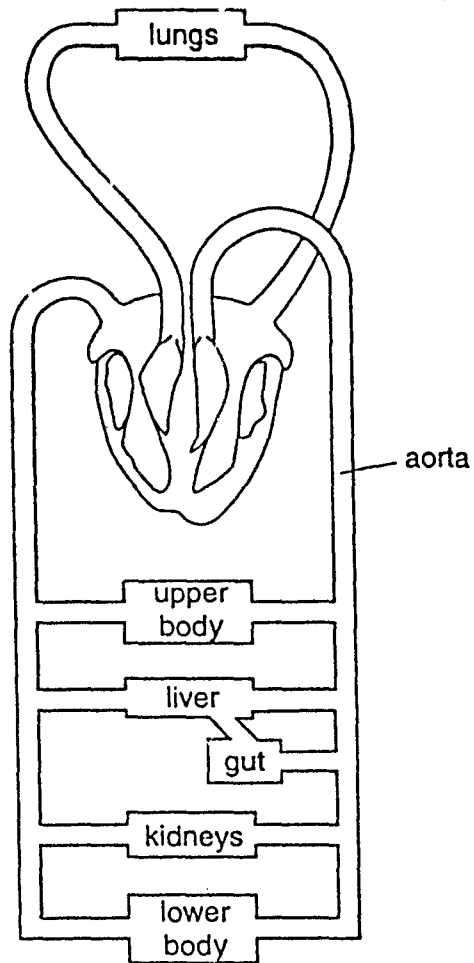


What do P and Q represent?

- | P                | Q              |
|------------------|----------------|
| A carbon dioxide | chlorophyll    |
| B carbon dioxide | oxygen         |
| C oxygen         | carbon dioxide |
| D oxygen         | chlorophyll    |
- 13 The following substances are found in the leaf of a plant.
- Which is obtained from the soil?
- A carbon dioxide
  - B chlorophyll
  - C glucose
  - D mineral salts
- 14 During the day, which substance needed for protein synthesis is carried into a leaf through a vein?
- A carbon dioxide
  - B nitrate
  - C oxygen
  - D sugar



15 The diagram shows the blood circulation system of a human.

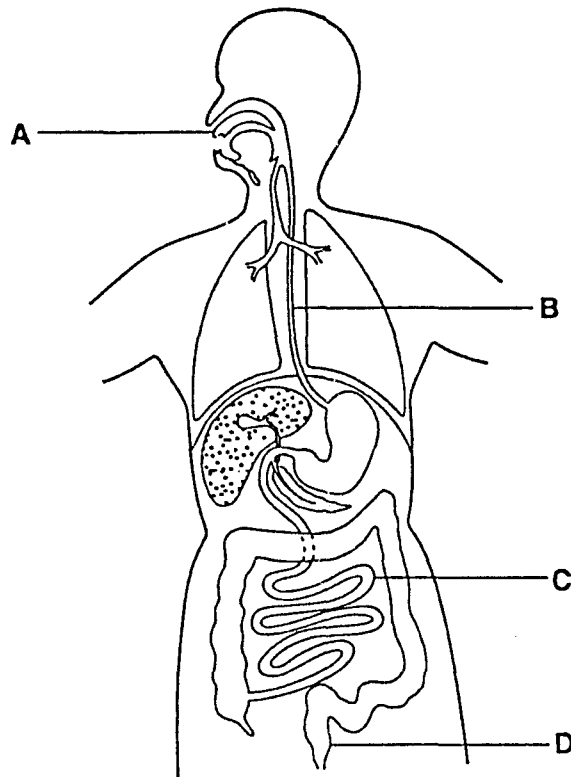


How many times does blood from the kidneys pass through the heart on its way to the aorta?

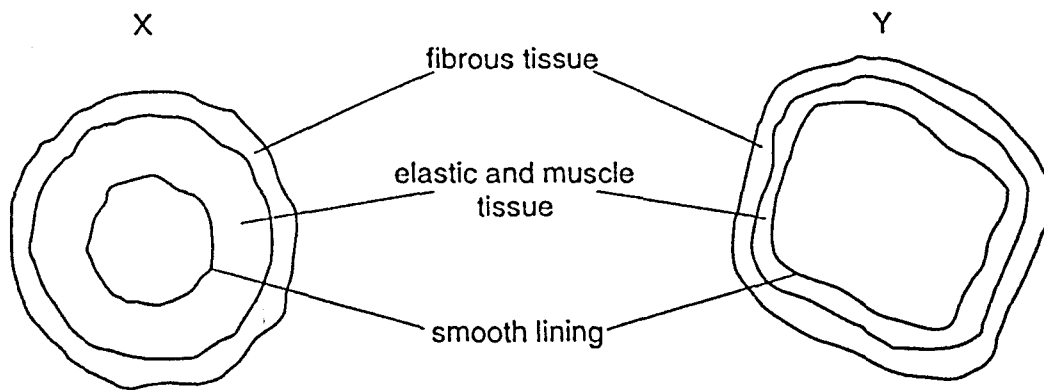
- A one
- B two
- C four
- D more than four

16 The diagram shows the human alimentary canal.

In which region is digested food absorbed?



17 The diagram shows cross-sections of two types of blood vessel, X and Y.

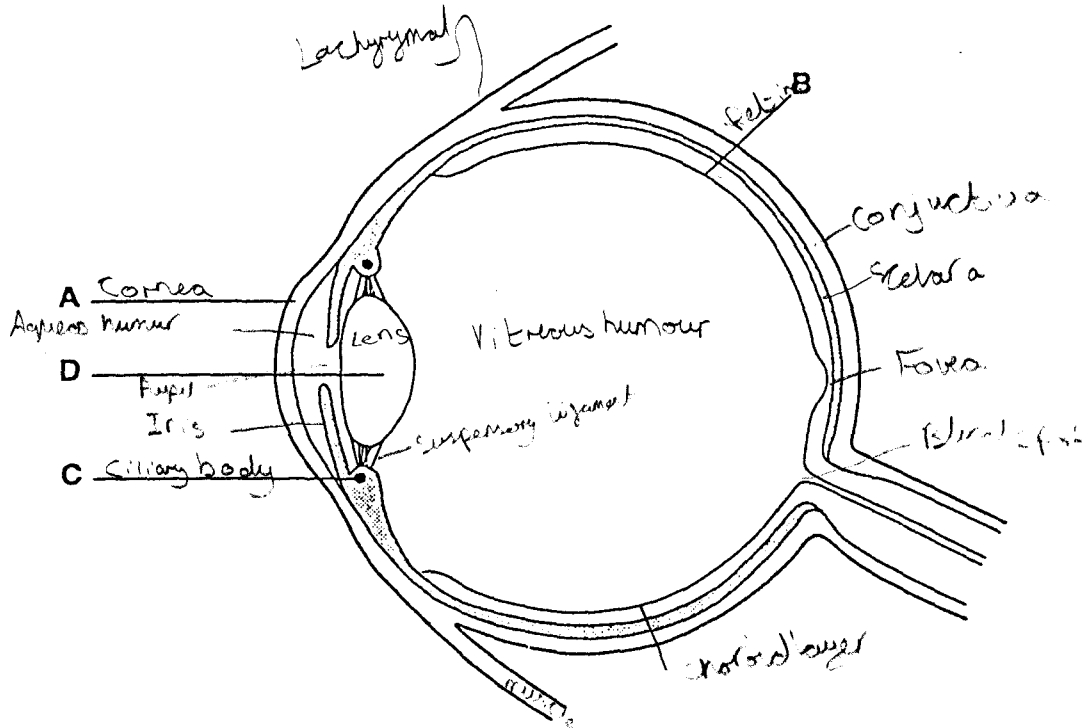


What do X and Y represent?

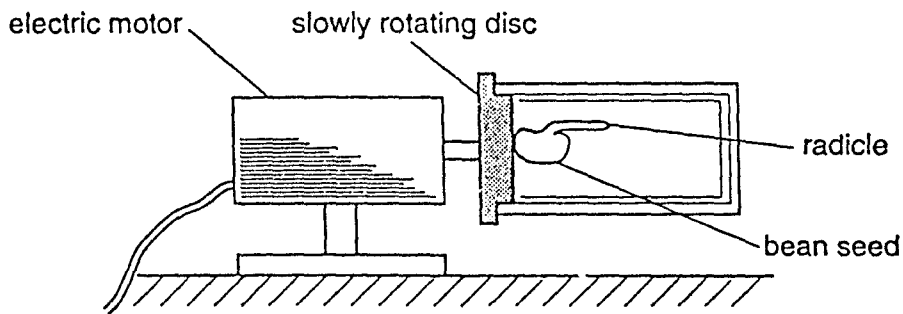
- | X           | Y         |
|-------------|-----------|
| A artery    | capillary |
| B artery    | vein      |
| C capillary | vein      |
| D vein      | artery    |

22 The diagram shows a section through an eye.

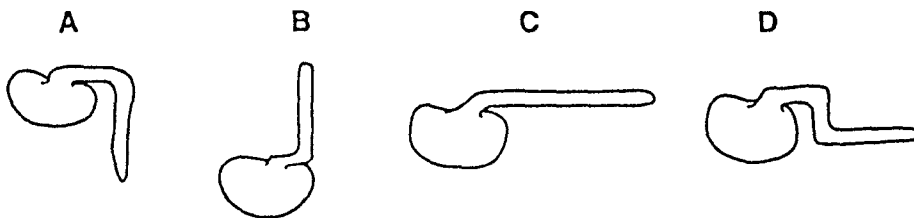
Which structure contracts or relaxes during accommodation?



23 The diagram shows a germinated bean seed with a horizontal radicle. This is placed on a slowly rotating disc and is left for three days.

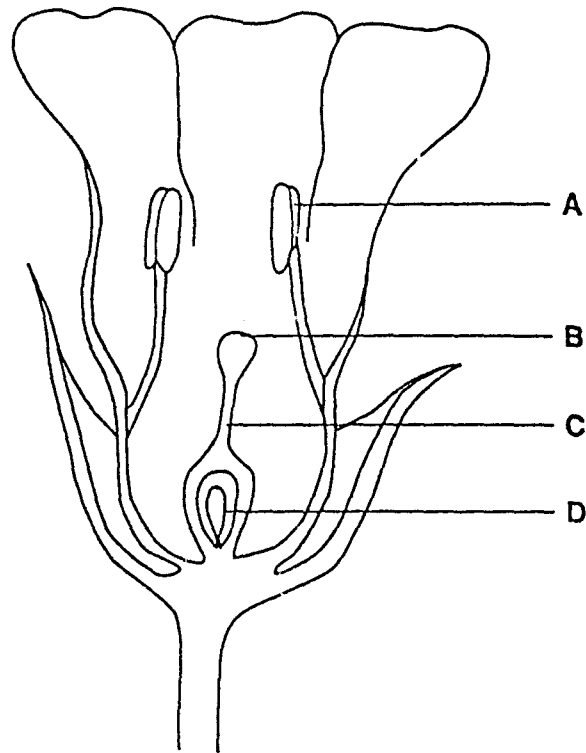


Which diagram shows the appearance of the radicle after three days?

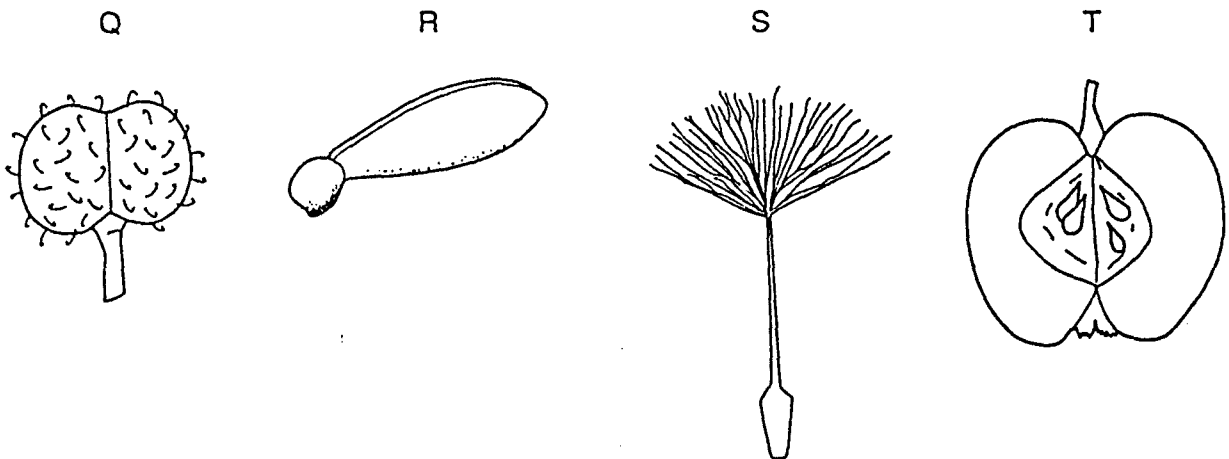


24 The diagram shows the structure of a flower.

Where does fertilisation take place?



25 The diagram shows four different fruits.



The seeds of which fruits are dispersed by the wind?

A R only

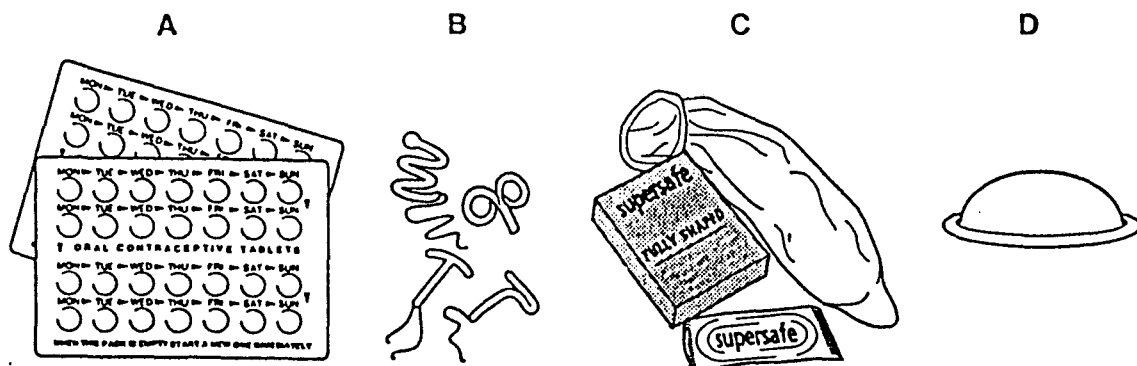
B T only

C Q and T

D R and S

26 The diagrams show four methods of birth control.

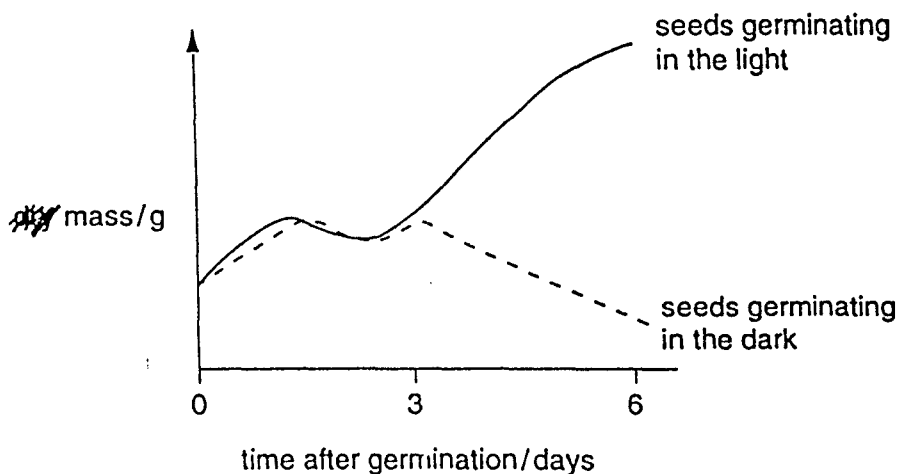
Which of these is a chemical method?



27 What does the nucleus in every body cell of a man contain?

- A X allele
- B Y allele
- C Y chromosome
- D Y gene

28 The graph shows the changes in the ~~dry~~ masses of two similar samples of germinating seeds.



What causes the change in ~~dry~~ mass after day 3, of the seeds germinating in the light?

- A All the stored food has been used up.
- B A lot of water has been absorbed.
- C Photosynthesis has begun.
- D The respiration rate has increased.

29 Which is an example of discontinuous variation in humans?

- A blood group
- B body weight
- C height
- D width of hand

30 Coat colour in mice is determined by a pair of alleles. The allele for black is dominant to the allele for brown.

Two mice which are heterozygous for coat colour are allowed to mate.

Which percentage of their offspring will have black coats?

- A 100%                      B 75%                      C 50%                      D 25%

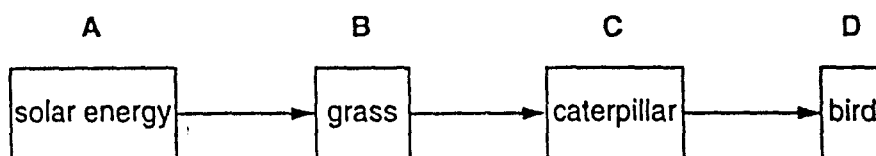
31 In a species of plant, the allele for red flowers is dominant to the allele for white flowers.

Which offspring will result from a cross between a heterozygous red-flowered plant and a white-flowered plant?

- A heterozygous red and homozygous white
- B heterozygous red only
- C heterozygous red and homozygous red
- D homozygous white only

32 The diagram shows a simple food chain.

Which is the primary (first) consumer?



33 Which of the following is a correct example of a food chain?

- A grain → cat → mouse
- B grain → mouse → cat
- C mouse → cat → grain
- D mouse → grain → cat

34 From which food chain is least energy lost?

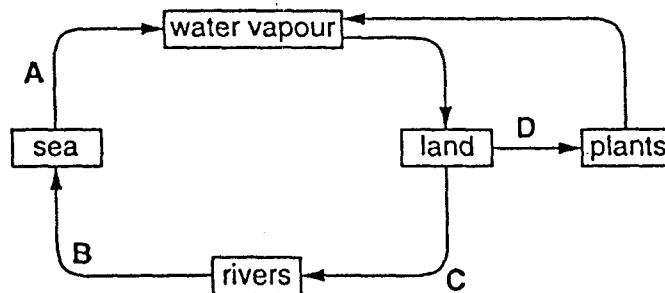
- A green plant → human
- B green plant → sheep → human
- C green plant → cow (milk) → human
- D green plant → small fish → large fish → human

35 In the nitrogen cycle, which is an example of denitrification?

- A nitrates → nitrogen
- B nitrogen → protein
- C protein → urea
- D urea → nitrates

36 The diagram shows part of the water cycle.

At which stage does the use of nitrate fertilisers in agriculture cause the greatest pollution?



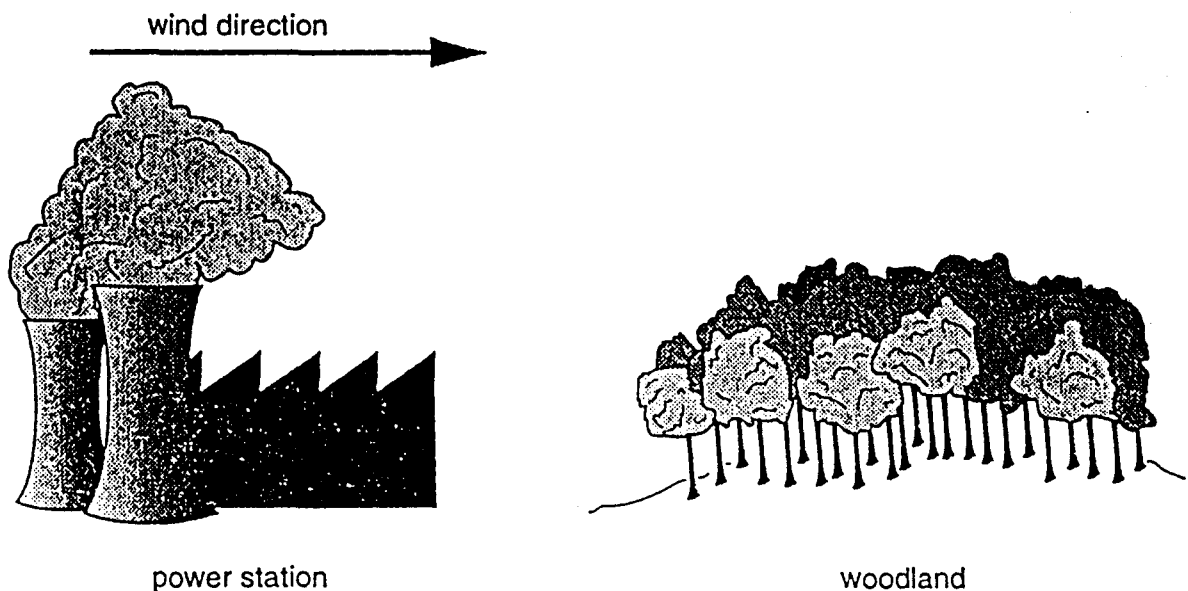
37 What happens to the size of a population if there are no limiting factors acting on it?

- A It decreases continuously.
- B It increases continuously.
- C It increases and then decreases.
- D It remains almost constant.

38 Which human activity helps to prevent the extinction of animal species?

- A creating more farmland
- B creating nature reserves
- C destroying natural habitats
- D extracting natural resources

39 The diagram shows a coal-burning power station and a nearby woodland area.



What is most likely to cause the trees from the woodland to show stunted growth and loss of leaves?

- A carbon dioxide
  - B high temperatures
  - C strong winds
  - D sulphur dioxide
- 40 What are the effects of sewage pollution on the oxygen concentration and the number of bacteria in a river?

<i>oxygen concentration</i>	<i>number of bacteria</i>
A decreases	decreases
B decreases	increases
C increases	decreases
D increases	increases



**International General Certificate of Secondary Education  
UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE**

**BIOLOGY**

**0610/1**

**PAPER 1 Multiple Choice**

**Tuesday**

**10 NOVEMBER 1998**

**Afternoon**

**45 minutes**

**Additional materials:**

Multiple Choice answer sheet

Soft clean eraser

Soft pencil (type B or HB is recommended)

**TIME** 45 minutes

**INSTRUCTIONS TO CANDIDATES**

**Do not open this booklet until you are told to do so.**

Write your name, Centre number and candidate number on the answer sheet in the spaces provided unless this has already been done for you.

There are **forty** questions in 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 very carefully the instructions on the answer sheet.**

**INFORMATION FOR CANDIDATES**

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.

- 1 The table lists six of the seven characteristics of living organisms.

<i>characteristics of living organisms</i>	
1	excretion
2	growth
3	irritability
4	nutrition
5	reproduction
6	respiration
7	?

What is the seventh characteristic?

- A coordination
- B digestion
- C movement
- D sight

- 2 The table shows some features of four vertebrates.

<i>feature</i>	<i>vertebrate</i>			
	P	Q	R	S
has hair	✓	X	✓	X
has feathers	X	✓	X	X
has scales	X	X	X	✓
has wings	✓	✓	X	X
lays eggs	X	✓	X	✓
produces milk	✓	X	✓	X

*key*

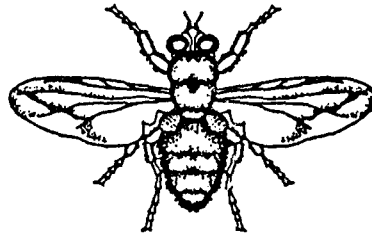
✓ = feature present

X = feature not present

Which two vertebrates are most closely related?

- A P and Q
- B P and R
- C Q and S
- D R and S

3 The diagram shows an animal.



Using the key, what is the identity of the animal?

- 1 wings present.....2  
 wings absent.....3
- 2 one pair of wings visible.....animal A  
 two pairs of wings visible .....animal B
- 3 three pairs of legs .....animal C  
 four pairs of legs .....animal D

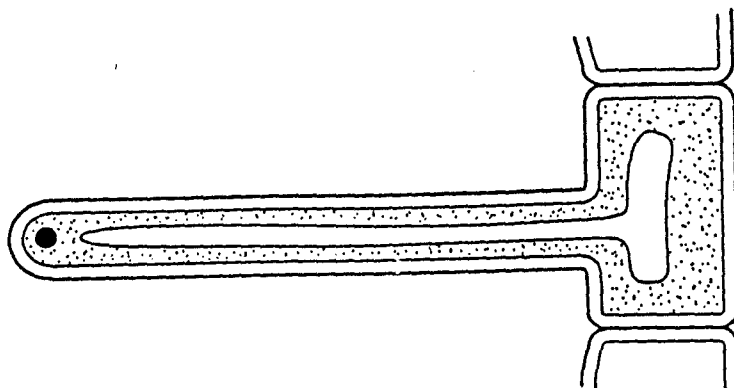
4 Which of the following does not contain cytoplasm?

- A liver cell
- B palisade cell
- C red blood cell
- D xylem vessel

5 Which structure is not found in an animal cell?

- A cell membrane
- B cell wall
- C cytoplasm
- D nucleus

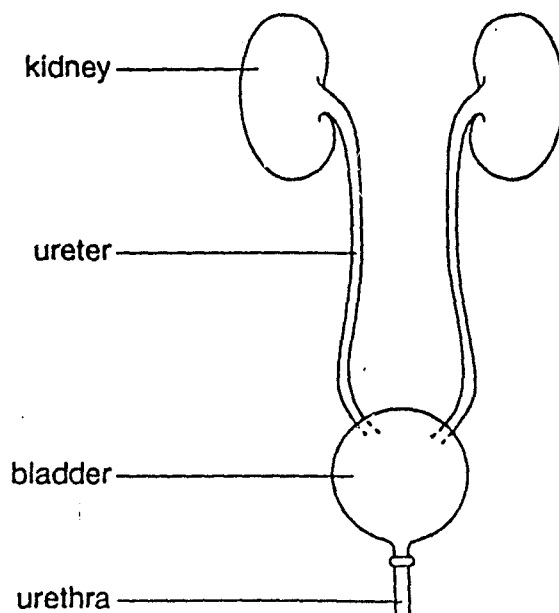
6 The diagram shows a root hair cell.



Which feature of this cell adapts it to carry out its function of absorption?

- A cell membrane
- B central vacuole
- C large surface area
- D lining of cytoplasm

7 The diagram shows those parts of a mammal that make and remove urine.

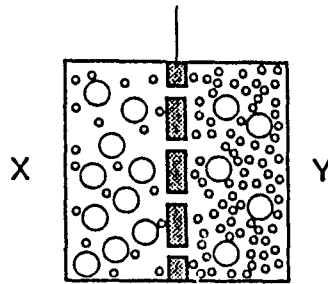


Together, what do these structures form?

- A an organ
- B an organism
- C an organ system
- D a tissue

- 8 The diagram shows water and sugar molecules on either side of a partially permeable membrane.

partially permeable membrane



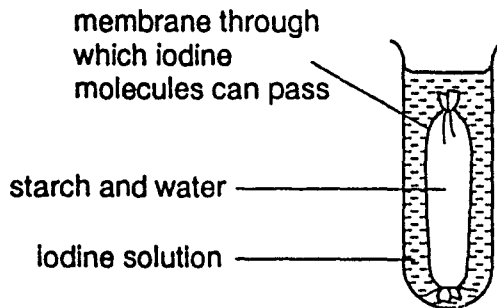
key

○ sugar molecule

• water molecule

What happens during osmosis?

- A More sugar molecules pass through the membrane from X to Y than from Y to X.  
 B More sugar molecules pass through the membrane from Y to X than from X to Y.  
 C More water molecules pass through the membrane from X to Y than from Y to X.  
 D More water molecules pass through the membrane from Y to X than from X to Y.
- 9 An experiment is set up as shown.



What is the colour of the starch and water mixture after 30 minutes?

- A blue-black  
 B orange  
 C white  
 D yellow-brown

10 When substance X is added to oil, it causes the breakdown of the oil to fatty acids and glycerol.

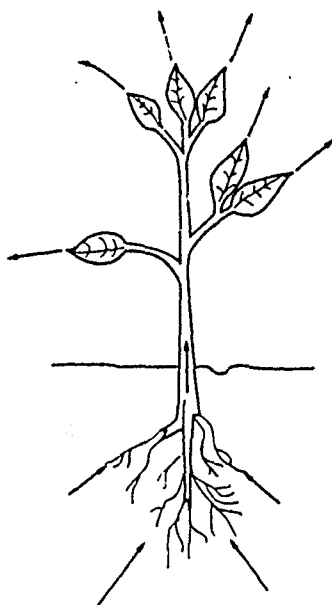
What is substance X?

- A a fat
- B an enzyme
- C bile
- D ethanol

11 In which conditions will amylase in saliva work best?

	<i>temperature / °C</i>	<i>pH</i>
A	25	3
B	37	5
C	25	7
D	37	8

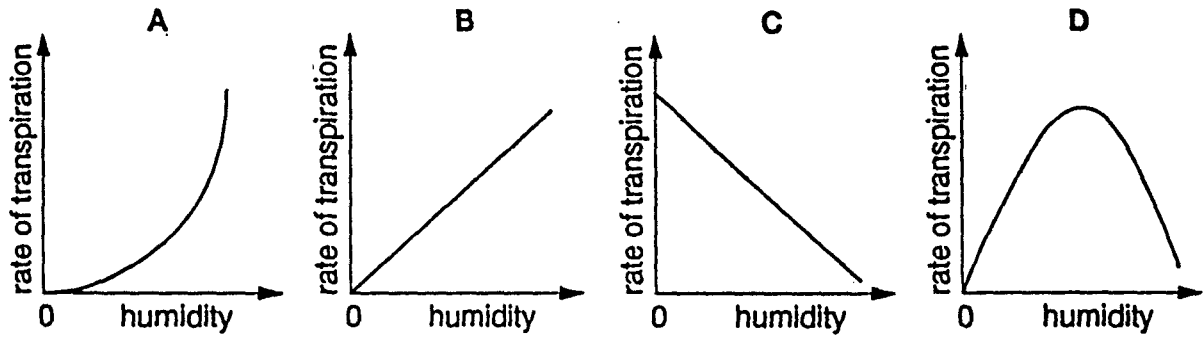
12 The arrows on the diagram show the path taken by a substance through a plant.



Which substance follows this path?

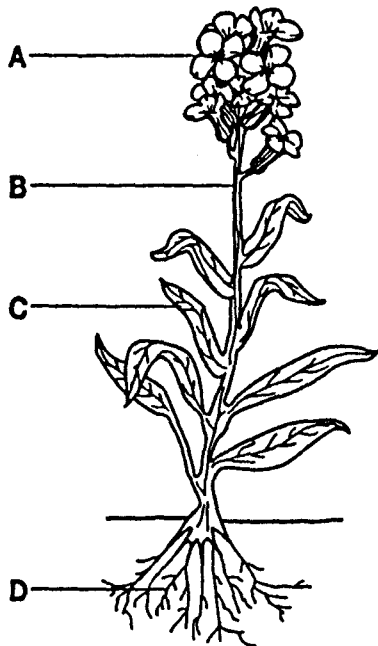
- A glucose
- B nitrate (ions)
- C oxygen
- D water

13 Which graph shows the effect of changes in humidity on the rate of transpiration?



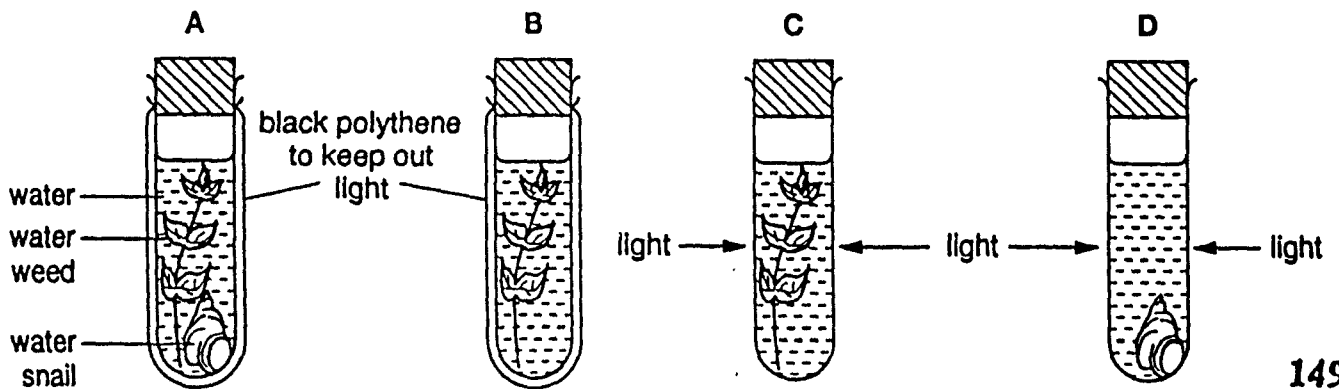
14 The diagram shows a plant in flower.

Which part contains most magnesium?

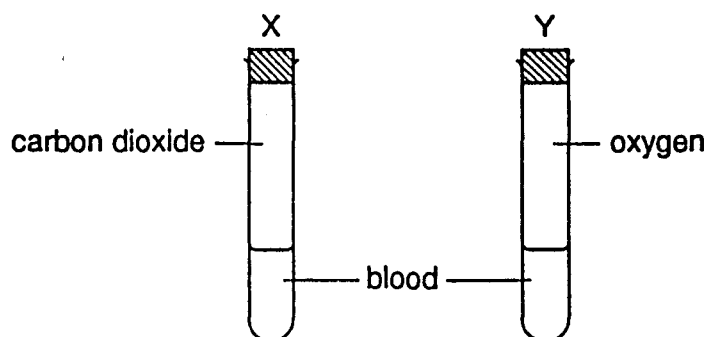


15 Four test-tubes are set up as shown.

Which test-tube contains the most carbon dioxide after one hour?

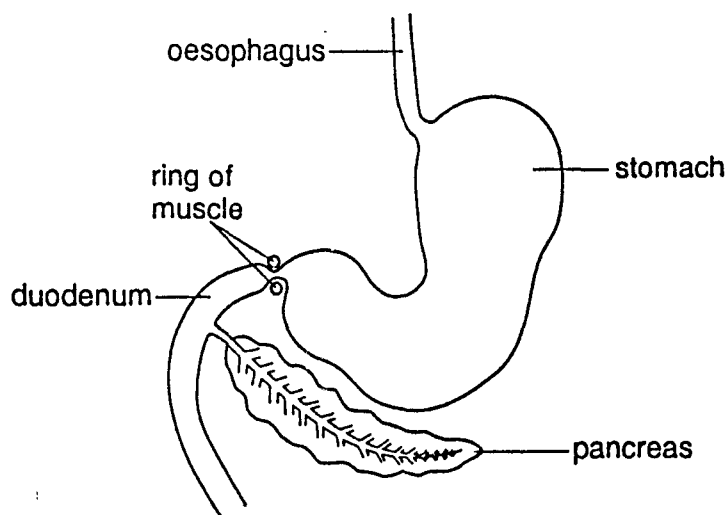


- 16 Two test-tubes are set up to show one of the properties of fresh blood.



After shaking the test-tubes, what is the colour of the blood?

- |   | <i>test-tube X</i> | <i>test-tube Y</i> |
|---|--------------------|--------------------|
| A | dull red           | dull red           |
| B | dull red           | bright red         |
| C | bright red         | dull red           |
| D | bright red         | bright red         |
- 17 The diagram shows part of the human digestive system.

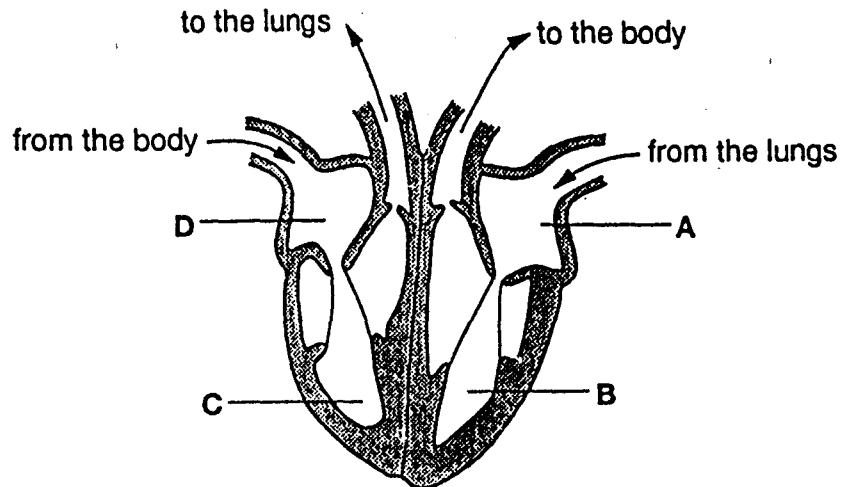


What does the ring of muscle control?

- A the amount of acid released into the stomach
- B the entry of food into the stomach
- C the contractions of the wall of the stomach
- D the release of food from the stomach

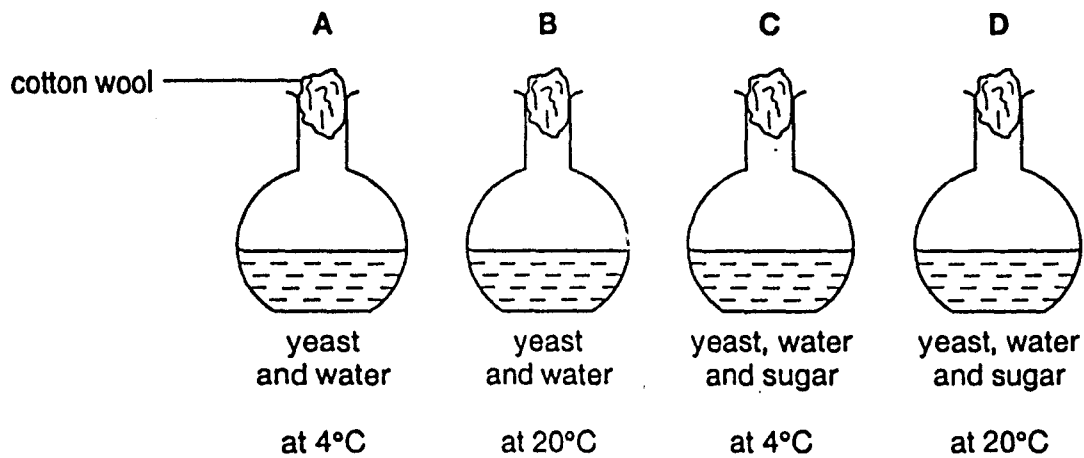


18 Which chamber of the human heart pumps blood most strongly?



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

Which flask will contain most alcohol after several hours?



20 A resting lion sees a zebra.

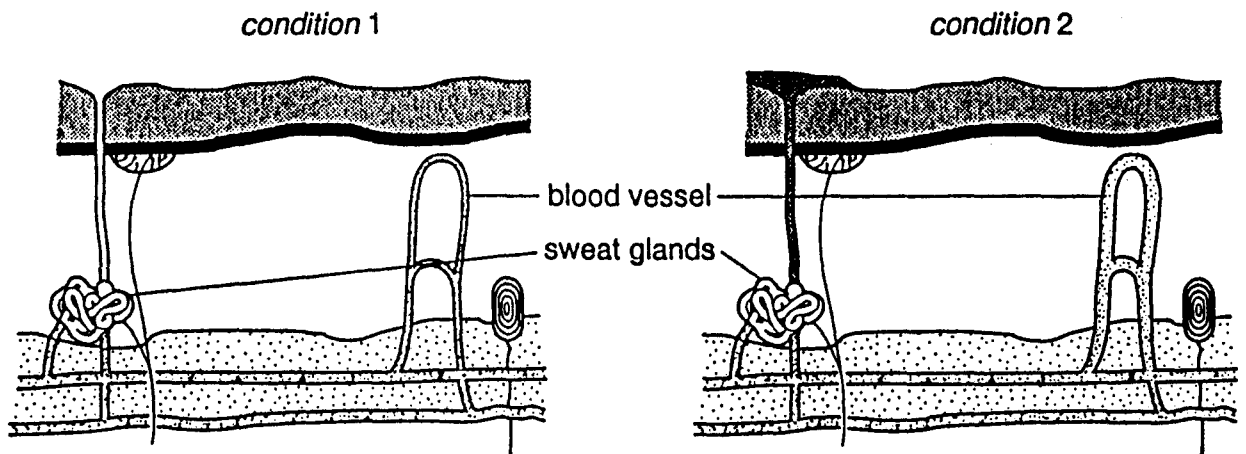
What will happen to the rate and the depth of the lion's breathing as it chases the zebra?

	<i>rate of breathing</i>	<i>depth of breathing</i>
<b>A</b>	decreases	decreases
<b>B</b>	decreases	increases
<b>C</b>	increases	decreases
<b>D</b>	increases	increases

21 Which food type, when eaten in excess, will cause a rise in the urea content of urine?

- A carbohydrate
- B fat
- C mineral salts
- D protein

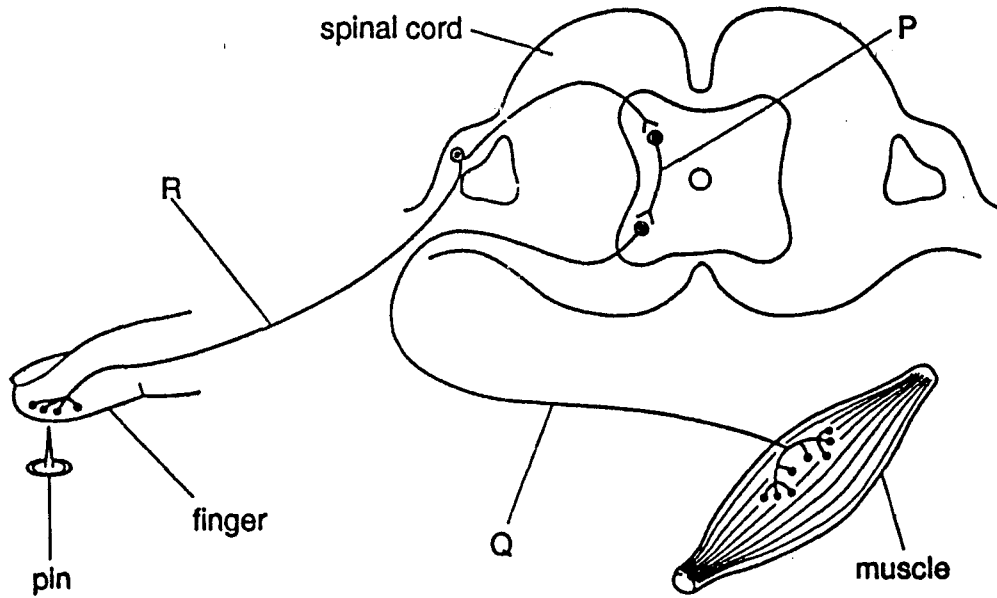
22 The diagram shows structures within human skin under two different external conditions.



What are external conditions 1 and 2?

- |   | <i>condition 1</i> | <i>condition 2</i> |
|---|--------------------|--------------------|
| A | cool               | hot                |
| B | cool               | cool               |
| C | hot                | cool               |
| D | hot                | hot                |

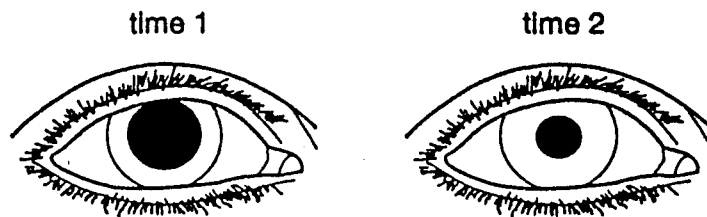
23 The diagram represents a simple reflex arc.



What is the sequence of nerve cells through which an impulse passes during a reflex action?

	<i>first</i>	→	<i>last</i>
<b>A</b>	P	Q	R
<b>B</b>	P	R	Q
<b>C</b>	Q	P	R
<b>D</b>	R	P	Q

24 The diagrams show the same eye at two different times.

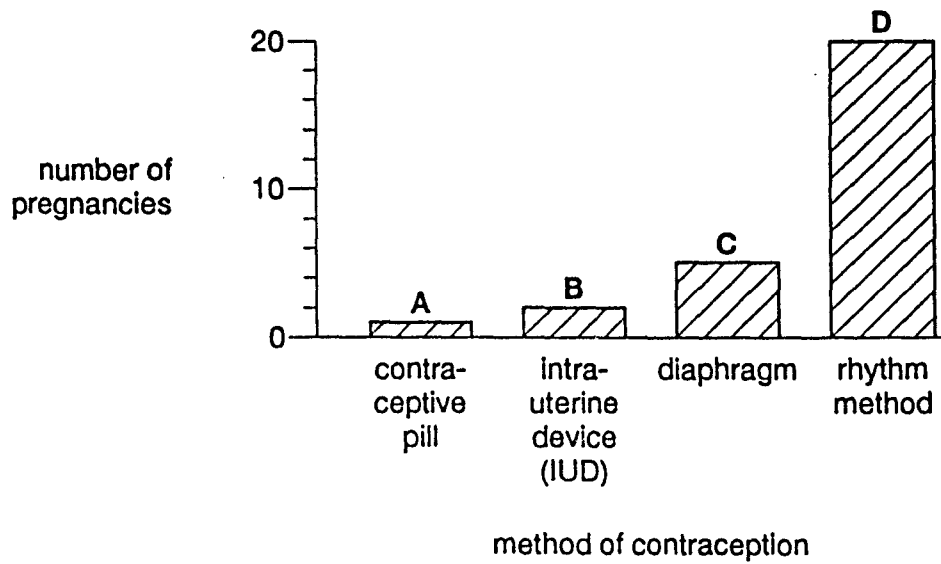


From the diagrams, what happens between time 1 and time 2?

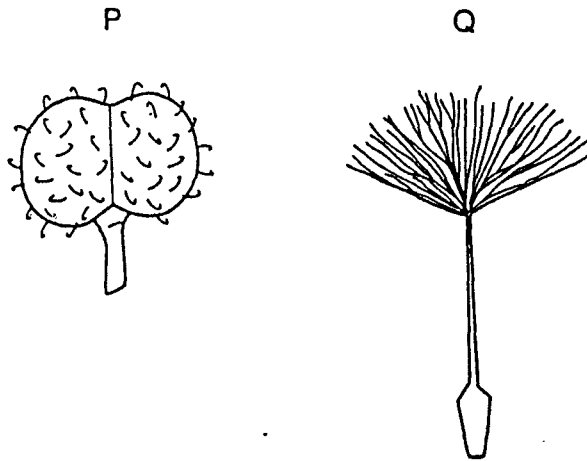
- A A bright light is shone into the eye.
- B The eye closes and then opens.
- C The eye focuses on a more distant object.
- D The person walks into a dark room.

- 25 The graph shows the number of pregnancies which resulted while four groups of 100 women were each using a different method of contraception.

Which method of contraception is the most effective?



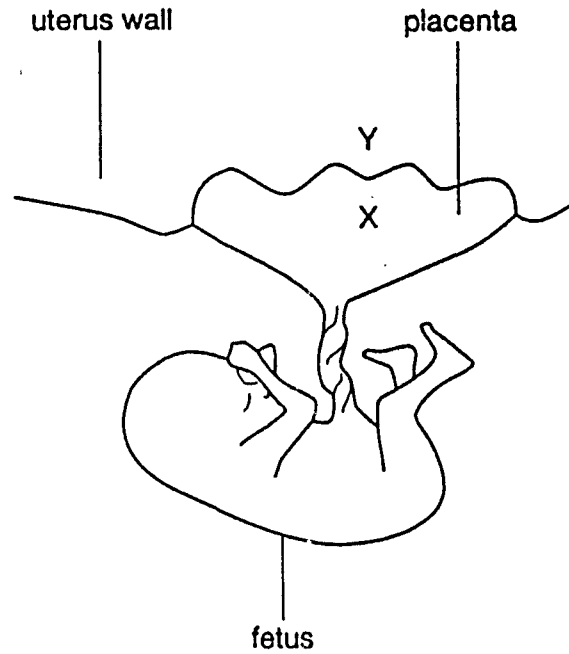
- 26 The diagrams show two fruits.



How are these fruits dispersed?

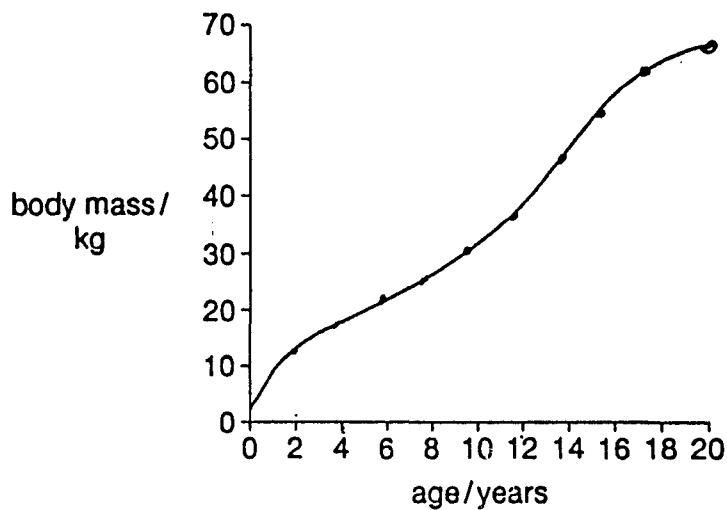
- |   | P       | Q       |
|---|---------|---------|
| A | animals | animals |
| B | animals | wind    |
| C | wind    | animals |
| D | wind    | wind    |

27 The diagram shows a fetus, placenta and uterus wall.



Which substances will pass from X to Y?

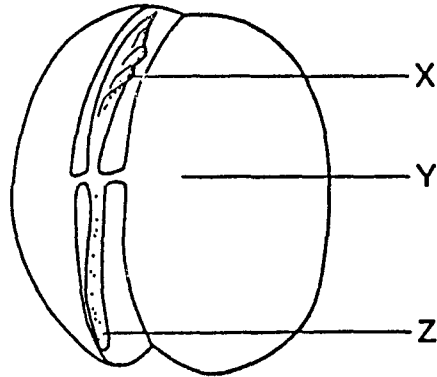
- A carbon dioxide and glucose
  - B carbon dioxide and urea
  - C oxygen and glucose
  - D oxygen and urea
- 28 The graph shows the average increase in body mass of humans between the ages of 0 and 20 years.



Between which ages is the increase in body weight most rapid?

- A 0 - 2 years
- B 4 - 6 years
- C 12 - 14 years
- D 16 - 18 years

29 The diagram shows a germinating bean seed with the seed coat removed.



What are the structures X, Y and Z?

	<i>structures</i>		
	X	Y	Z
<b>A</b>	cotyledon	radicle	plumule
<b>B</b>	plumule	cotyledon	radicle
<b>C</b>	plumule	radicle	cotyledon
<b>D</b>	radicle	plumule	cotyledon

30 What is **always** found in female gametes and **may** be found in male gametes?

- A one X chromosome
- B one Y chromosome
- C two X chromosomes
- D one X chromosome and one Y chromosome

31 The table shows the results of crossing pea plants which have different phenotypes.

<i>phenotypes of parents</i>	<i>phenotypes of offspring</i>
green seeds and yellow seeds	all yellow seeds
tall stem and short stem	all tall stems

The alleles for which phenotypes are dominant?

- |   | <i>seed colour</i> | <i>stem length</i> |
|---|--------------------|--------------------|
| A | green              | tall               |
| B | green              | short              |
| C | yellow             | tall               |
| D | yellow             | short              |

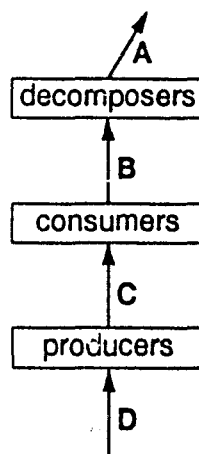
32 In a plant species, the allele for red flowers (R) is dominant to the allele for white flowers (r). Homozygous red-flowered plants (RR) are crossed with homozygous white-flowered plants (rr).

Which colour flowers are produced by the offspring?

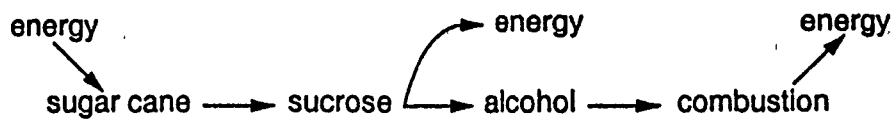
- A all red
- B all white
- C equal numbers of red and white
- D three red to one white

33 The diagram shows organisms in an ecosystem.

Which arrow represents energy input from the Sun?

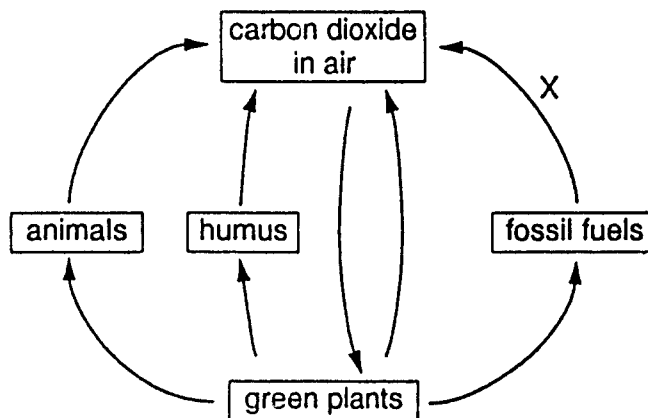


- 34 The diagram shows energy flowing through a system.



Which process liberates energy from the sucrose?

- A anaerobic respiration
  - B aerobic respiration
  - C evaporation
  - D photosynthesis
- 35 The diagram represents the carbon cycle.

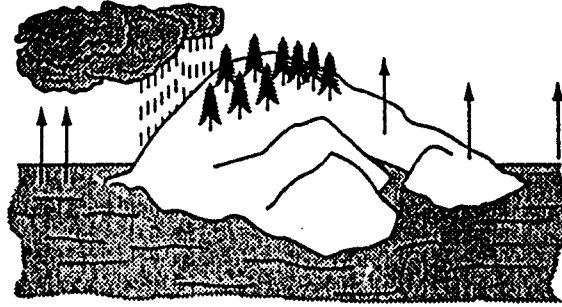


Which process is represented by arrow X?

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



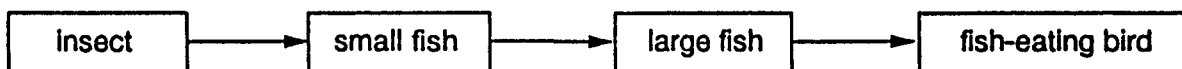
36 The diagram shows part of the water cycle.



Which process is shown by the arrows?

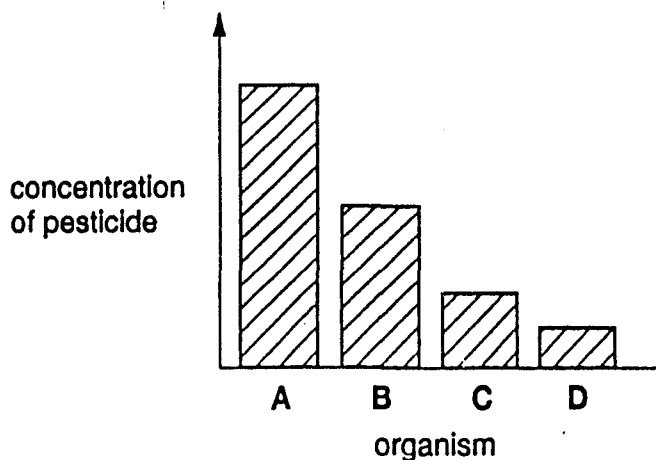
- A condensation
  - B evaporation
  - C precipitation
  - D transpiration
- 37 What leads directly to a fall in human birth rate?
- A better medical care
  - B improved housing
  - C increased food supply
  - D use of contraception

38 The diagram shows part of a food chain.

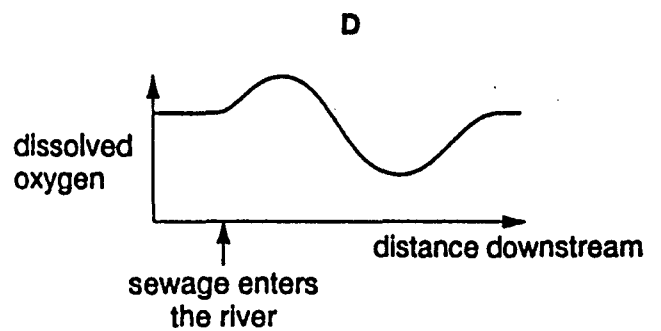
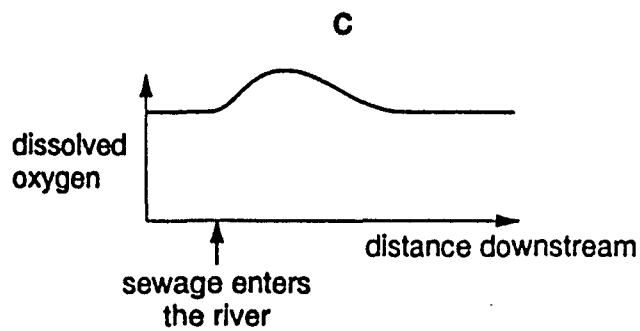
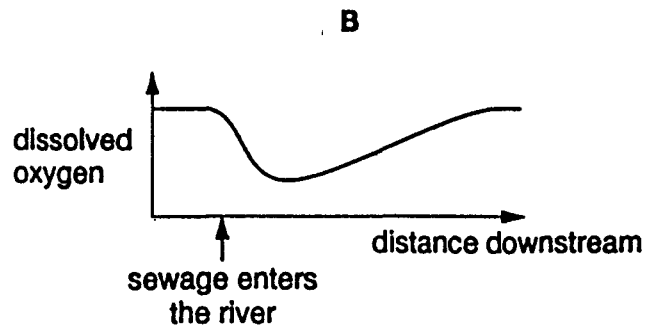
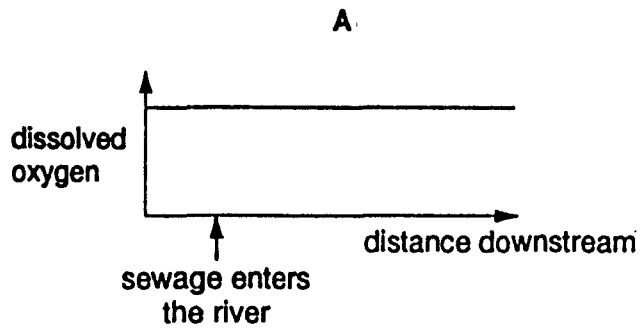


The chart shows the concentration of pesticide in the bodies of each organism in the chain.

Which organism on the chart is the large fish?



39 Which graph shows the effect of pollution by sewage on the amount of oxygen dissolved in a river?



40 Which activity will be least likely to lead to the extinction of species?

- A conservation
- B deforestation
- C use of herbicides
- D use of pesticides

International General Certificate of Secondary Education  
UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE  
**BIOLOGY** **0610/1**  
PAPER 1 Multiple Choice

Tuesday **8 JUNE 1999** Afternoon 45 minutes

Additional materials:  
Multiple Choice answer sheet  
Soft clean eraser  
Soft pencil (type B or HB is recommended)

**TIME** 45 minutes

**INSTRUCTIONS TO CANDIDATES**

**Do not open this booklet until you are told to do so.**

Write your name, Centre number and candidate number on the answer sheet in the spaces provided unless this has already been done for you.

There are **forty** questions in 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 very carefully the instructions on the answer sheet.**

**INFORMATION FOR CANDIDATES**

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Any rough working should be done in this booklet.

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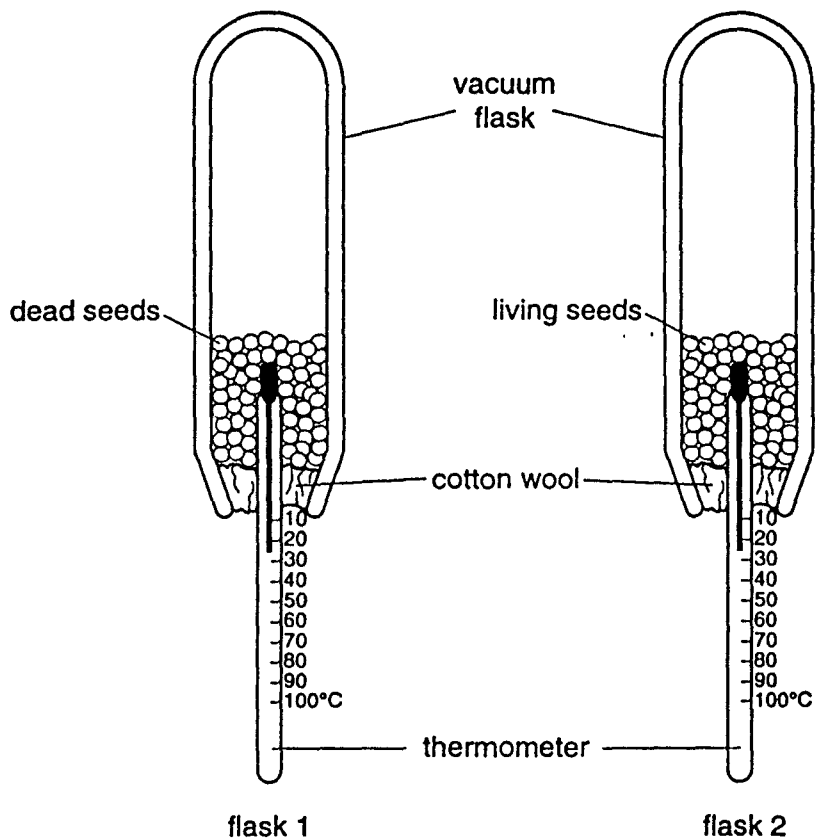
This question paper consists of 17 printed pages and 3 blank pages.

**161**

1 Which two characteristics of all living organisms are involved when a person catches a ball?

- A growth and movement
- B growth and nutrition
- C irritability and movement
- D irritability and nutrition

2 An experiment is set up as shown.

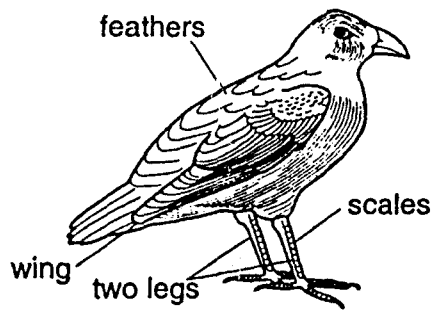


After two days, the temperature has increased in flask 2 only.

What causes this increase in temperature?

- A excretion
- B nutrition
- C reproduction
- D respiration

3 The diagram shows some external features of a bird.



Which feature is also found in fish and reptiles?

- A feathers
- B scales
- C two legs
- D wings

4 Which structure is found **only** in plant cells?

- A cell membrane
- B cell wall
- C cytoplasm
- D nucleus

5 In the table, which is an animal cell?

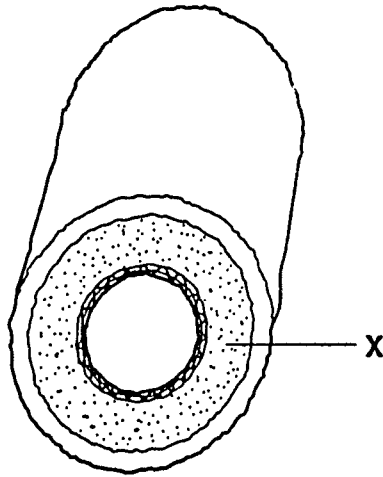
	characteristic of cell			
	cell membrane	chloroplasts	cytoplasm	nucleus
A	✓	x	✓	✓
B	✓	✓	✓	x
C	x	✓	x	✓
D	x	x	✓	✓

key

✓ = present

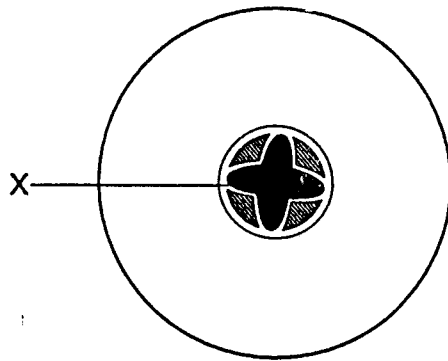
x = absent

- 6 The diagram shows the structure of an artery.



What is layer X?

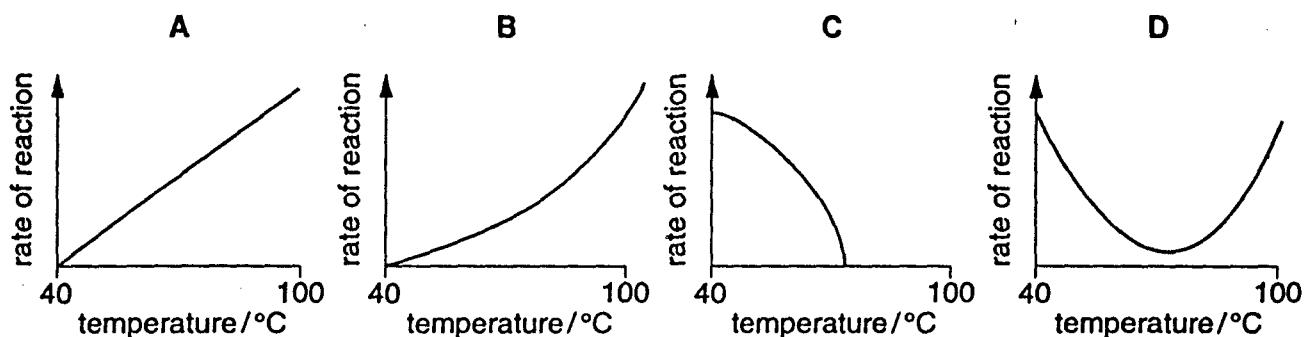
- A a cell
  - B an organ
  - C an organ system
  - D a tissue
- 7 The diagram shows a section through the root of a plant that has been standing in a solution of red dye for 24 hours. Tissue X has stained red.



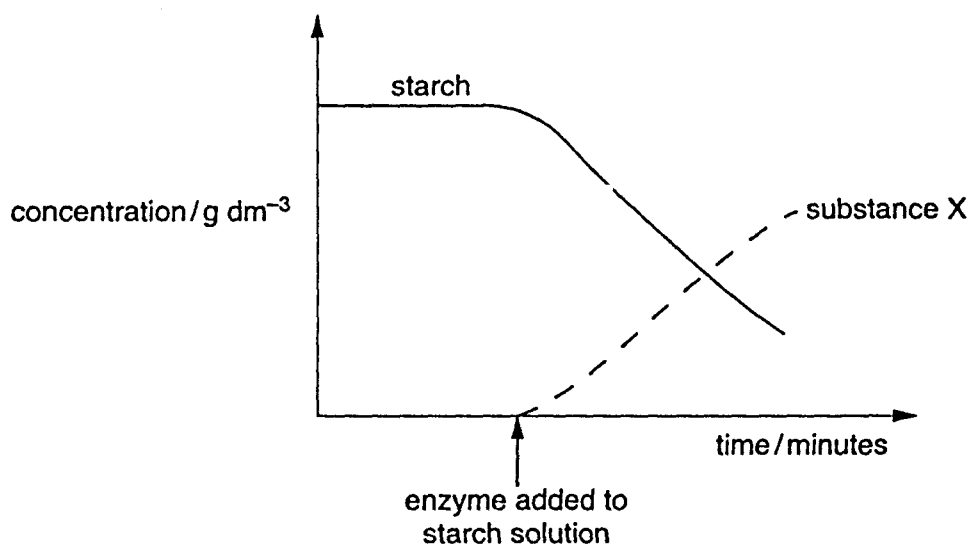
What is the function of tissue X?

- A to carry sugars to the root tip
- B to carry sugars to the stem
- C to carry water to the root tip
- D to carry water to the stem

8 Which graph best shows the effect of high temperatures on enzyme activity in the stomach?



9 The graph shows the production of substance X when an enzyme works on a starch solution.



What is substance X?

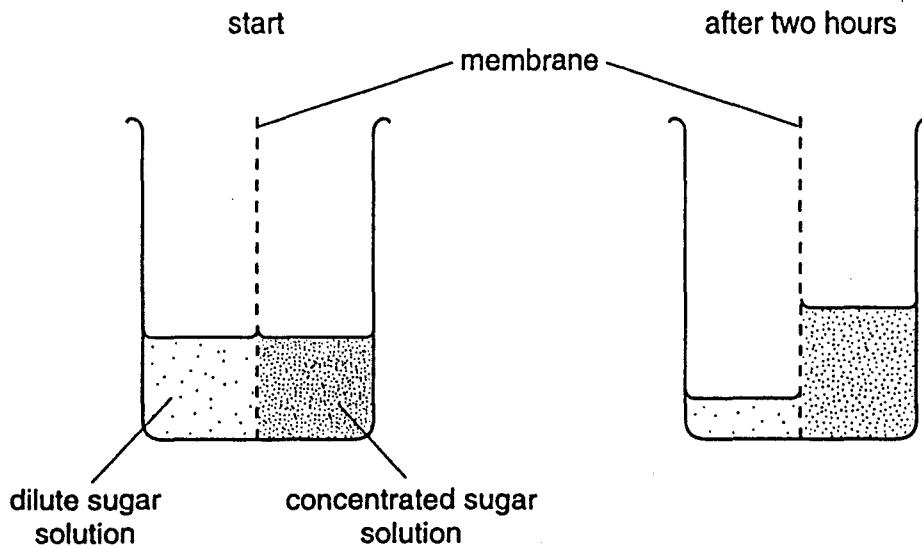
- A amino acid
- B amylase
- C glycerol
- D maltose

10 The roots of some land plants are flooded by sea water. The salty sea water later becomes more concentrated due to evaporation.

Why do the plants then wilt?

- A Salt damages the walls of the root cells.
- B The plant cells absorb too much water.
- C The transpiration rate increases.
- D Water passes out of the plant cells.

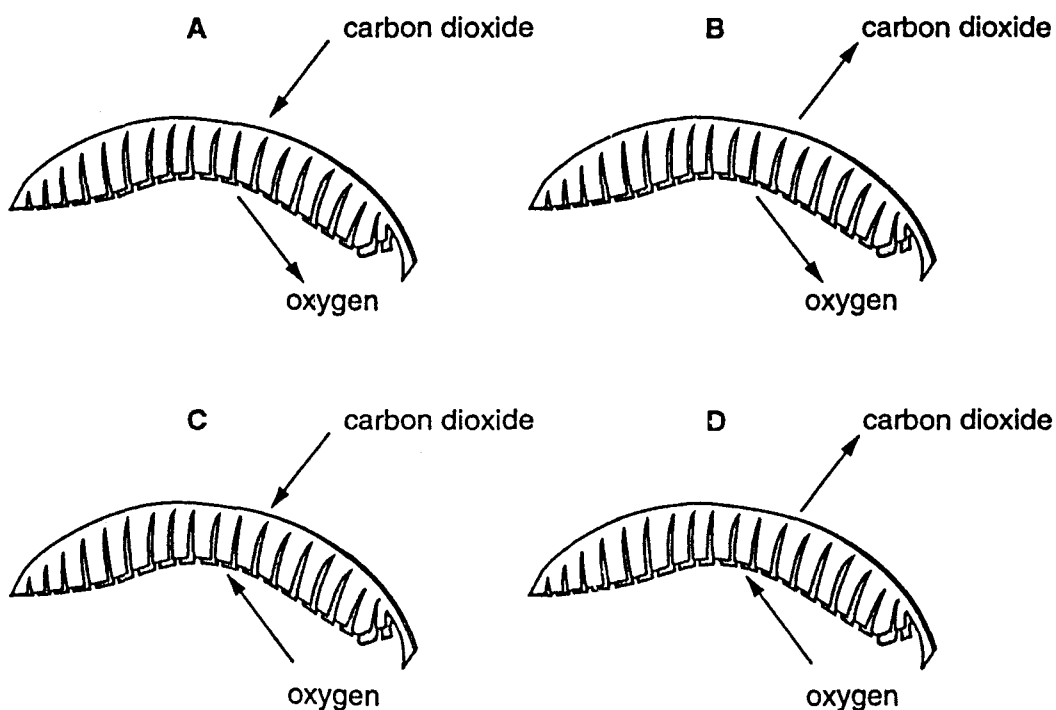
11 An experiment is set up as shown.



Which statement about the membrane explains the result shown?

- A It is equally permeable to water and sugar.
- B It is impermeable to water and sugar.
- C It is more permeable to sugar than to water.
- D It is more permeable to water than to sugar.

12 Which diagram shows the movement of gases into and out of a leaf during photosynthesis?

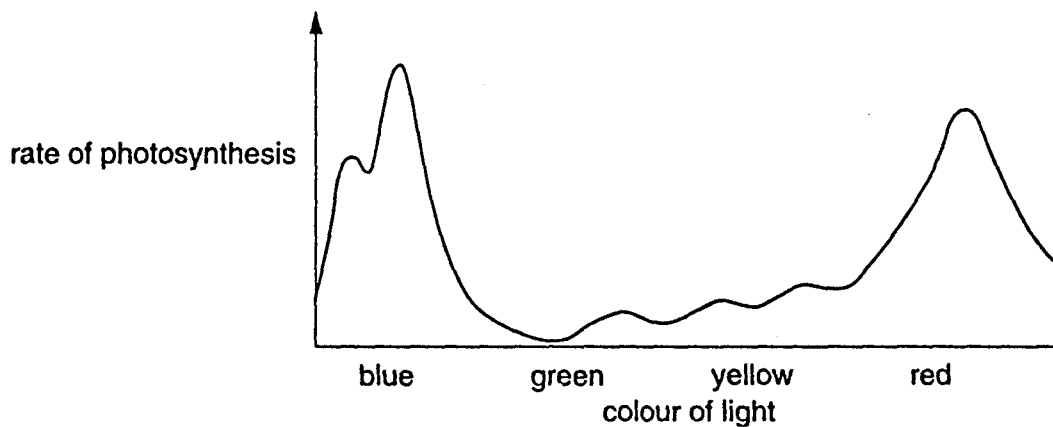




13 Which element, for making proteins, do plants normally obtain from the soil?

- A carbon
- B hydrogen
- C nitrogen
- D oxygen

14 The graph shows the rate of photosynthesis of a green plant when it is placed in light of different colours.



In which colour of light do plants photosynthesise most slowly?

- A blue
- B green
- C red
- D yellow

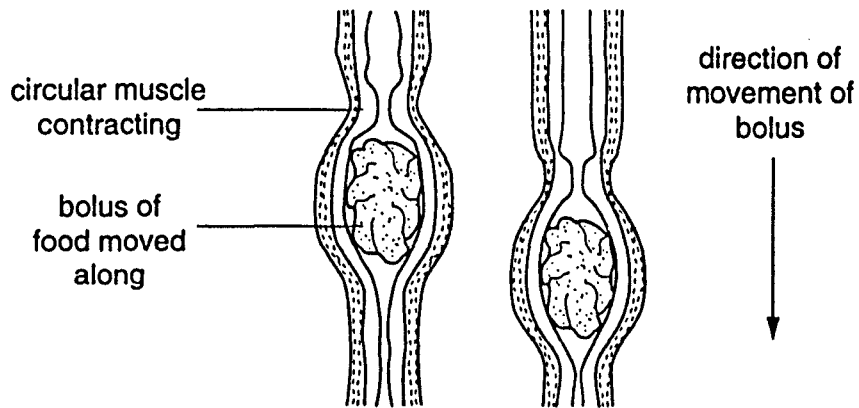
15 In which atmospheric conditions does water move most quickly through the xylem in a leaf?

- A cool and damp
- B damp and warm
- C warm and dry
- D dry and cool

16 What is the main function of the colon in humans?

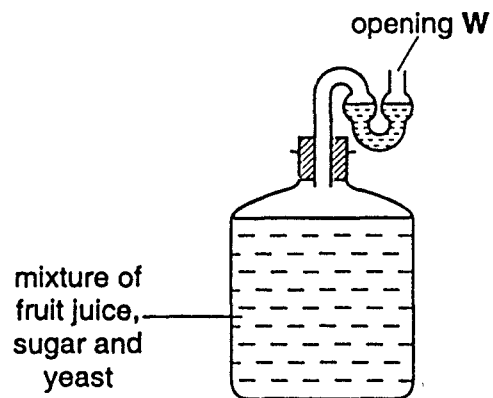
- A to absorb digested food
- B to absorb water
- C to produce bile
- D to produce enzymes

17 Which process is shown in the diagrams of the oesophagus?



- A assimilation
- B chewing
- C egestion
- D peristalsis

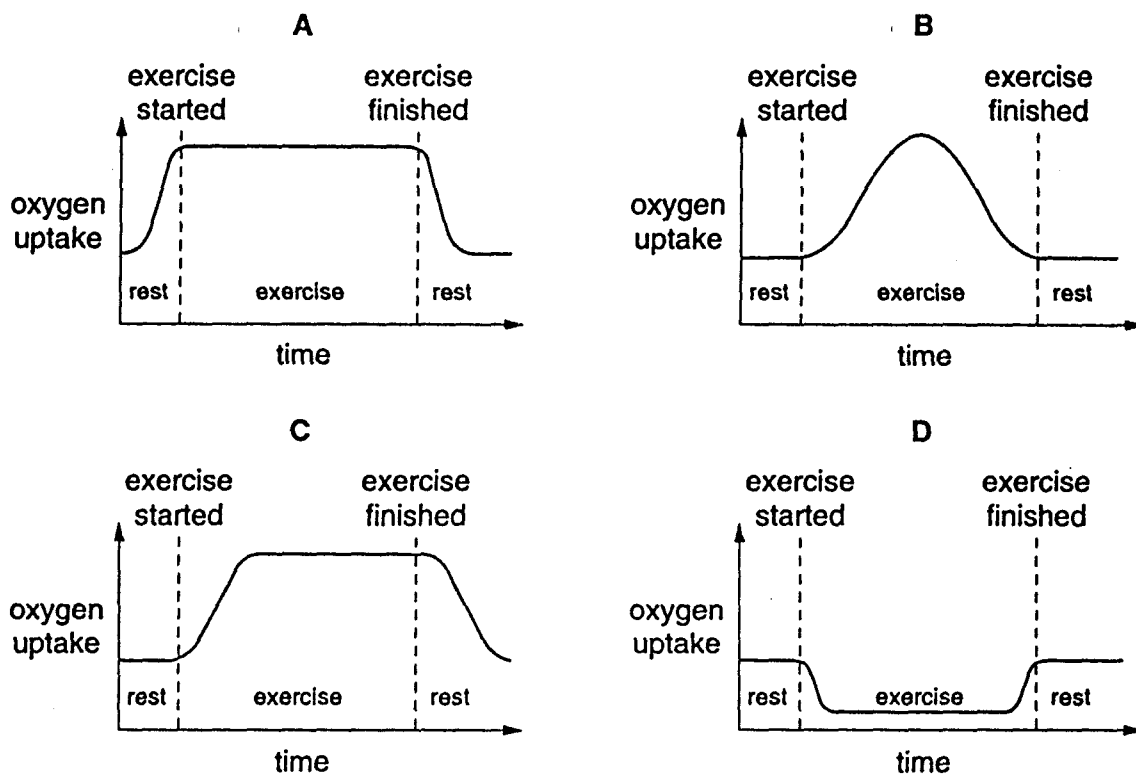
18 The diagram shows a fermentation jar containing fruit juice, sugar and yeast.



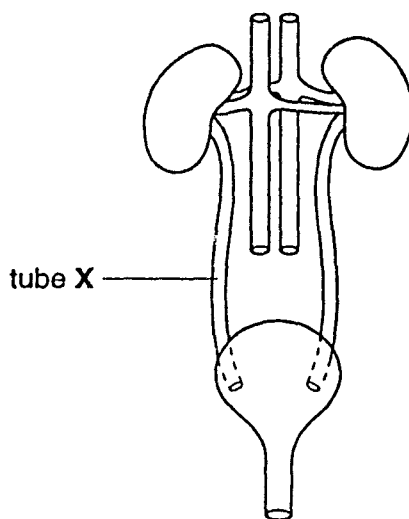
During fermentation, what happens at opening W?

- A carbon dioxide enters
- B carbon dioxide leaves
- C oxygen enters
- D oxygen leaves

19 Which graph shows oxygen uptake before, during and after a period of steady exercise?



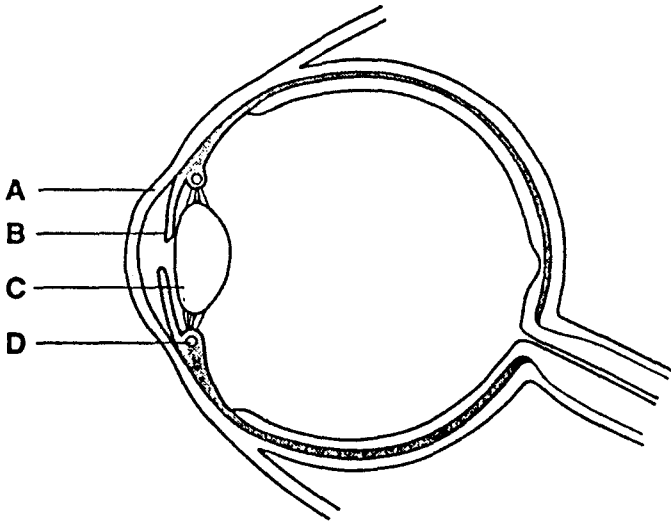
20 The diagram shows the excretory system.



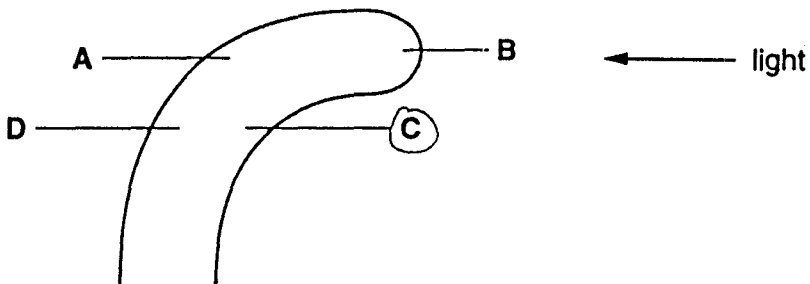
What is the function of tube X?

- A to transport blood to the kidney
- B to transport blood from the kidney
- C to transport urine to the bladder
- D to transport urine from the bladder

- 21 The diagram shows a section through a human eye.  
Which part controls how much light enters the eye?

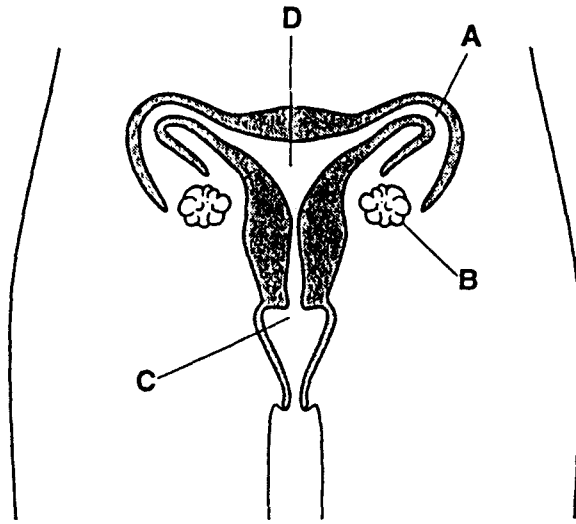


- 22 The diagram shows the shoot tip of a seedling which is exposed to light from one side.  
Where is the least auxin found?

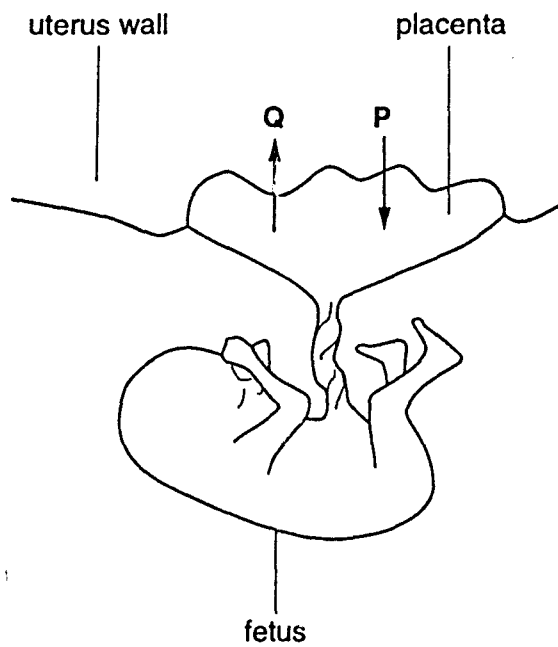


23 The diagram shows the human female reproductive system.

In which region does fertilisation usually occur?



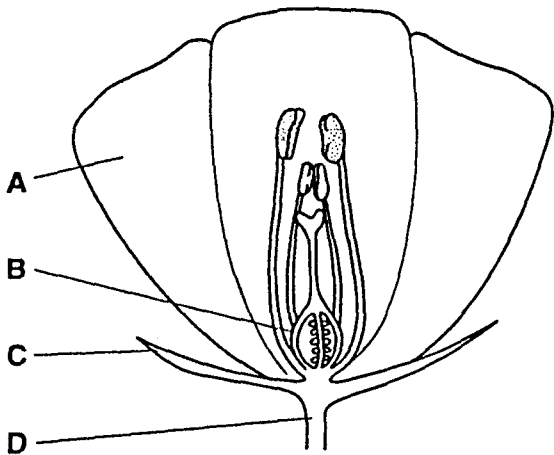
24 The diagram shows a developing human fetus joined to its mother.



What do P and Q represent?

	P	Q
A	blood	urea
B	carbon dioxide	glucose
C	glucose	carbon dioxide
D	urea	blood

25 The diagram shows the main parts of a flower.

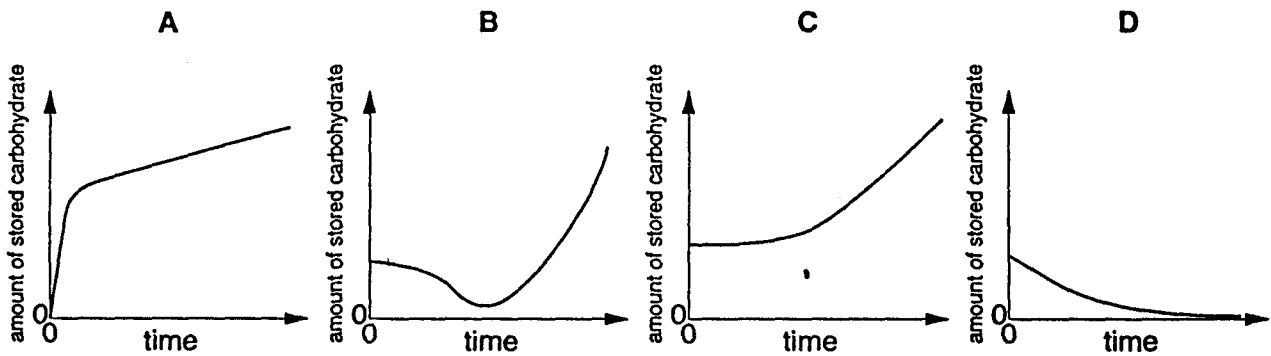


Which part of the flower protects the rest of the flower when it is in bud?

26 What brings about growth in living organisms?

- A meiosis and cell enlargement
- B meiosis only
- C mitosis and cell enlargement
- D mitosis only

27 Which graph shows the change in the amount of stored carbohydrate from the germination of a seed until shortly before the start of photosynthesis?



28 What are formed at the end of of meiosis?

- A body cells
- B haploid nuclei
- C paired chromosomes
- D seeds

- 29 A couple have three daughters and are expecting a fourth child.

What is the probability that the fourth child will be a daughter?

- A 50%      B 33.3%      C 25%      D 20%

- 30 A female fruit fly with short wings mates with a male fruit fly with long wings. All of the offspring have long wings.

The female parent then mates with a second male whose genotype and phenotype are unknown. 17 offspring are produced, 8 with short wings and 9 with long wings.

What is the genotype and phenotype of the second male?

- A heterozygous with long wings  
 B heterozygous with short wings  
 C homozygous with long wings  
 D homozygous with short wings
- 31 Heterozygous tall plants are crossed with pure-breeding short plants of the same species. The resulting seeds are collected and grown to produce the next generation.

What are the approximate percentages of tall and short offspring?

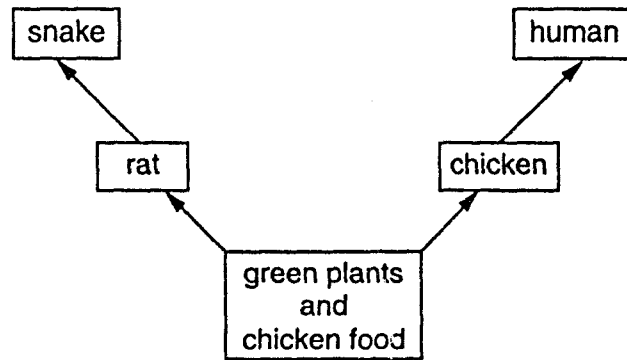
	% of tall	% of short
A	25	75
B	50	50
C	75	25
D	100	0

- 32 The diagram shows the stages in the flow of energy through a food chain.

Through which stage does the most energy flow?



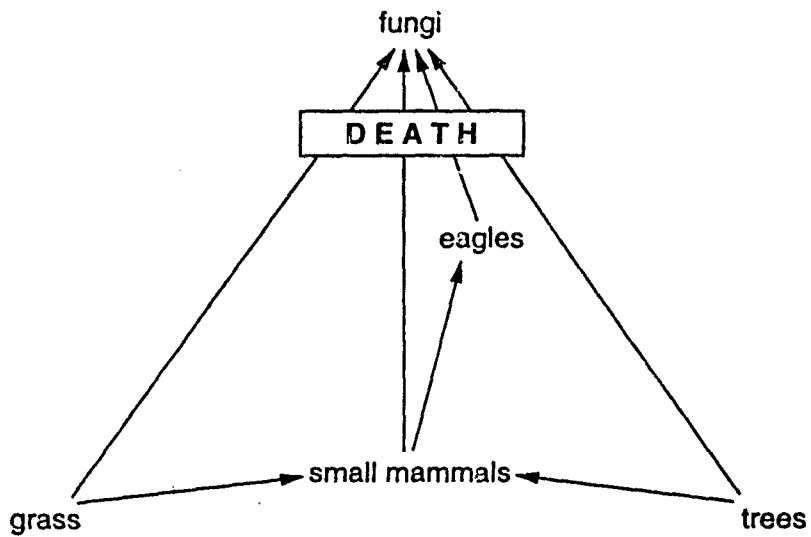
33 The diagram shows a simple food web found on a chicken farm.



Which of the following is a carnivore in this food web?

- A chicken
- B green plant
- C rat
- D snake

34 The diagram shows a food web.



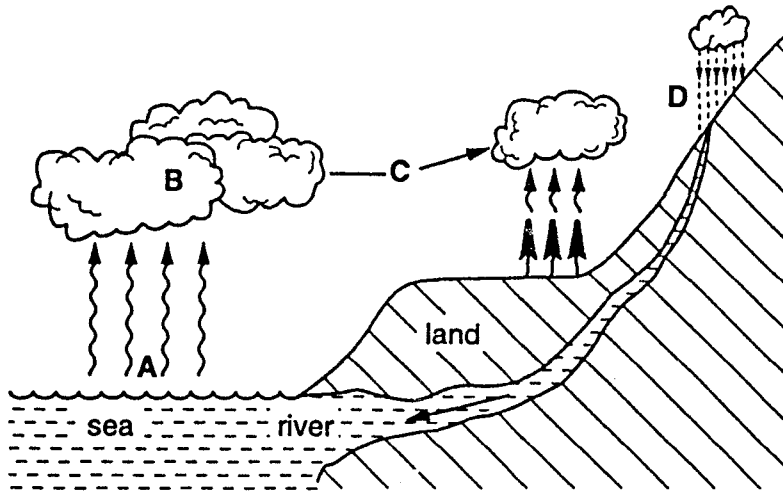
In this food web the fungi are

- A decomposers.
- B primary consumers.
- C producers.
- D secondary consumers.

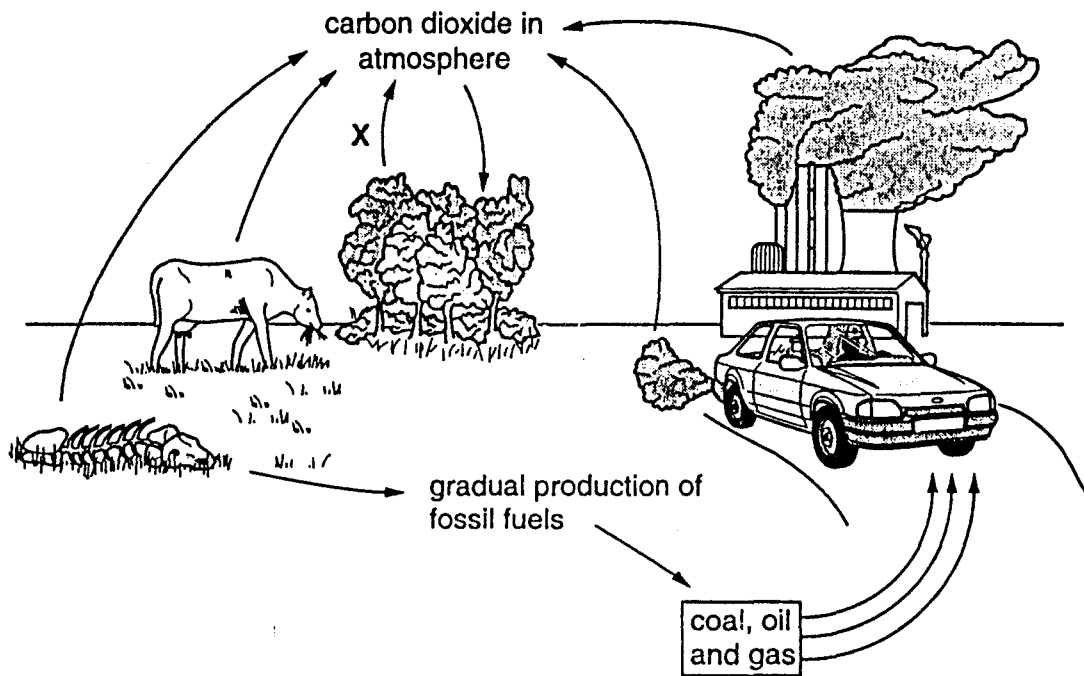


35 The diagram shows the water cycle.

Where does most evaporation take place?



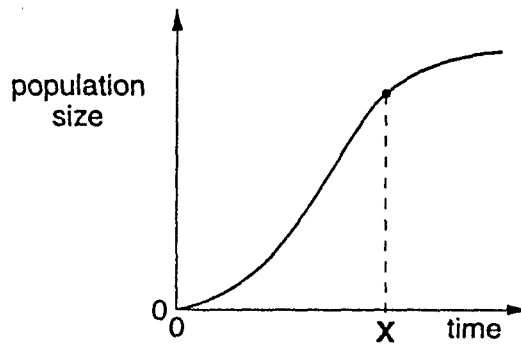
36 The diagram shows the carbon cycle.



Which process is represented by arrow X?

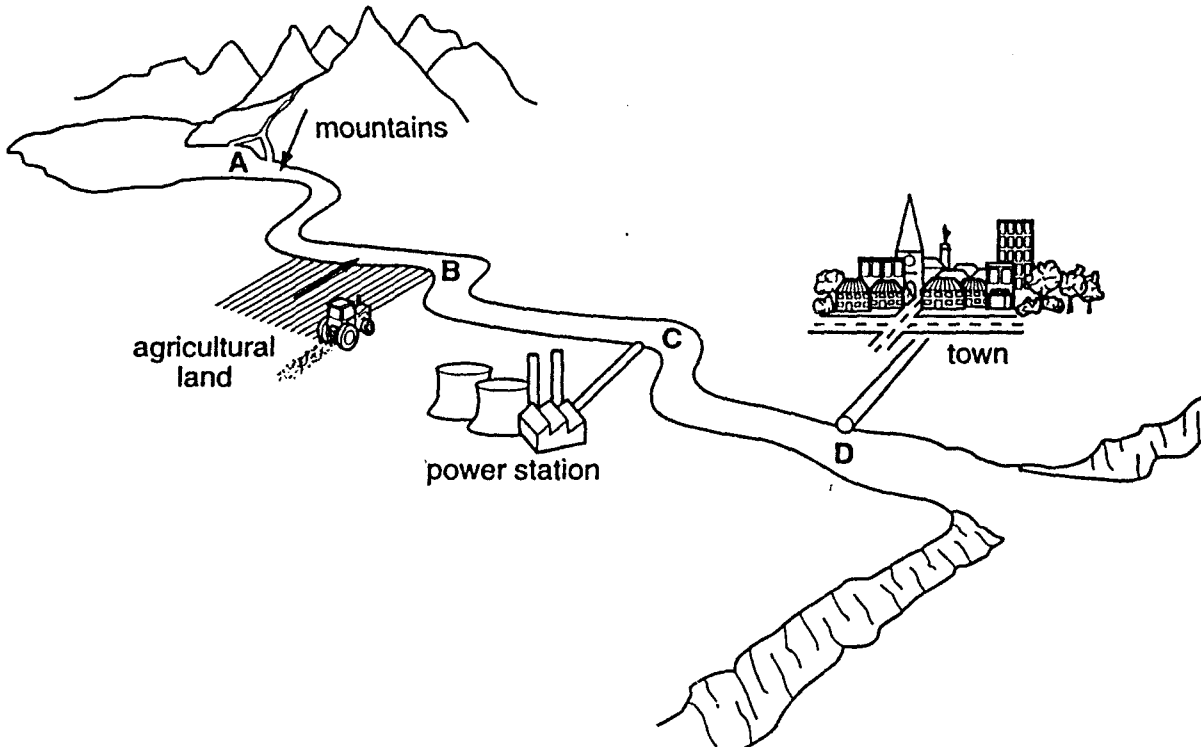
- A combustion
- B decay
- C photosynthesis
- D respiration

37 The graph shows how the size of a population of organisms changes over time.

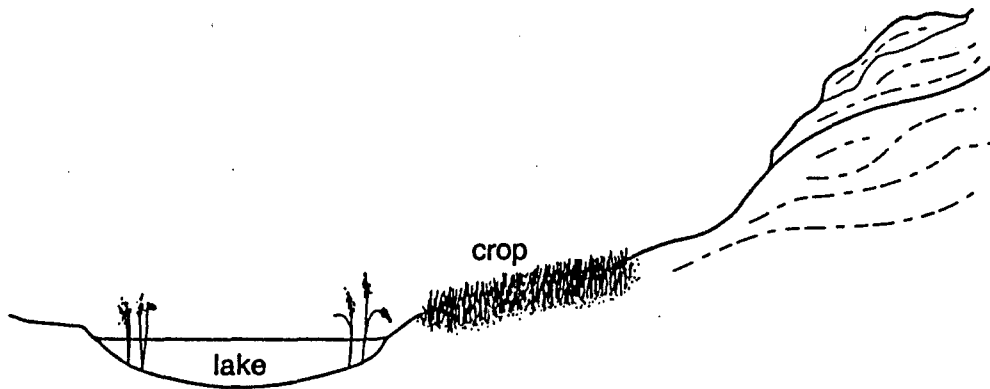


What could cause the change in the shape of the curve at time X?

- A a decrease in the number of predators
  - B a faster rate of reproduction
  - C a greater supply of food
  - D an increase in disease
- 38 In which region of the river shown in the diagram is the concentration of oxygen in the water most likely to be the highest?



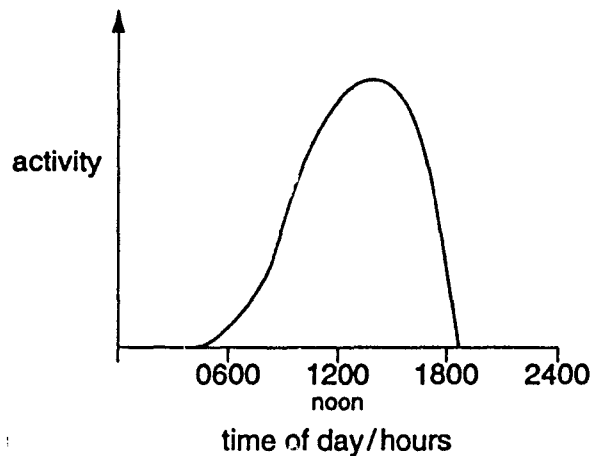
39 The diagram shows a crop growing near a lake.



Which substance, when applied to the crop, increases both the crop yield and the growth of plants in the lake?

- A fertiliser
- B herbicide
- C pesticide
- D water

40 The graph shows the activity of honey bees during a 24-hour period.



What is the best time of day to spray crops with pesticide in order to prevent harming the bees?

- A 0600 hours
- B 1000 hours
- C 1400 hours
- D 2000 hours

**International General Certificate of Education  
UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE**

**BIOLOGY**

**0610/1**

**PAPER 1 Multiple Choice**

**Tuesday 9 NOVEMBER 1999 Afternoon 45 minutes**

**Additional materials:**

- Multiple Choice answer sheet
- Soft clean eraser
- Soft pencil (type B or HB is recommended)

**TIME 45 minutes**

**INSTRUCTIONS TO CANDIDATES**

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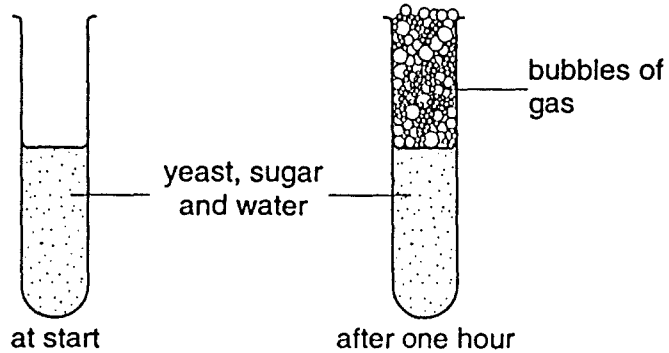
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This question paper consists of 16 printed pages.

**178**

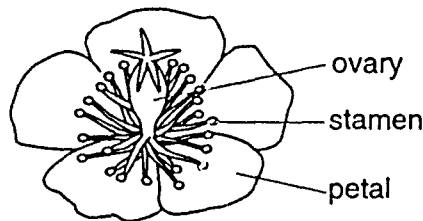
[Turn over

- 1 Some yeast, sugar and water are mixed in a test-tube. The diagrams show the test-tube at the start and after one hour.



Which process causes this change?

- A growth
  - B irritability
  - C reproduction
  - D respiration
- 2 The diagram shows a flower.

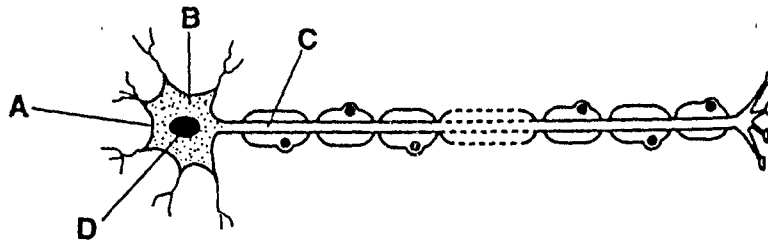


Use the key to identify the flower.

- 1 Petals four .....go to 2
- Petals five.....go to 3
- 2 Ovary above the petals .....flower A
- Ovary below the petals.....flower B
- 3 Stamens less than five .....flower C
- Stamens more than five .....flower D

- 3 The diagram shows an effector (motor) neurone.

Which structure is also found in white blood cells, but not in red blood cells?



- 4 The table shows features possessed by living cells.

Which features identify a liver cell?

	large central vacuole	chloroplasts	cellulose cell wall
A	✓	✓	✓
B	✓	✓	x
C	x	x	✓
D	x	x	x

key

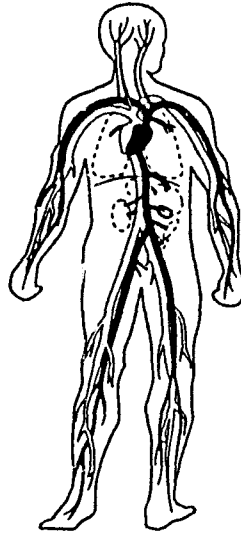
✓ = feature present

x = feature absent

- 5 Why is the epidermis of a leaf an example of a tissue?

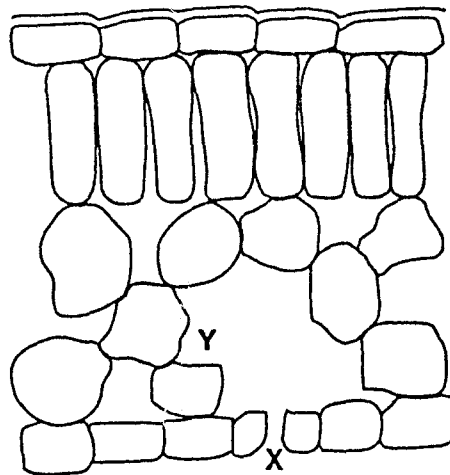
- A The cells all have a similar structure and function.
- B The cells allow light to pass through.
- C The cells allow water to enter them by osmosis.
- D The cells are covered by a waxy cuticle.

- 6 The diagram shows some blood vessels in the human body.



The blood vessels shown are all parts of the same

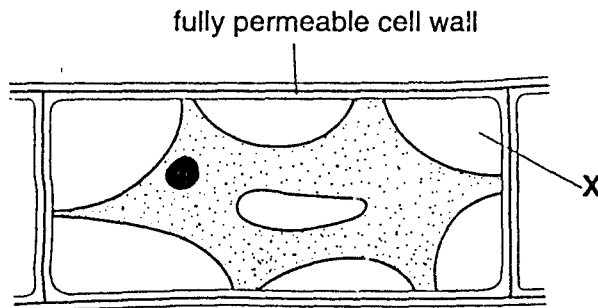
- A cell.
  - B organ.
  - C organ system.
  - D tissue.
- 7 The diagram shows a section through a leaf.



How do gases move from X to Y in the leaf?

- A by diffusion
- B by osmosis
- C by translocation
- D by transpiration

- 8 The diagram shows a plant cell that has been placed in sugar solution for 30 minutes.



Which substance is found at X?

- A air  
 B cell sap  
 C cytoplasm  
 D sugar solution
- 9 Which substance is an enzyme?
- A bile  
 B fibrinogen  
 C lipase  
 D maltose
- 10 An experiment is carried out to study the effect of temperature on the time taken for food to be digested by an enzyme.

The table shows the results.

temperature/°C	observation
25	4 hours for complete digestion
37	2 hours for complete digestion
45	1.5 hours for complete digestion
55	no digestion takes place

From these results, at which temperature does the enzyme work best?

- A 25 °C      B 37 °C      C 45 °C      D 55 °C

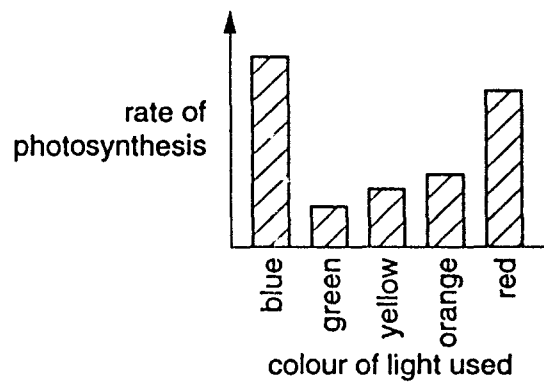


- 11 During photosynthesis in a leaf, water molecules enter the ... X ... cells, where they combine with ... Y ... to form glucose.

Which words complete the sentence?

	X	Y
A	epidermal	carbon dioxide
B	epidermal	oxygen
C	palisade	carbon dioxide
D	palisade	oxygen

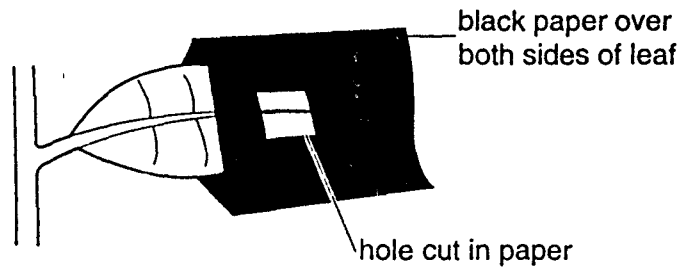
- 12 The bar chart shows the rate of photosynthesis of a green plant when it is placed in light of different colours.



In which colours of light is the rate of photosynthesis the fastest?

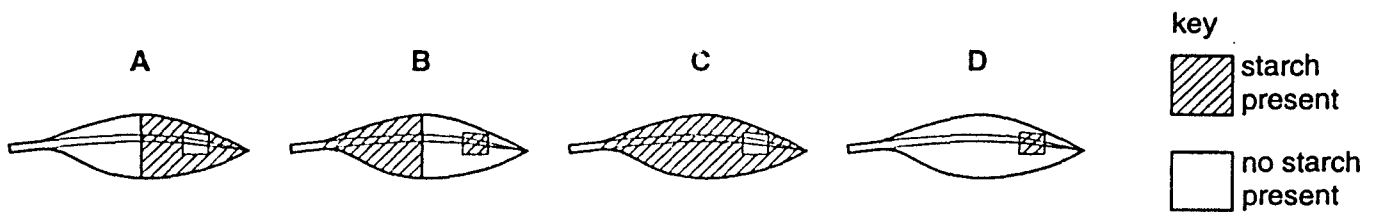
- A blue and red
- B green and blue
- C orange and red
- D yellow and green

13 A destarched plant is placed in light with black paper over part of one leaf, as shown.



After 8 hours, the leaf is tested for starch.

Which diagram shows the appearance of the leaf after this test?



14 In humans, where does most absorption of digested food take place?

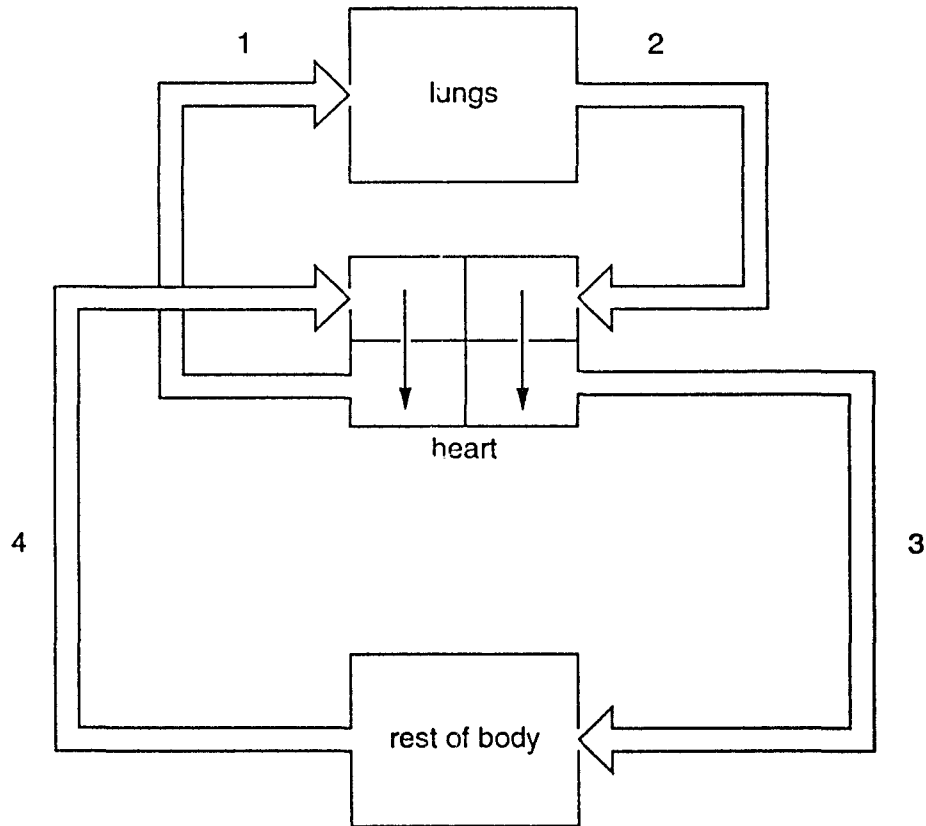
- A colon
- B kidney
- C liver
- D small intestine

15 Nutrients are made up of basic units and can be identified by food tests.

Which nutrient is a protein?

	basic units	food test
A	amino acids	biuret test
B	fatty acids and glycerol	ethanol emulsion test
C	sugars	Benedict's test
D	sugars	iodine test

16 The diagram shows the double circulatory system in a human.



Which blood vessels contain oxygenated blood?

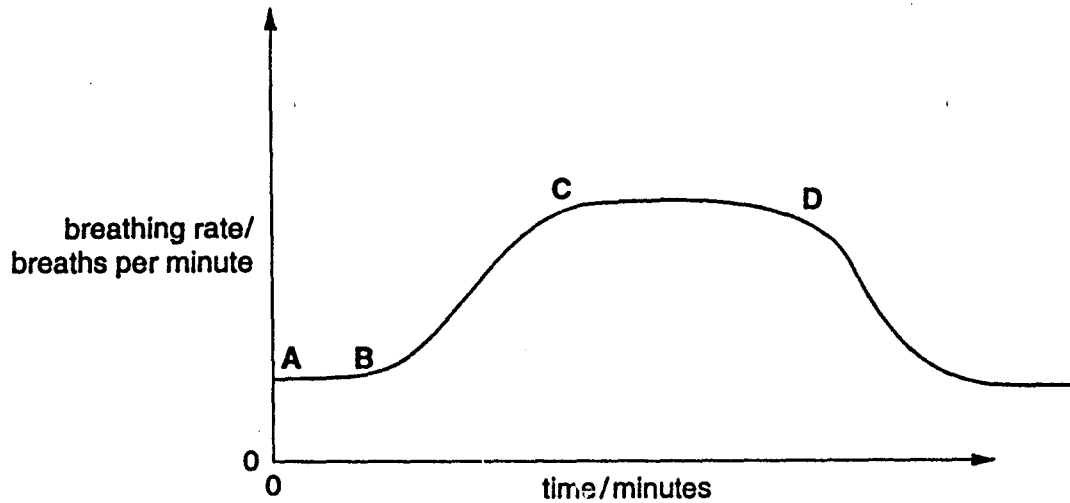
- A 1 and 2      B 1 and 4      C 2 and 3      D 3 and 4

17 The table shows the deficiency symptoms that result from a lack of some substances in the human diet.

Which substance is iron?

	deficiency symptom
A	anaemia (haemoglobin deficiency)
B	scurvy
C	soft teeth
D	rickets

18 From the graph, when did the person begin a period of vigorous exercise after resting?



19 What is produced by human cell respiration?

	carbon dioxide	alcohol (ethanol)	water
A	x	✓	✓
B	✓	x	✓
C	✓	✓	x
D	✓	✓	✓

key

✓ = produced

x = not produced

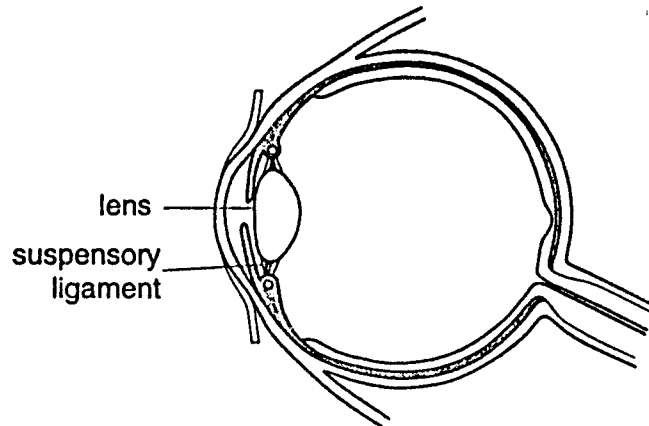
20 Which process gets rid of the waste products of metabolism?

- A absorption
- B digestion
- C excretion
- D ingestion

21 What shows the correct levels of oxygen, carbon dioxide and urea in the blood, after they have passed through the liver?

	oxygen	carbon dioxide	urea
A	less	more	less
B	less	more	more
C	more	less	less
D	more	less	more

22 The diagram shows a section through a human eye.



What happens when the eye views an object that is very close?

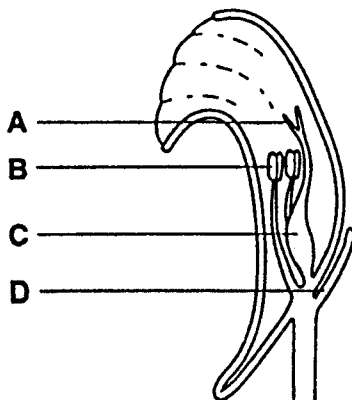
	suspensory ligament	lens
A	slackens	becomes fatter
B	tightens	becomes fatter
C	slackens	becomes thinner
D	tightens	becomes thinner

23 Which of the following is not a simple reflex action?

- A blinking
- B sneezing
- C swallowing
- D walking

24 The diagram shows a vertical section through a flower.

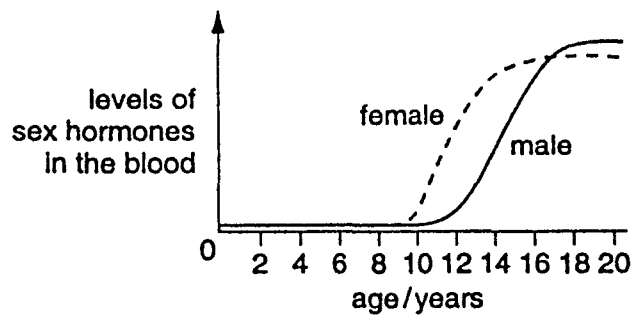
Which structure produces female sex cells?



25 What is the main function of a flower?

- A to produce nectar
- B to produce scent
- C to produce seeds
- D to produce spores

26 The graph shows the average level of sex hormones in the blood of females and males.



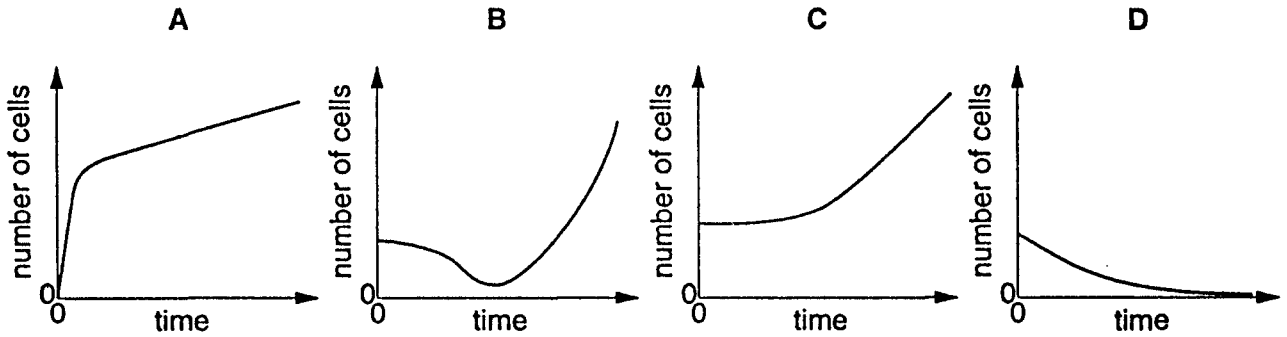
What are the hormones?

	hormones in female	hormones in male
A	adrenaline	oestrogen
B	oestrogen	testosterone
C	progesterone	adrenaline
D	testosterone	progesterone

27 What must **always** be present for seeds to germinate?

- A chlorophyll
- B light
- C soil
- D water

28 Which graph shows the change in the number of cells from the germination of a seed until the start of photosynthesis?

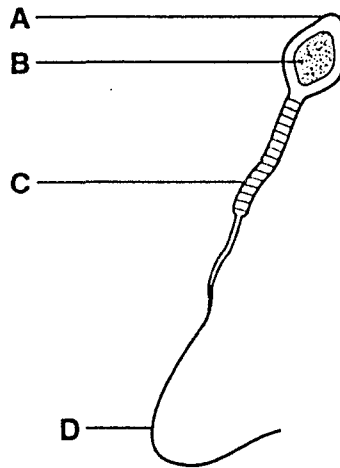


29 Which terms describe the nucleus in the gametes and the zygote of a human?

	gametes	zygote
A	diploid	diploid
B	diploid	haploid
C	haploid	diploid
D	haploid	haploid

30 The diagram shows a sperm cell.

Which part contains genes?

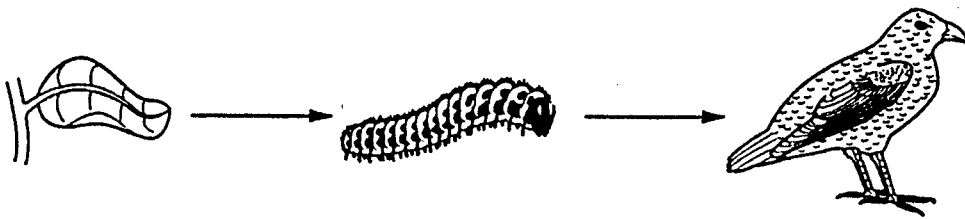


31 A female fruit fly with short wings mates with a male with long wings. All the offspring are long-winged. Two of these offspring mate with each other.

What percentage of their offspring will have long wings?

- A 25%      B 50%      C 75%      D 100%

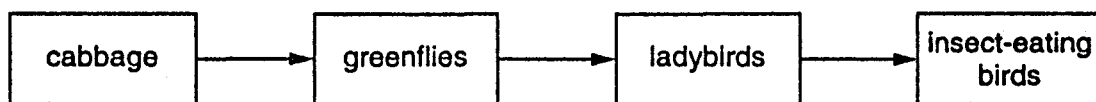
32 The diagram shows a simple food chain.



What is the source of energy for this food chain?

- A carbon dioxide
- B minerals
- C Sun
- D water

33 The diagram shows a food chain.



Which organism is a producer?

- A cabbage
- B greenfly
- C insect-eating bird
- D ladybird

34 From which food chain is **least** energy lost?

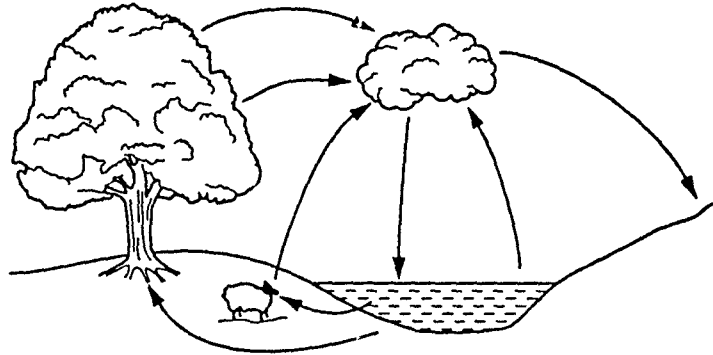
- A corn → hens → humans
- B grass → dairy cows → humans
- C potatoes → humans
- D water plants → small fish → large fish → humans

35 Which process is **not** a part of the carbon cycle?

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



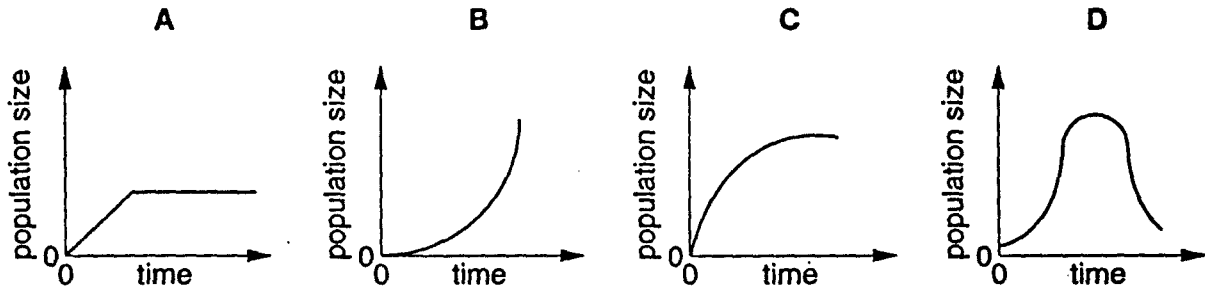
36 The diagram shows the natural cycle of a substance.



What is the substance?

- A carbon dioxide
- B nitrogen
- C oxygen
- D water

37 Which graph shows the growth of a population where there are **no** limiting factors?



38 What may result from nuclear fall out and the release of sulphur dioxide from factories?

	genetic mutations	acid rain
A	x	✓
B	✓	✓
C	x	x
D	✓	x

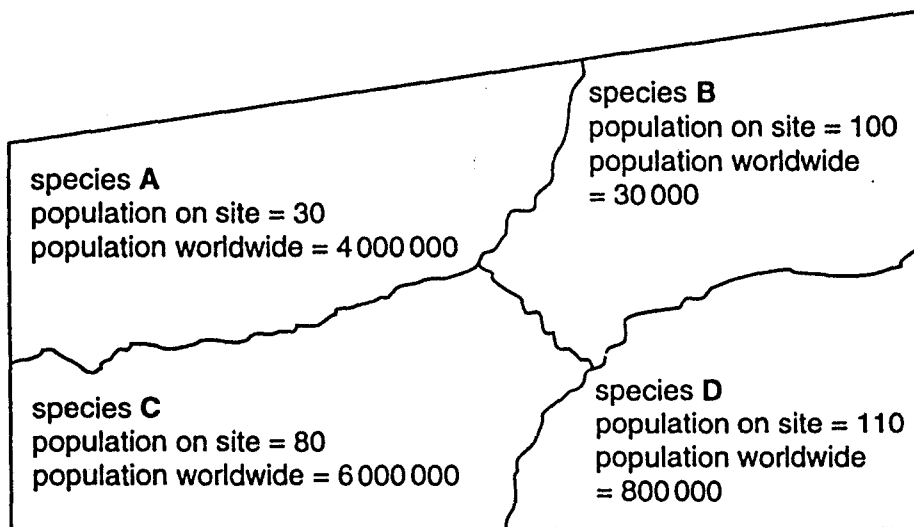
key  
 ✓ = present  
 x = absent

39 What is reduced when untreated sewage is released into rivers?

- A the amount of nitrate
- B the concentration of carbon dioxide
- C the level of oxygen
- D the number of bacteria

40 The map shows an area of uncultivated land with four habitats. In each habitat there is a population of a different species of rare insect.

Which species is most at risk of extinction if this land is used for building?



**International General Certificate of Secondary Education**  
**UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE**  
**BIOLOGY** **0610/1**  
**PAPER 1 Multiple Choice**  
**MAY/JUNE SESSION 2000** **45 minutes**

**Additional materials:**  
Multiple Choice answer sheet  
Soft clean eraser  
Soft pencil (type B or HB is recommended)

**TIME** 45 minutes

**INSTRUCTIONS TO CANDIDATES**

**Do not open this booklet until you are told to do so.**

**Write your name, Centre number and candidate number on the answer sheet in the spaces provided unless this has already been done for you.**

**There are forty questions in 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 very carefully the instructions on the answer sheet.**

**INFORMATION FOR CANDIDATES**

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**Any rough working should be done in this booklet.**

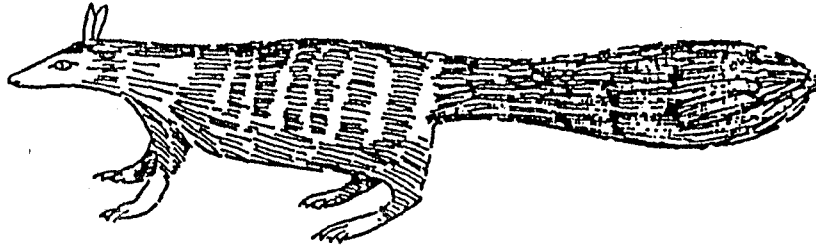
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**This question paper consists of 19 printed pages and 1 blank page.**

1 Which feature of vertebrates is present in fish and reptiles?

- A fins
- B hair
- C legs
- D scales

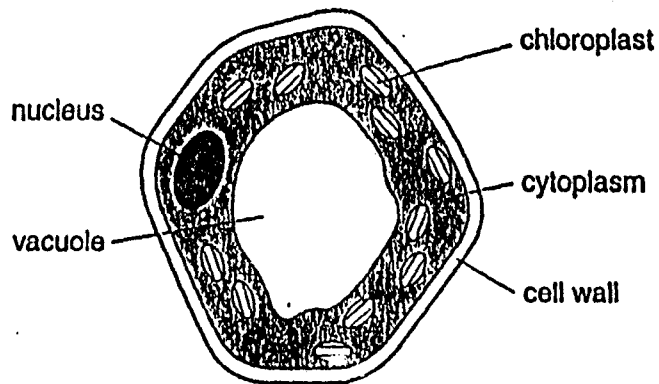
2 The diagram shows a mammal.



Use the key to identify this animal.

- 1 tail thin.....go to 2
- tail bushy.....go to 3
- 2 coat striped.....A
- coat spotted.....B
- 3 ears upright.....C
- ears flattened.....D

Questions 3 and 4 refer to the diagram of the plant cell.



3 Which structure contains the genetic information of the cell?

- A chloroplast
- B cytoplasm
- C nucleus
- D vacuole

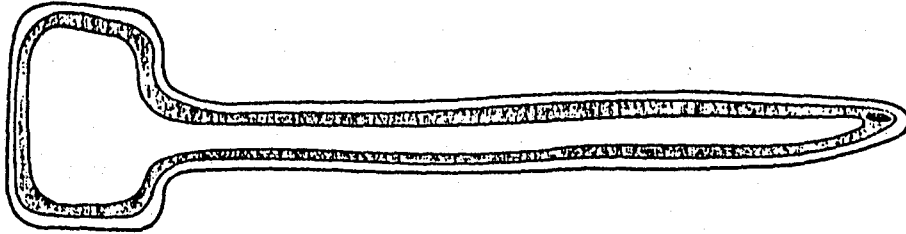
4 In which structure are simple sugars produced?

- A cell wall
- B chloroplast
- C cytoplasm
- D vacuole

5 At which level of organisation is an artery?

- A a cell
- B an organ
- C an organ system
- D a tissue

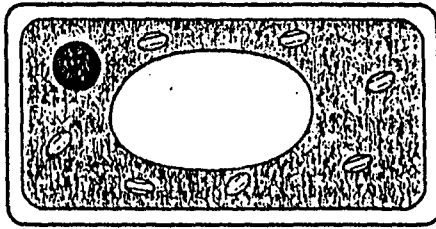
- 6 The diagram shows the structure of a plant cell.



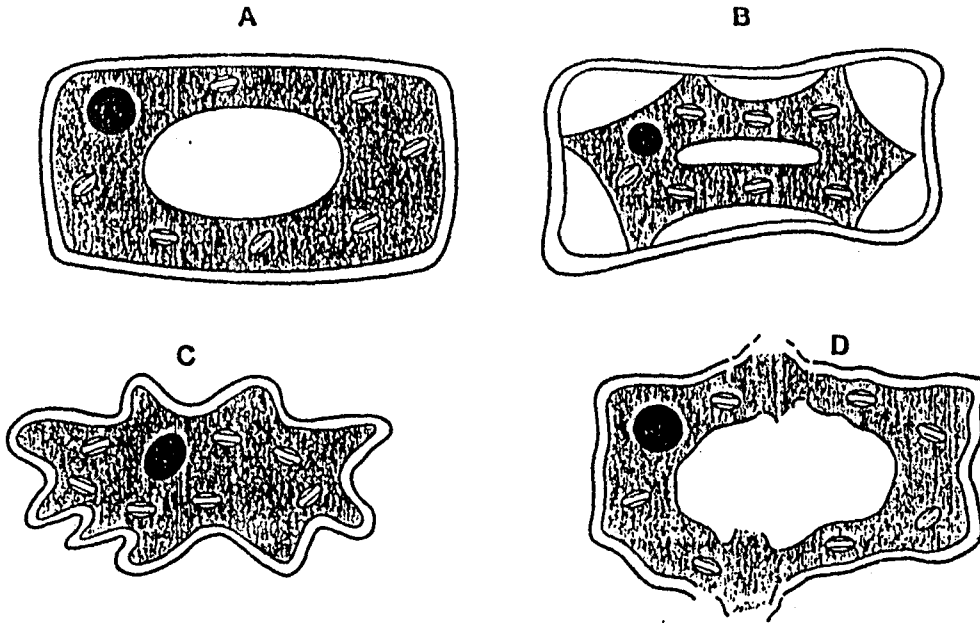
How is the cell adapted for maximum water absorption?

- A It has a cell wall.
  - B It has a large surface area.
  - C It has a nucleus.
  - D It has no chloroplasts.
- 7 By which process does carbon dioxide pass from the blood into the alveoli of the lungs?
- A diffusion
  - B osmosis
  - C respiration
  - D transpiration

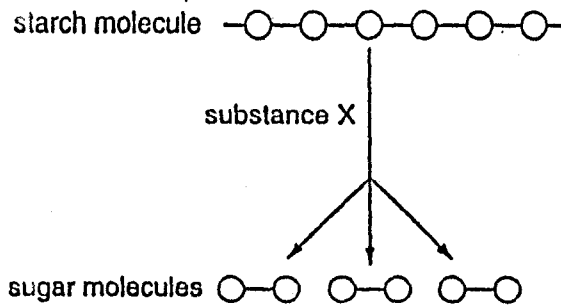
8 The diagram shows a plant cell before it was put into a concentrated sugar solution,



What will the cell look like after 30 minutes in the solution?



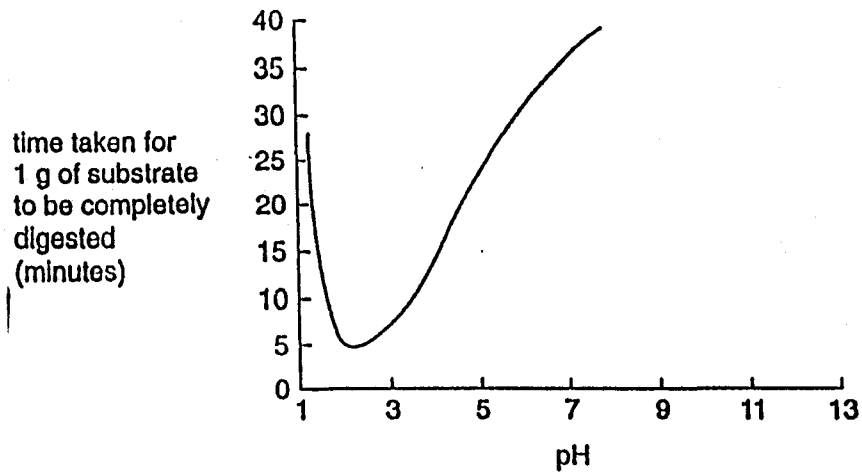
9 The diagram shows how a starch molecule is broken down into smaller sugar molecules with the help of substance X.



What is substance X?

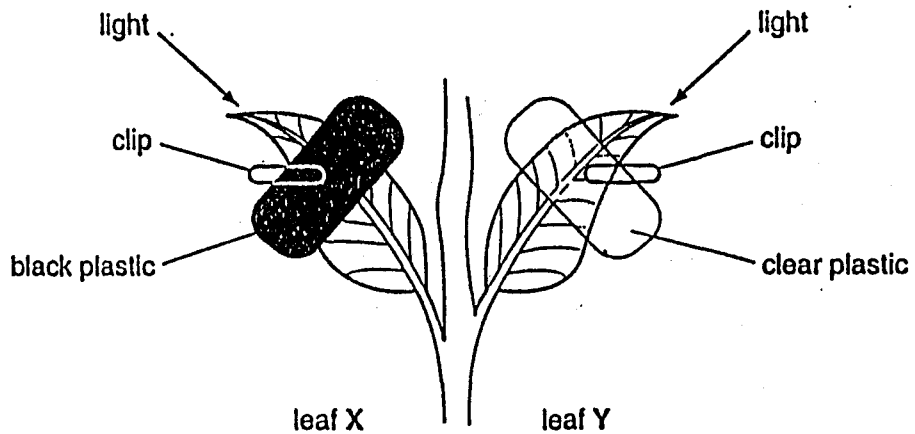
- A a carbohydrate
- B a hormone
- C a vitamin
- D an enzyme

- 10 The graph shows the effect of pH on the activity of a digestive enzyme.



In which part of the human alimentary canal would the enzyme work best?

- A mouth
  - B stomach
  - C large intestine
  - D small intestine
- 11 The experiment shown is set up using leaves on the 'same destarched plant.'



Both leaves are left to photosynthesise for six hours.

Which set of results is likely to be obtained after testing both leaves for starch?

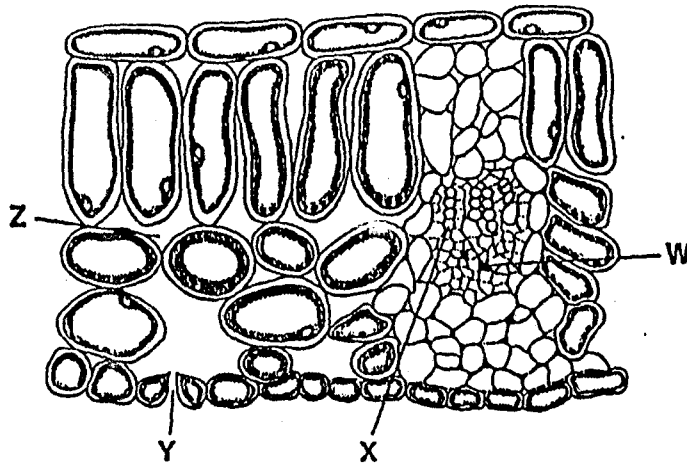
	leaf X	leaf Y
A	all blue-black	all blue-black
B	all blue-black	partly blue-black
C	partly blue-black	all blue-black
D	partly blue-black	partly blue-black



12 How is magnesium used in a plant?

- A to make auxin
- B to make cellulose
- C to make chlorophyll
- D to make protein

13 The diagram shows a cross section through part of a leaf.

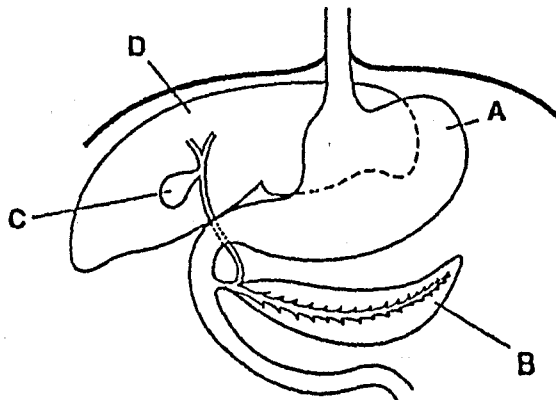


By which route does water travel through the leaf?

	from	→ to
A	W	X
B	X	Y
C	Y	Z
D	Z	W

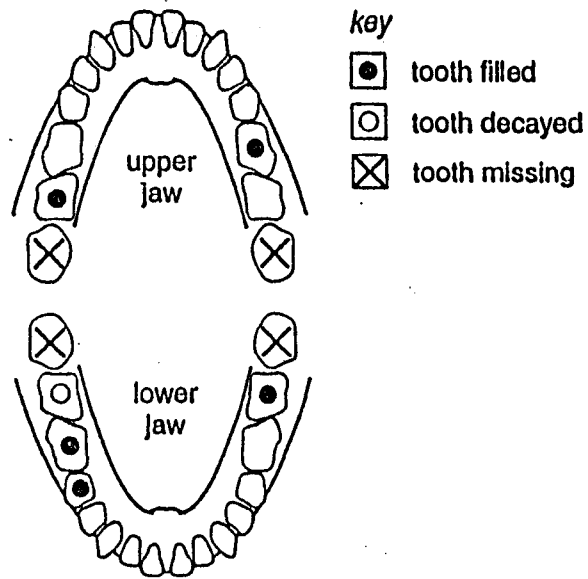
14 The diagram shows part of the human digestive system.

Where is glucose changed to glycogen?



0610/1 500

15 The chart shows the teeth in a person's upper and lower jaws.



How many of the molar teeth are filled?

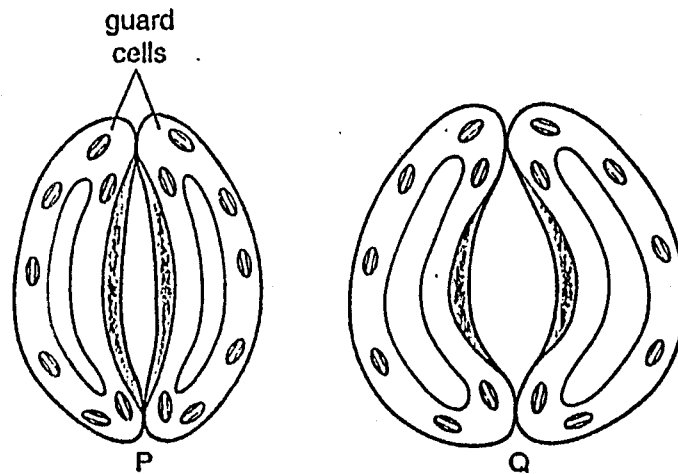
- A 1      B 4      C 5      D 6

16 What describes the blood in the pulmonary artery?

	direction of blood flow	oxygen content
A	away from the heart	high
B	away from the heart	low
C	towards the heart	high
D	towards the heart	low

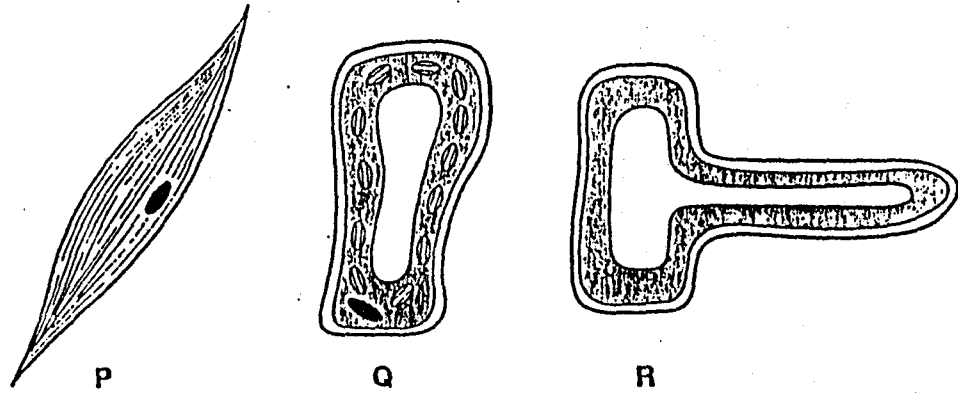
17 The diagram shows a pair of guard cells at two different times during the day.

What causes the change from P to Q?



- A high humidity
  - B high light intensity
  - C low oxygen concentration
  - D low temperature
- 18 Which substance in tobacco smoke combines with haemoglobin, preventing it from carrying oxygen?
- A carbon dioxide
  - B carbon monoxide
  - C nicotine
  - D tar

19. The diagram shows three types of cells.



In which cell does respiration take place?

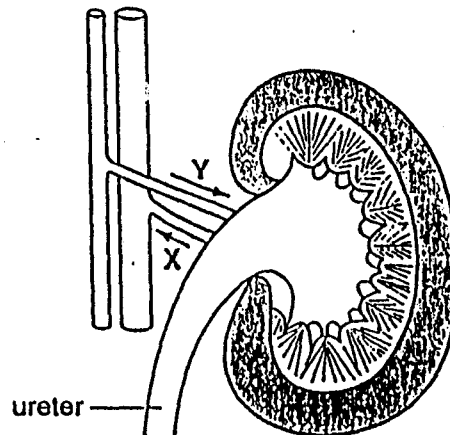
- A P only
- B P and Q only
- C Q and R only
- D P, Q and R

20. A healthy person eats a high-protein meal on a hot day.

What describes his urine after this meal?

	quantity	concentration of urea
A	large	high
B	large	low
C	small	high
D	small	low

- 21 The diagram shows a kidney and its blood supply.



What describes the carbon dioxide and urea content of the blood in vessel X compared with the blood in vessel Y?

	carbon dioxide in X	urea in X
A	less	less
B	more	less
C	less	more
D	more	more

- 22 A potted plant is moved from a garden and placed near a window in a house.

After a few days, the stem of the plant begins to grow towards the window.

What is this growth response?

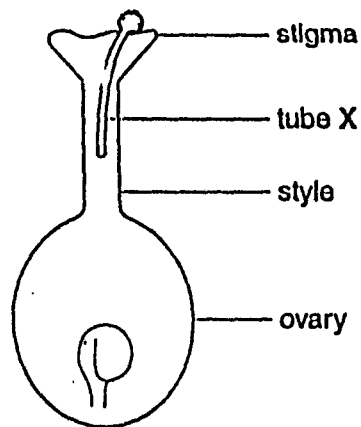
- A negative geotropism
  - B negative phototropism
  - C positive geotropism
  - D positive phototropism
- 23 What happens to the ciliary muscle and the lens in the eye when it focuses on an approaching object?

	ciliary muscle	lens
A	contracts	becomes fatter
B	contracts	becomes thinner
C	relaxes	becomes fatter
D	relaxes	becomes thinner

24 Which term describes the fusion of an egg and a sperm?

- A fertilisation
- B implantation
- C menstruation
- D ovulation

25 The diagram shows the carpel of a flower just after pollination.

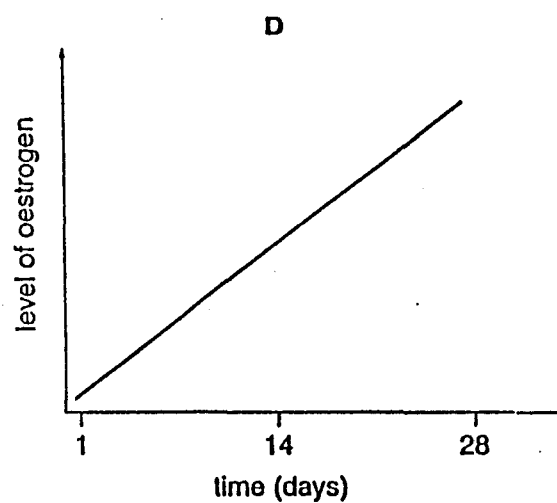
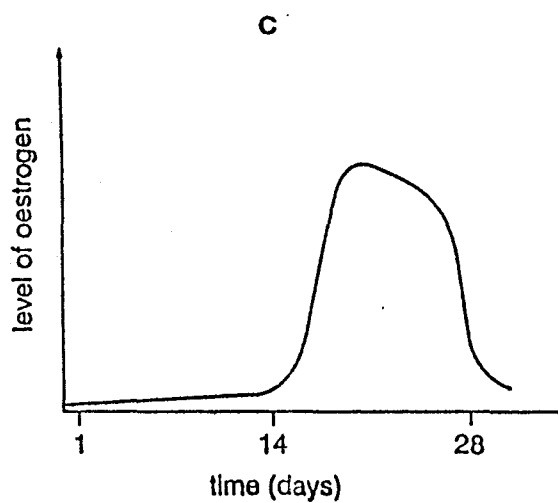
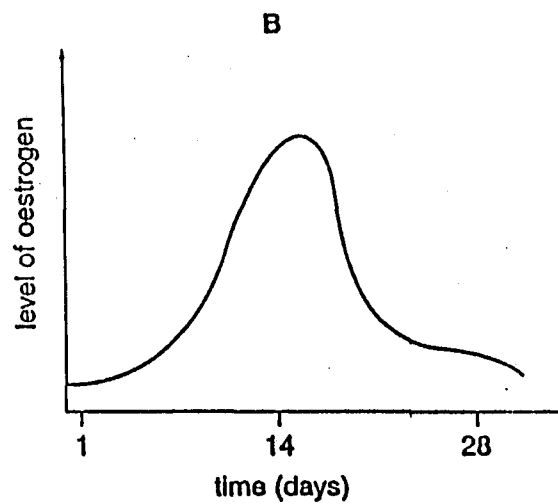
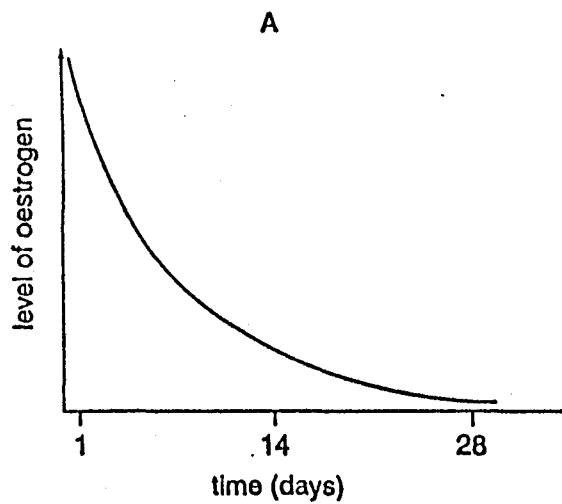


What passes along tube X?

- A a male gamete
- B an ovule
- C a pollen grain
- D a seed

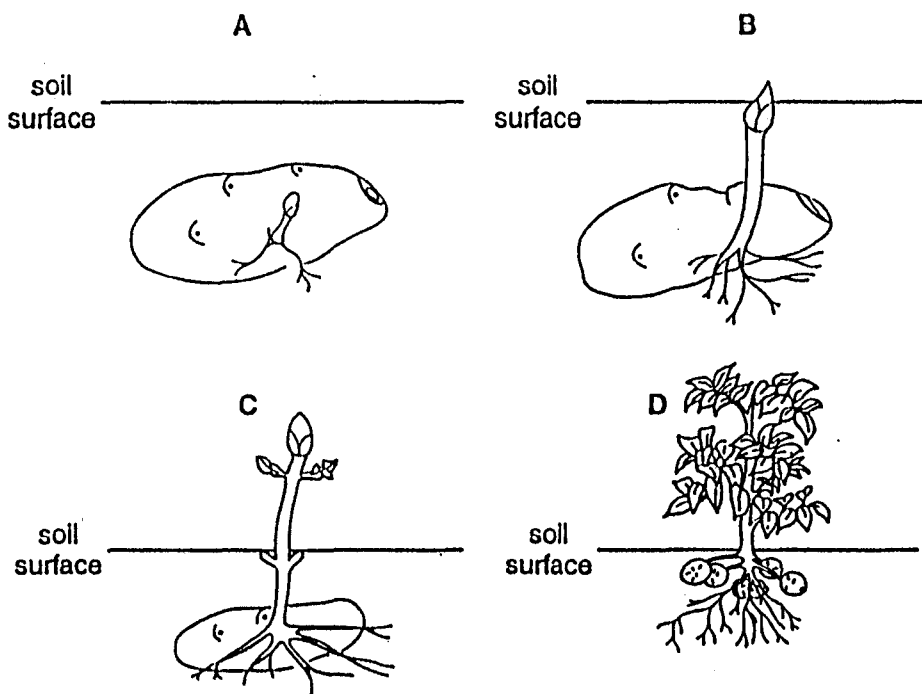
26 The level of oestrogen in the blood of a woman changes during a normal menstrual cycle.

Which graph shows these changes?



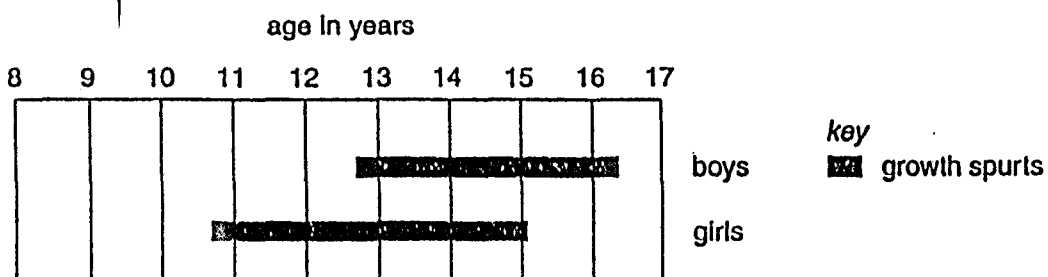
27 The diagrams show four stages in the development of a potato plant.

During which stage does an increase in mass occur?



28 All humans have a 'growth spurt' (when the rate of growth is high).

The diagram shows the range of ages across which the growth spurt usually occurs in boys and in girls.

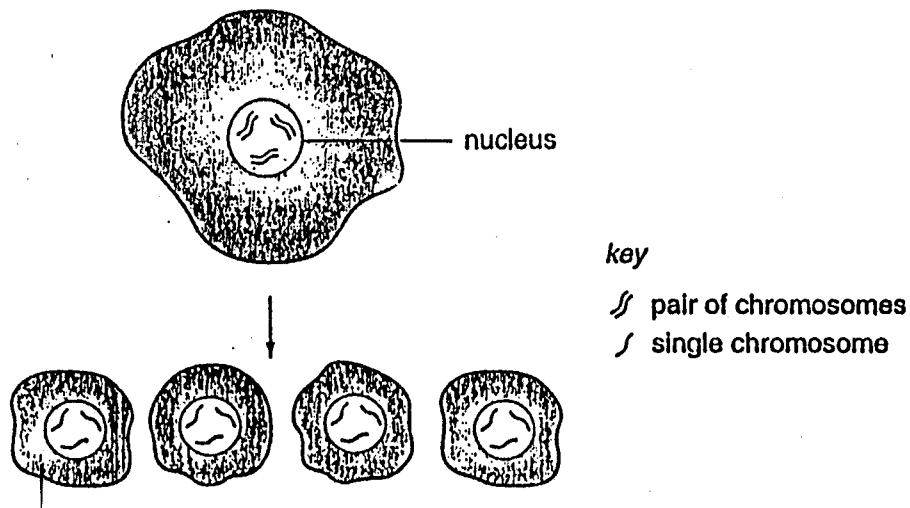


Which conclusion can be drawn from the diagram?

- A Boys are usually taller than girls.
- B Boys usually grow faster than girls.
- C The growth spurt usually occurs later in boys.
- D The growth spurt usually lasts longer in boys.



29 The diagram shows a type of nuclear division.



What is the process called?

- A mitosis
- B meiosis
- C mutation
- D variation

30 Which statement about mitosis is true?

- A It occurs only in animals.
- B It occurs only in plants.
- C It results in the growth of an organism.
- D It results in the formation of gametes.

31 In a species of plant, the allele for tall is dominant to the allele for short. A tall plant, P, is crossed with a short plant, Q. The offspring of this cross consist of 87 tall plants and 79 short plants.

What are the genotypes of P and Q?

	P	Q
A	TT	tt
B	Tt	Tt
C	Tt	tt
D	T	t

32 The diagram shows a food chain found in Lake Victoria in Africa.

microscopic organisms → tilapia fish → lung-fish → crocodiles

Which population changes would occur if all the crocodiles are killed by hunters?

	microscopic organisms	tilapia fish	lung-fish
A	decrease	increase	increase
B	increase	decrease	increase
C	increase	increase	decrease
D	increase	increase	increase

33 What does not flow in a cycle through biological systems?

- A carbon
- B energy
- C nitrogen
- D water

34 An example of a food chain is shown.

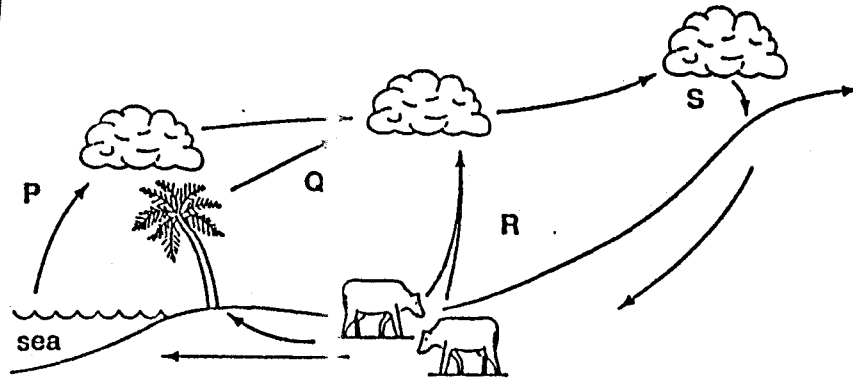
water plants → small fish → large fish

What is the source of energy for the water plants in this food chain?

- A mineral salts
- B small fish
- C sunlight
- D water

35 The diagram shows the water cycle.

Which arrows represent water that has just evaporated?



- A P, Q and R
- B P, Q and S
- C P, R and S
- D Q, R and S

36 What changes ammonium compounds in the soil into nitrates?

- A decomposing bacteria
- B denitrifying bacteria
- C nitrogen-fixing bacteria
- D nitrifying bacteria

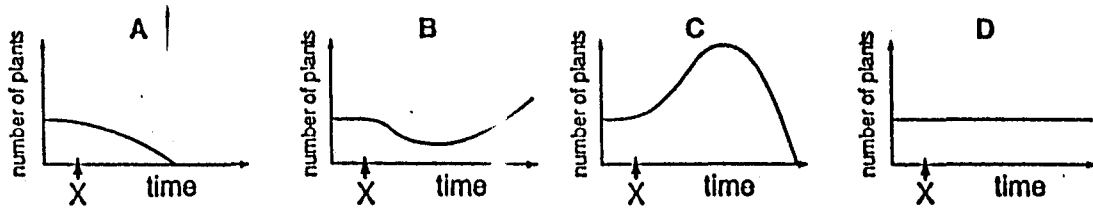
37 The table shows factors affecting the size of population in four countries.

Which country has the greatest rate of population increase?

country	number of births per thousand	number of deaths per thousand	number of immigrants entering country per thousand	number of emigrants leaving country per thousand
A	15	16	6	9
B	15	17	9	6
C	16	15	7	7
D	17	15	9	7

38 Nitrate leaks into a pond at time X.

Which graph shows the effect of nitrate pollution on the number of plants in the pond?



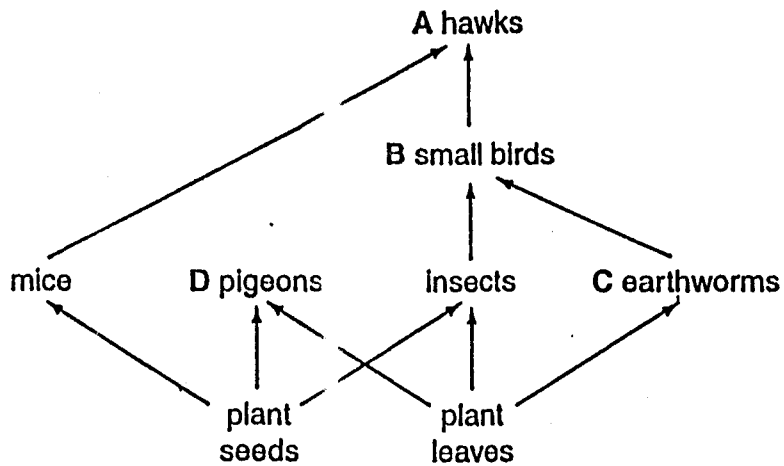
39 Which of the following is an air pollutant that damages plants?

- A fertilisers
- B insecticides
- C sewage
- D sulphur dioxide

40 The diagram shows a food web.

To protect young plants a farmer sprays the insects with insecticide.

Which animals are likely to contain most insecticide in their bodies a few weeks later?



International General Certificate of Secondary Education  
UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE

**BIOLOGY**

**0610/1**

PAPER 1 Multiple Choice

Thursday 9 NOVEMBER 2000 Afternoon 45 minutes

Additional materials:

- Multiple Choice answer sheet
- Soft clean eraser
- Soft pencil (type B or HB is recommended)

**TIME** 45 minutes

**INSTRUCTIONS TO CANDIDATES**

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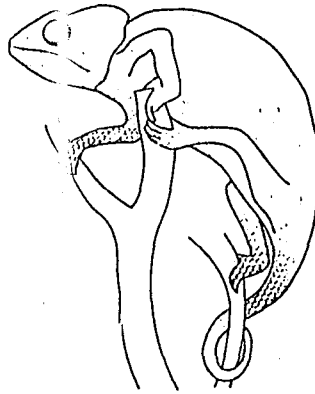
Any rough working should be done in this booklet.

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This question paper consists of 18 printed pages and 2 blank pages.

**211**

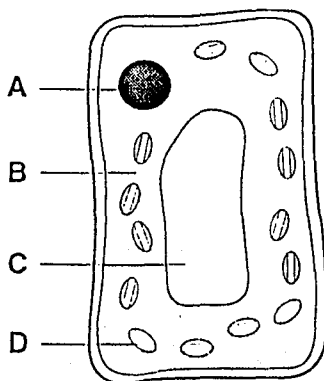
- 1 What is the process by which carbon dioxide is removed from living organisms?
- A excretion
  - B irritability
  - C nutrition
  - D respiration
- 2 The diagram shows a newly discovered species.



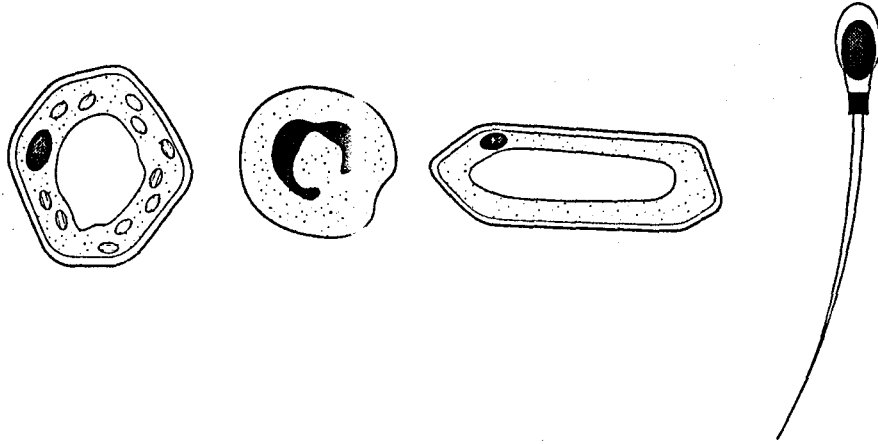
Which combination of features shows that this animal is a reptile?

- A scales, two eyes
  - B scales, four legs
  - C tail, two eyes
  - D tail, four legs
- 3 The diagram shows a plant cell.

Which part contains cell sap?



4 The diagrams show different types of cells.



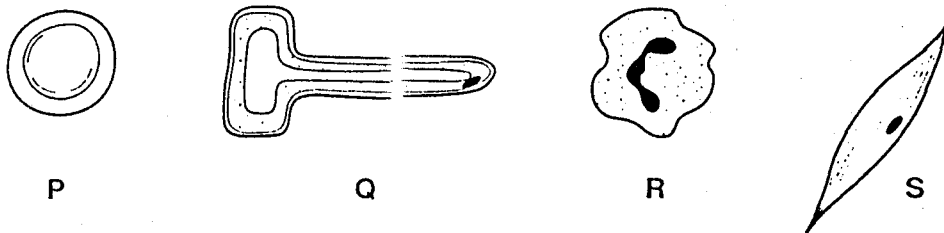
Which structures do all these cells have?

- A cell membrane and nucleus
- B cell membrane and cell wall
- C chloroplast and cell wall
- D chloroplast and nucleus

5 The heart is an example of

- A a cell.
- B an organ.
- C an organ system.
- D a tissue.

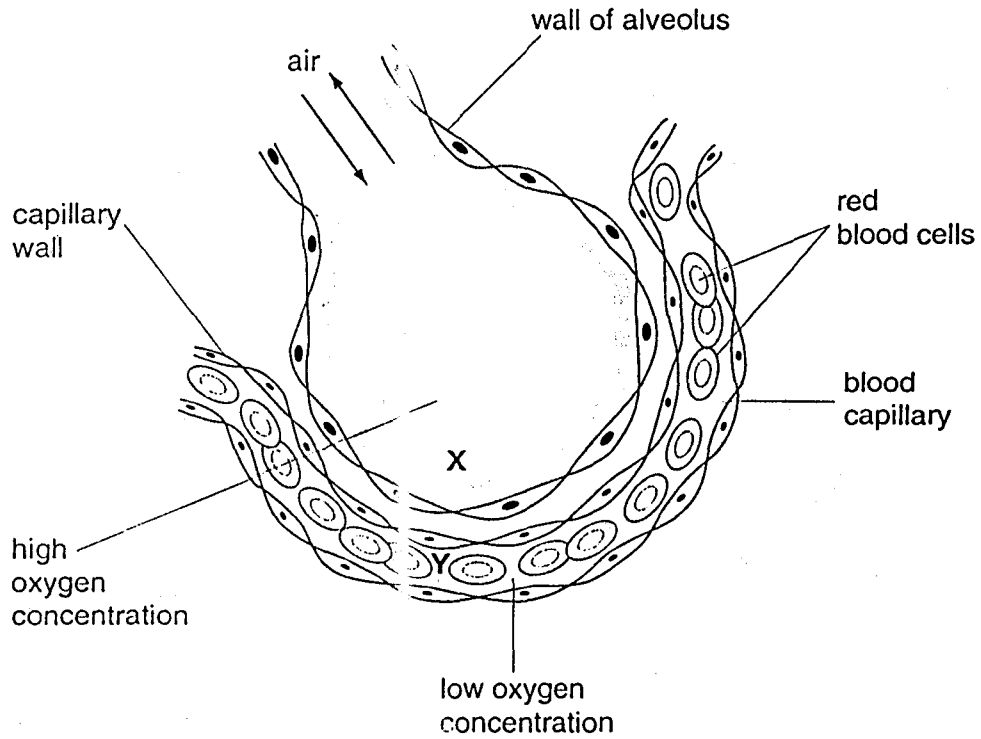
6 The diagram shows four different cells.



Which two cells are modified to increase absorption?

- A P and Q
- B Q and R
- C R and S
- D S and Q

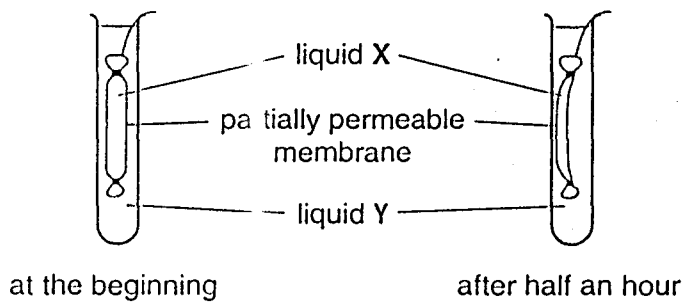
7 The diagram shows a section through an alveolus and through a capillary passing round it.



How does oxygen move from X to Y?

- A by diffusion
- B by osmosis
- C by translocation
- D by transpiration

8 The diagrams show an experiment to investigate osmosis.



What are liquids X and Y?

	liquid X	liquid Y
A	water	10% sucrose solution
B	5% sucrose solution	water
C	10% sucrose solution	water
D	10% sucrose solution	5% sucrose solution

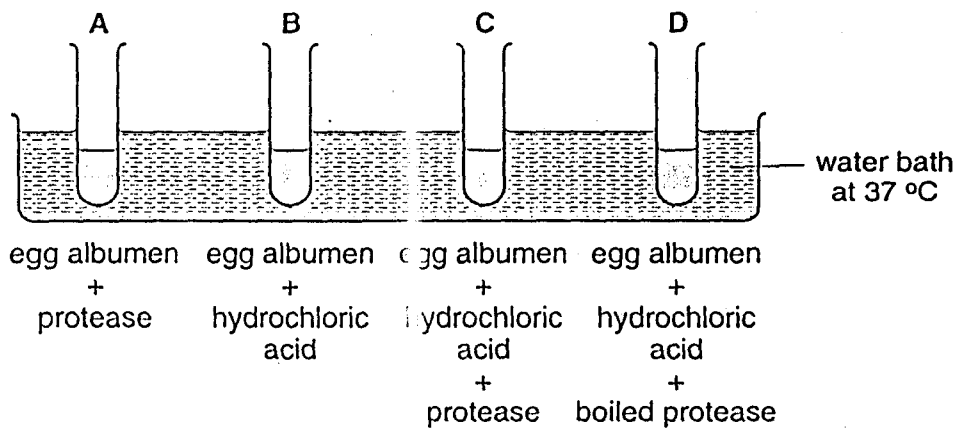


9 Which substance catalyses the breakdown of starch to sugar?

- A adrenaline
- B amylase
- C insulin
- D protease

10 The diagram shows an experiment on the digestion of the protein in egg albumen. The protease was taken from a human stomach.

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



11 By which process are dissolved amino acids moved through a plant?

- A absorption
- B osmosis
- C transpiration
- D translocation

12 To show that a green plant releases carbon dioxide, in which condition must it be placed and why?

	condition	reason
A	dark	to prevent photosynthesis
B	dark	to prevent respiration
C	light	to allow photosynthesis
D	light	to allow respiration

- 13 Different surfaces of three soft, green leaves are covered with waterproof jelly and are kept at 25°C.

Their appearances after four days are shown in the table.

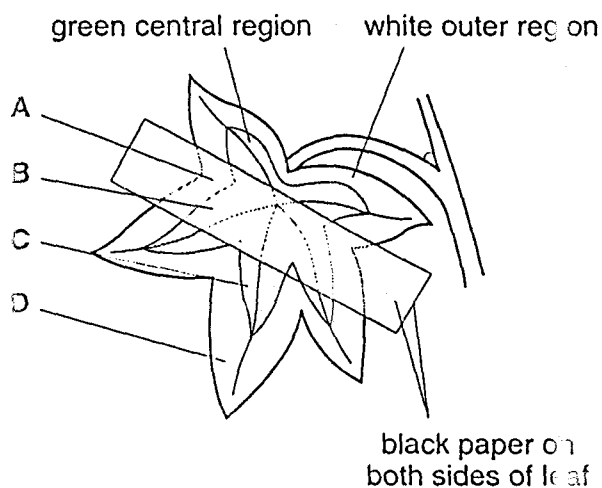
surface covered	appearance of leaf
upper only	dry and brown
lower only	soft and green
both	soft and green
neither	dry and brown

What is the correct explanation for these results?

- A The lower surface has more stomata than the upper surface.  
 B The upper surface has more stomata than the lower surface.  
 C The upper and lower surfaces do not have stomata.  
 D The upper and lower surfaces have the same number of stomata.
- 14 A plant with variegated leaves was completely destarched by placing it in a dark cupboard for 48 hours.

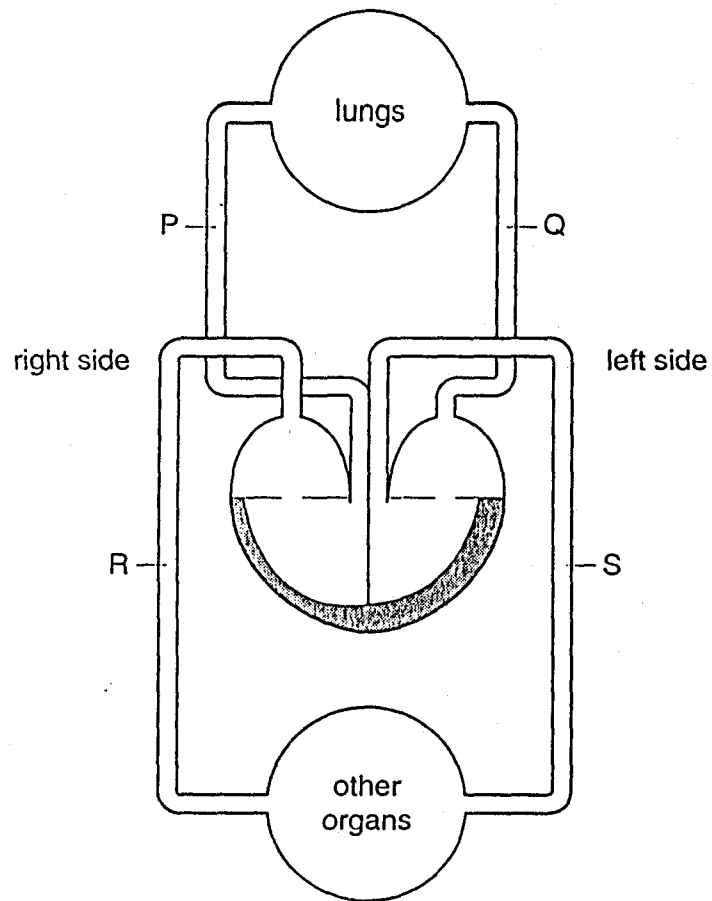
Black paper was then fixed on one leaf as shown and the plant was exposed to the light.

After 24 hours, which region of the leaf contained starch?





17 The diagram shows a plan of the human blood system.

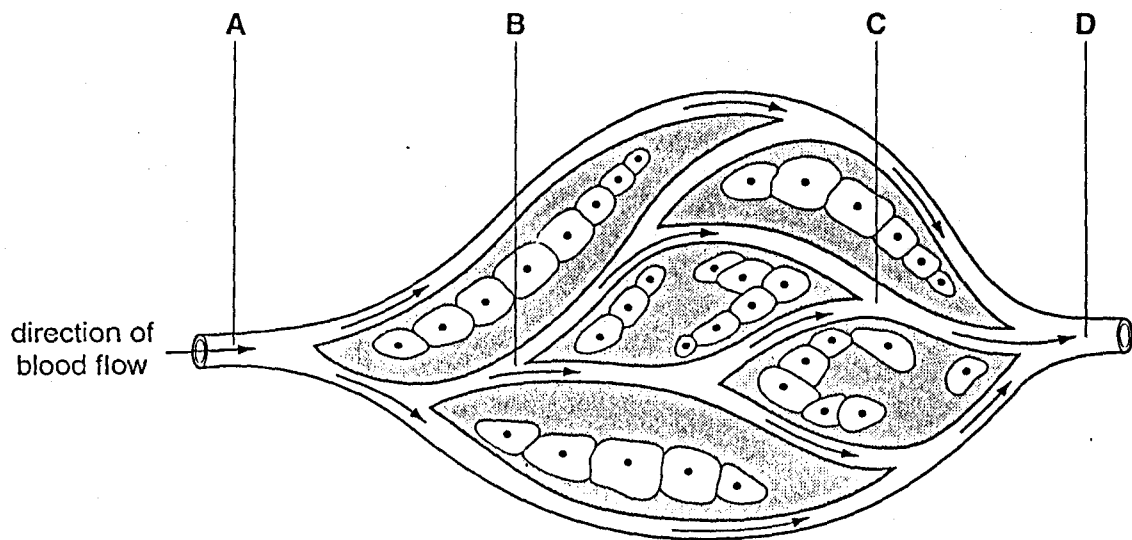


Which sequence correctly describes the flow of blood?

- A  $P \rightarrow Q \rightarrow R \rightarrow S$
- B  $P \rightarrow Q \rightarrow S \rightarrow R$
- C  $P \rightarrow R \rightarrow S \rightarrow Q$
- D  $P \rightarrow R \rightarrow Q \rightarrow S$

18 The diagram shows the blood supply to a group of cells.

At which point is the blood at the highest pressure?

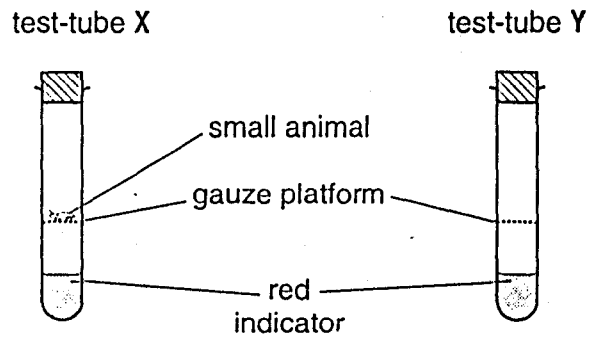


19 The equations for four different processes are shown, each involving an energy change.

Which process releases the most energy?

process	equation
A	carbon dioxide + water $\rightarrow$ sugar + oxygen
B	sugar $\rightarrow$ lactic acid
C	sugar $\rightarrow$ alcohol + carbon dioxide
D	sugar + oxygen $\rightarrow$ carbon dioxide + water

20 An experiment is set up as shown.



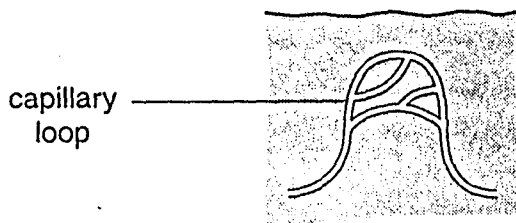
The red indicator turns yellow when the amount of carbon dioxide increases.

After several hours, the indicator in test-tube X turns yellow. The indicator in test-tube Y remains red.

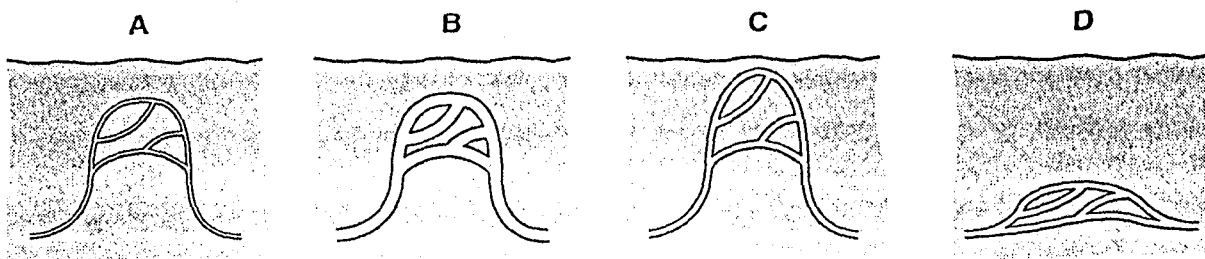
Which process caused the colour change?

- A digestion
  - B respiration
  - C sweating
  - D transpiration
- 21 Which organ breaks down heroin and alcohol?
- A brain
  - B kidney
  - C liver
  - D pancreas

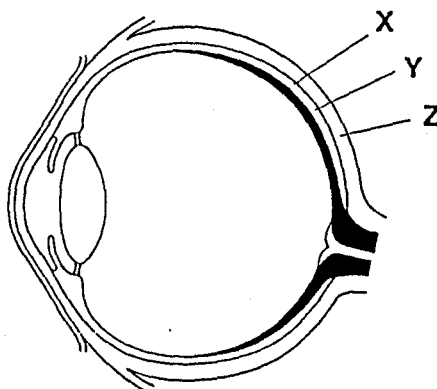
22 The diagram shows a capillary loop in the skin of a mammal.



What will the vessel look like when the mammal gets hot?



23 The diagram shows a section through a human eye.



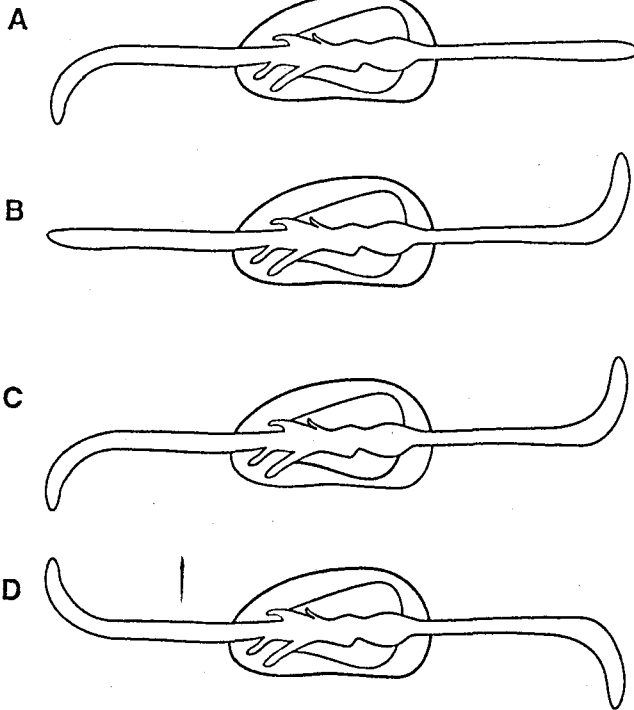
What are X, Y, and Z?

	X	Y	Z
A	choroid	retina	sclerotic
B	retina	choroid	sclerotic
C	retina	sclerotic	choroid
D	sclerotic	choroid	retina

- 24 The diagram shows a maize seedling which is placed horizontally in damp soil in a dark room.



What will the seedling look like after a few days?

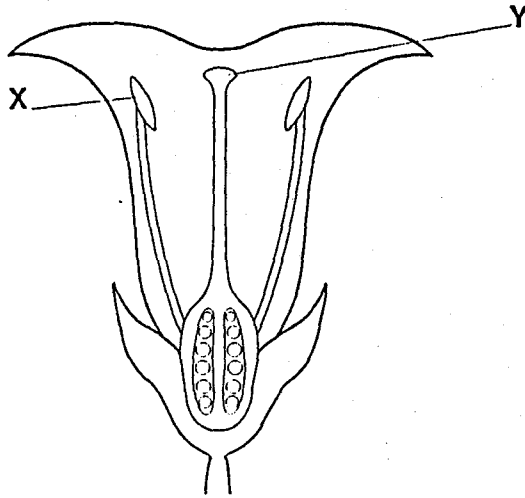


- 25 Which statement is true for every pollen grain?

- A It contains a male nucleus.
- B It is carried by insects.
- C It is carried by wind.
- D It is diploid.



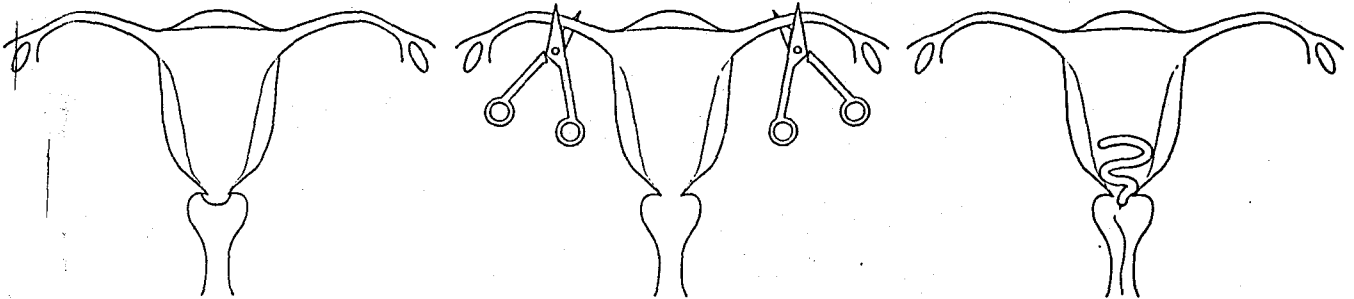
26 The diagram shows a section through a flower.



If pollen is transferred from X to Y, which process has occurred?

- A cross-fertilisation
- B self-fertilisation
- C cross-pollination
- D self-pollination

27 The diagrams show three methods of birth control.



Which methods are illustrated?

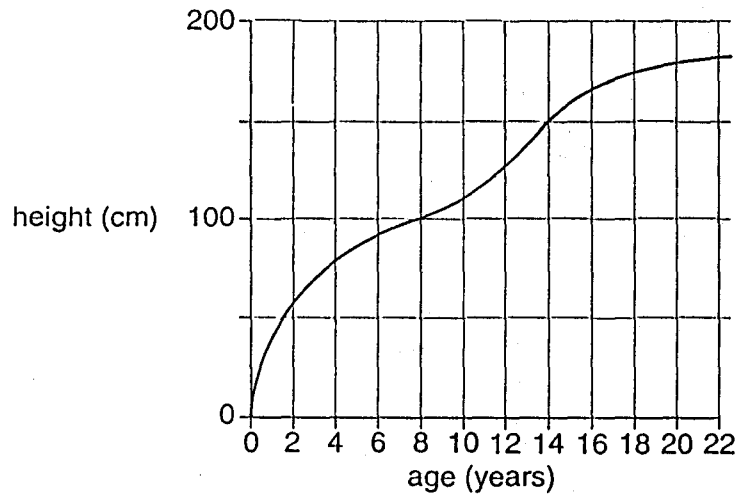
- A mechanical and chemical
- B mechanical and surgical
- C natural and mechanical
- D natural and surgical

- 28 During the germination of a seed when only the radicle (root) has started to grow, there is an increase in mass.

What causes this increase?

- A absorption of water
- B photosynthesis
- C respiration
- D storage of starch

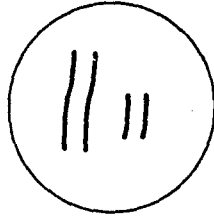
- 29 The graph shows how human height changes with age.



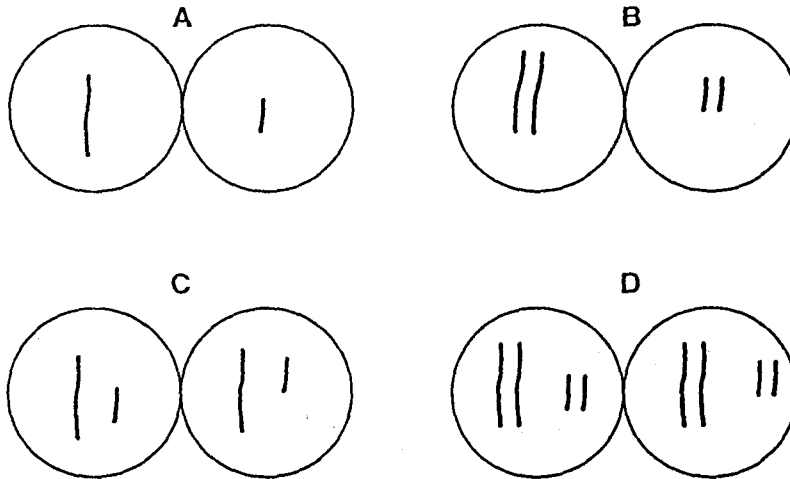
In which age range is growth most rapid?

- A 0-2 years
- B 12-14 years
- C 16-18 years
- D 20-22 years

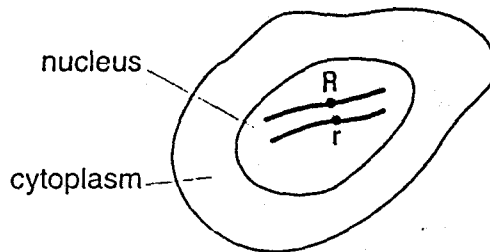
30) The nucleus of a cell contains two pairs of chromosomes.



Which two nuclei are produced after mitosis?



31) The diagram shows a diploid cell and alleles R and r on one pair of chromosomes.



When this cell divides by mitosis, which daughter cells will be produced?

	chromosome number	genotype
A	diploid	heterozygous
B	diploid	homozygous
C	haploid	heterozygous
D	haploid	homozygous

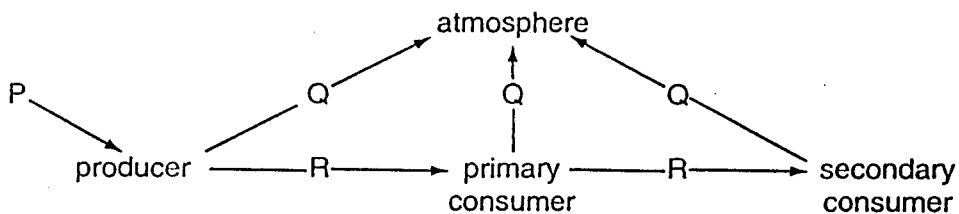
32 In a particular breed of dog, black coat colour is due to a dominant allele **B** and golden colour is due to its recessive allele **b**.

A black dog, whose father was golden, is mated with a black bitch whose mother was golden.

What is the likelihood of one of their puppies being heterozygous?

- A nil      B 1 in 4      C 1 in 2      D 1 in 1

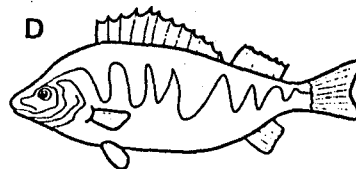
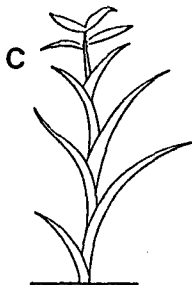
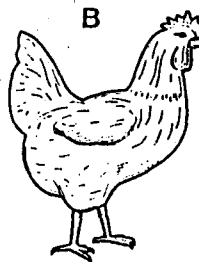
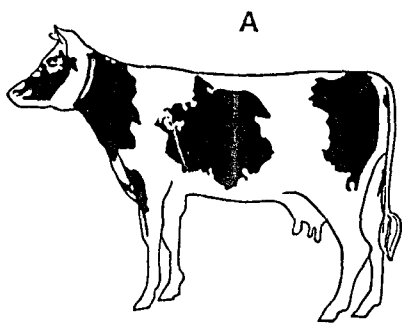
33 The diagram shows the flow of energy in a food chain.



What are the types of energy P, Q and R?

	P	Q	R
A	chemical	light	heat
B	heat	chemical	light
C	light	heat	chemical
D	solar	chemical	heat

34 Which organism would be a producer in a food chain?

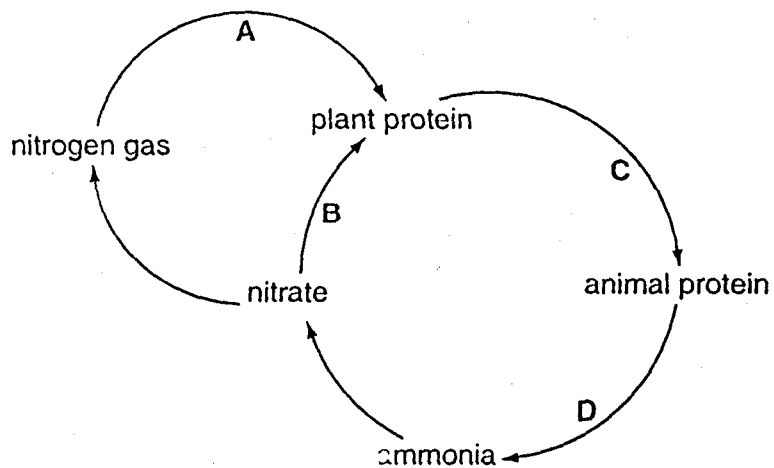


35 By which process does carbon enter a food chain?

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

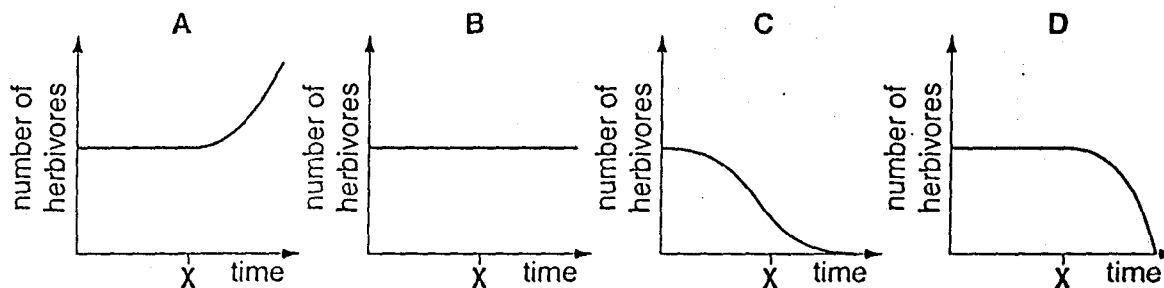
36 The diagram shows part of the nitrogen cycle.

When is decomposition occurring?



37 The graphs show the number of herbivores in a habitat over a period of time. At time X the carnivores are removed from the habitat.

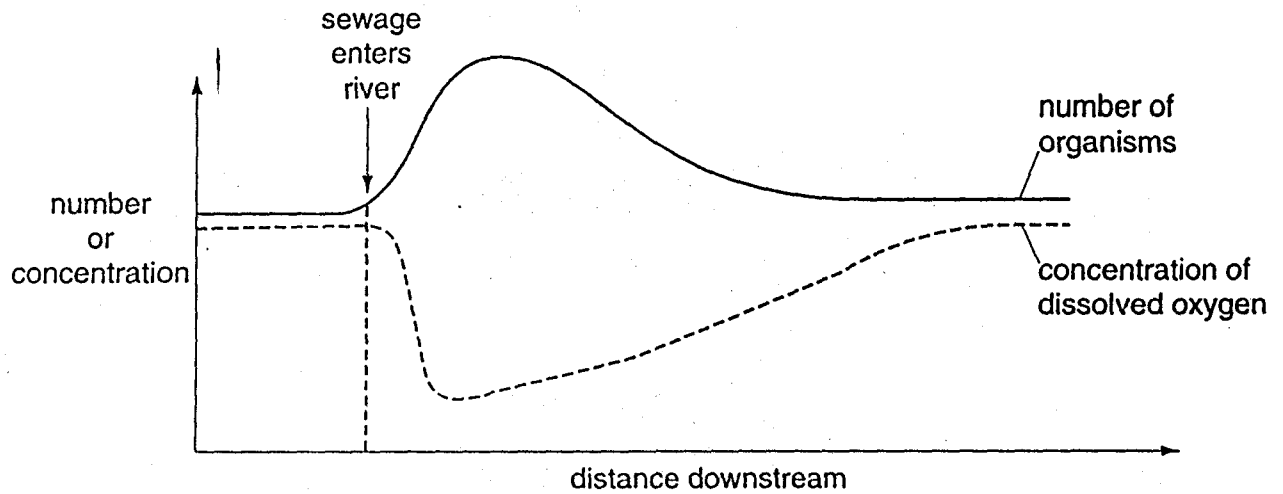
Which graph shows the effect of this on the number of herbivores?



38 What is the result of cutting down trees in a forest?

- A a decrease in carbon dioxide in the atmosphere
- B a decrease in transpiration
- C an increase in rainfall
- D an increase in sulphur dioxide in the atmosphere

33 The graph shows how untreated sewage affects a river.



Which type of organisms are referred to in the graph?

- A bacteria
- B fish
- C floating plants
- D rooted plants

40 A certain pollutant causes the loss of colour from a type of green plant.

How will this pollutant affect this type of plant over a long period of time?

- A Colourless mutants will survive.
- B Larger leaves will be produced.
- C The plants will die.
- D There will be no long-lasting effects.

International General Certificate of Secondary Education  
UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE  
**BIOLOGY** **0610/1**

PAPER 1 Multiple Choice

MAY/JUNE SESSION 2001

45 minutes

**Additional materials:**

Multiple choice answer sheet

Soft clean eraser

Soft pencil (type B or HB is recommended)

**TIME** 45 minutes

**INSTRUCTIONS TO CANDIDATES**

Do not open this booklet until you are told to do so.

Write your name, Centre number and candidate number on the answer sheet in the spaces provided unless this has already been done for you.

There are forty questions in 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 very carefully the instructions on the answer sheet.

**INFORMATION FOR CANDIDATES**

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.

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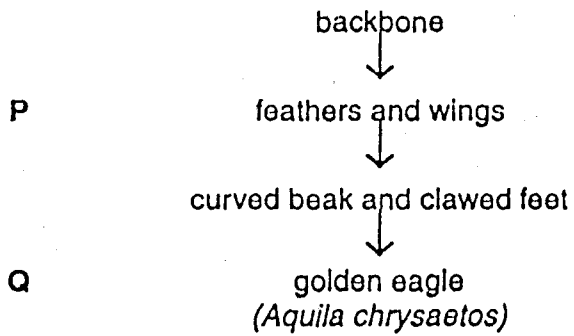
This question paper consists of 19 printed pages and 1 blank page.

**229**

1 Which list includes only activities that are carried out by **all** living things?

- A excreting, growing, reproducing, respring
- B excreting, moving, reproducing, sleeping
- C growing, moving, respiring, thinking
- D growng, respring, swimming, thinking

2 The classification table identifies a particular animal.



To which groups, used in classification, do P and Q refer?

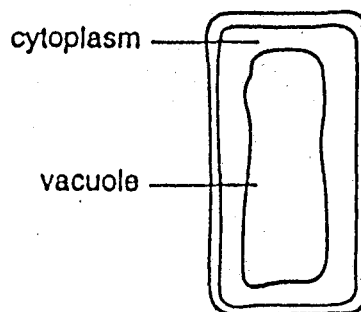
	P	Q
A	class	genus
B	class	species
C	genus	class
D	species	genus

3 Which part of a cell contains cellulose?

- A cell wall
- B chloroplast
- C cytoplasm
- D vacuole



The diagram shows parts of a palisade cell.



What are found in the labelled regions?

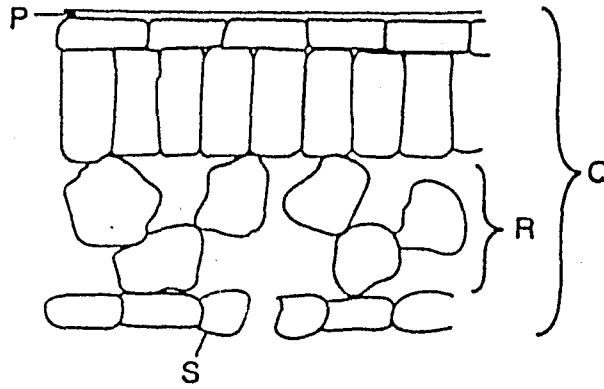
	In the cytoplasm	In the vacuole
A	chloroplasts	nucleus
B	chloroplasts and nucleus	sap
C	nucleus	chloroplasts
D	sap	chloroplasts and nucleus

The table shows functions that are carried out by some cells.

Which cell is most accurately described?

	cell	absorption	conduction	transport	contraction
A	muscle cell	X	✓	X	✓
B	red blood cell	✓	X	✓	X
C	root hair cell	✓	X	X	✓
D	xylem vessel	X	✓	X	✓

The diagram shows a section through a leaf.



Which structure is an organ and which structure is a tissue?

	organ	tissue
A	P	S
B	Q	R
C	R	P
D	S	Q

By which process does oxygen move into the cytoplasm of a root hair cell?

- A diffusion
- B osmosis
- C photosynthesis
- D transpiration

- 8 A potato is cut into four pieces.

The four pieces are weighed and then each one is placed in a different sugar solution.

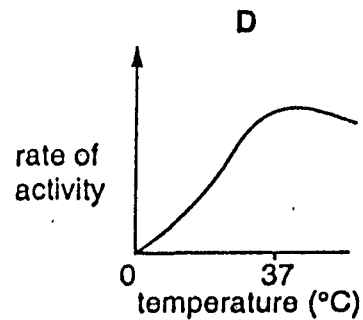
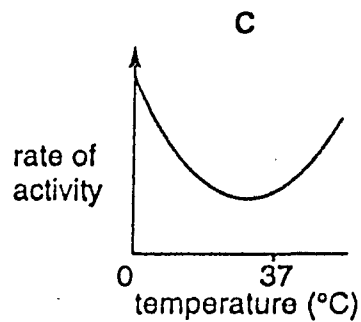
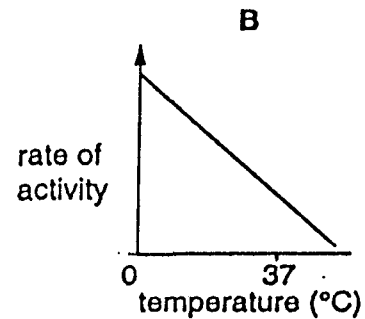
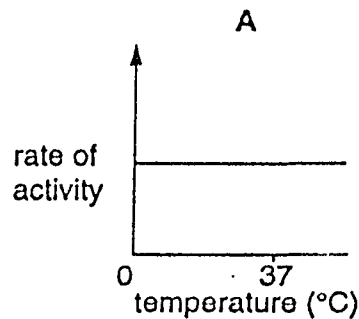
After four hours, the pieces are taken out of the solutions, dried, and re-weighed.

The masses of the pieces at the start and after four hours are shown in the table below.

Which solution is the most dilute?

solution	mass at start (g)	mass after four hours (g)
A	24	22
B	25	34
C	28	23
D	32	35

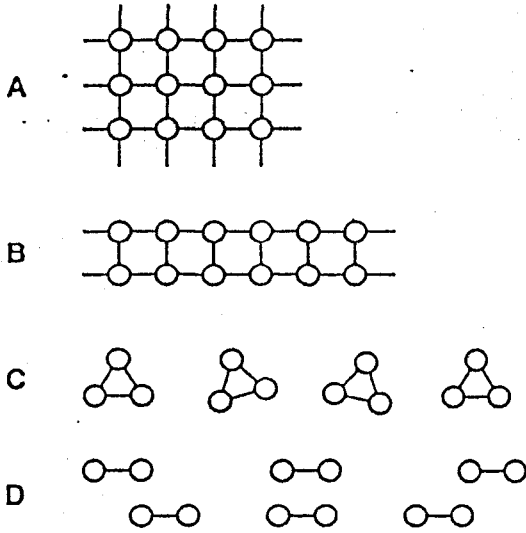
- 9 Which graph shows the change in the rate of activity of an enzyme with temperature?



10 The diagram shows part of a starch molecule.

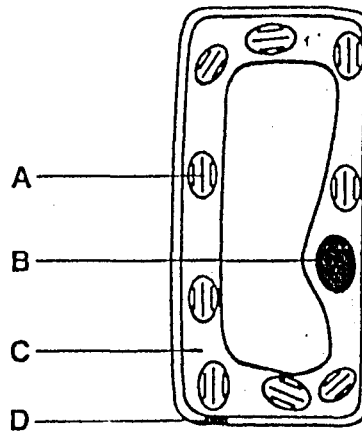


Which diagram shows the effect of the enzyme amylase on this molecule?



11 The diagram shows a palisade cell from a leaf.

In which structure are there large amounts of a substance containing magnesium?



- 12 When a plant shoot is placed in a solution of dye, the dye moves up the stem.

Under which conditions will the dye move fastest?

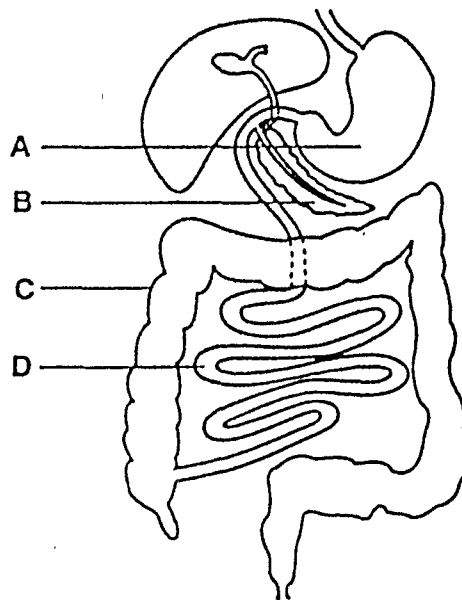
	temperature	humidity
A	high	high
B	high	low
C	low	high
D	low	low

- 13 A box lies on some grass for a week. When the box is lifted, the grass underneath has turned yellow.

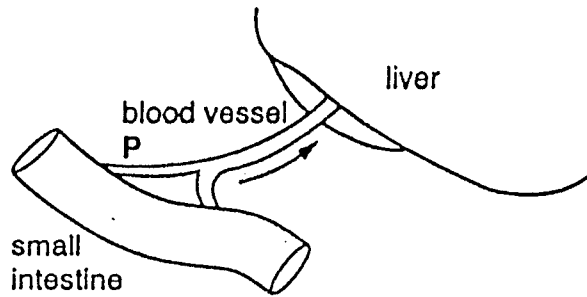
This is caused by a lack of

- A carbon dioxide.
  - B light.
  - C oxygen.
  - D water.
- 14 The diagram shows the human alimentary canal.

The main function of which part is to absorb water?



- 15 The diagram shows blood vessel P which carries digested food from the small intestine to the liver.



What describes the level of glucose in blood vessel P and the level of glycogen in the liver, shortly after a meal containing carbohydrates?

	glucose in blood vessel P	glycogen in liver
A	high	decreasing
B	high	increasing
C	low	decreasing
D	low	increasing

- 16 What describes the direction of blood flow and the oxygen content of the blood in the pulmonary artery?

	direction of blood flow	oxygen content of the blood
A	away from the heart	low
B	away from the heart	high
C	towards the heart	low
D	towards the heart	high

- 17 Which substance in cigarette smoke may cause lung cancer?

- A carbon dioxide
- B carbon monoxide
- C nicotine
- D tar

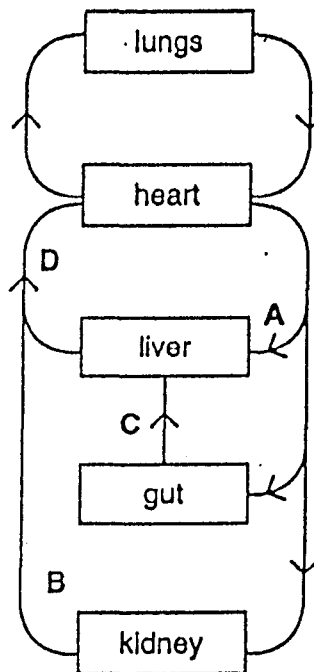
- 18 The table shows differences in the amounts of oxygen and carbon dioxide in air breathed in and in air breathed out.

gas	percentage volume in air breathed in	percentage volume in air breathed out
oxygen	21.00	16.00
carbon dioxide	0.04	4.00

What is the reason for these differences?

- A Carbon dioxide is used up by body cells during aerobic respiration.
  - B Carbon dioxide is used up by body cells during anaerobic respiration.
  - C Oxygen is used up by body cells during aerobic respiration.
  - D Oxygen is used up by body cells during anaerobic respiration.
- 19 The diagram shows the plan of part of the human circulatory system.

In which blood vessel are the breakdown products of alcohol first found?



- 20 What will be the effect of strenuous exercise on the amount of water lost through the skin and the kidneys?

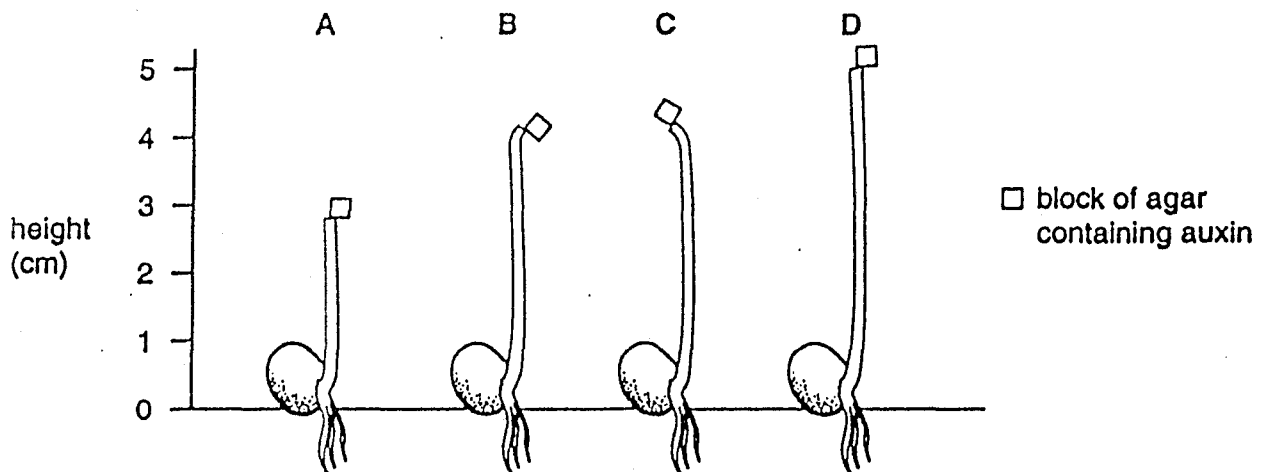
	amount of water lost through the skin	amount of water lost through the kidneys
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

- 21 A boy accidentally touches a very hot object and immediately takes his hand away.

In this reflex action, what is the effector?

- A a heat receptor in his hand  
 B a motor neurone  
 C a muscle in his arm  
 D the spinal cord
- 22 The tip is removed from a growing plant shoot 2.8 cm tall and on one side only is replaced by a block of agar containing auxin.

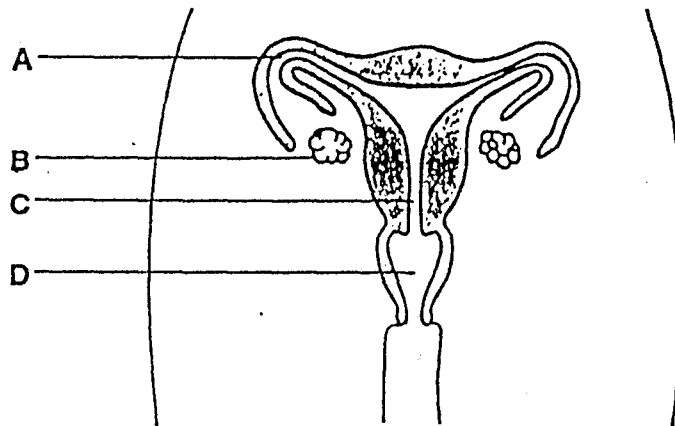
Which diagram shows the result after four days?



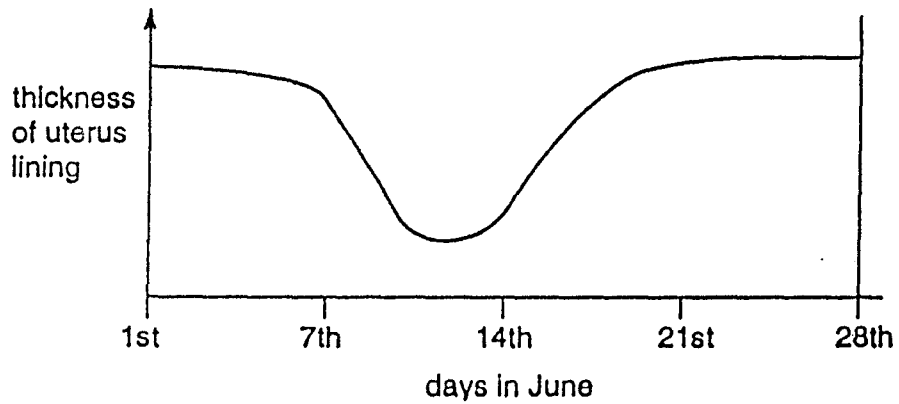


23 The diagram shows the human female reproductive system.

Where are sperms released during sexual intercourse?



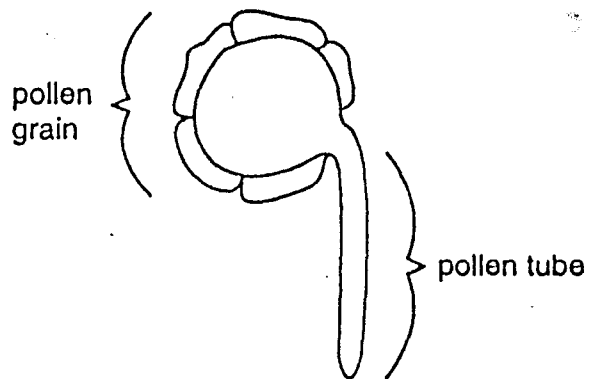
24 The graph shows changes in the thickness of the lining of the uterus wall, during a menstrual cycle.



On which date in this cycle does menstruation begin?

- A June 1<sup>st</sup>
- B June 7<sup>th</sup>
- C June 14<sup>th</sup>
- D June 21<sup>st</sup>

25 The diagram shows a pollen grain germinating after pollination.



Which structure surrounds the pollen tube?

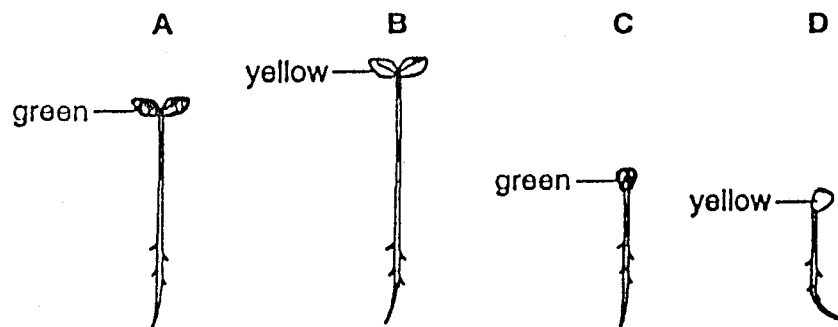
- A anther
  - B filament
  - C stigma
  - D style
- 26 Which part of a seed grows into the root system of a plant?
- A cotyledon
  - B micropyle
  - C plumule
  - D radicle

- 27 Four samples of cress seeds were allowed to germinate in different conditions of temperature and light, as shown in the table.

sample	temperature (°C)	light
1	5	absent
2	5	present
3	20	absent
4	20	present

A typical seedling from each sample was removed after seven days.

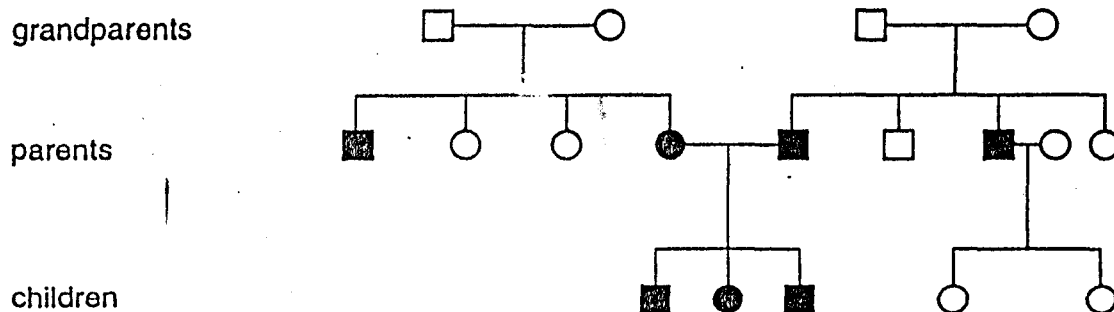
Which seedling was from sample 2?



- 28 Which name is given to the observable features of an organism?

- A alleles
- B genes
- C genotype
- D phenotype

- 29 The diagram shows a family tree. Squares represent males and circles represent females. Normal individuals are indicated by white symbols. Individuals who show a genetically-controlled defect are indicated by black symbols.



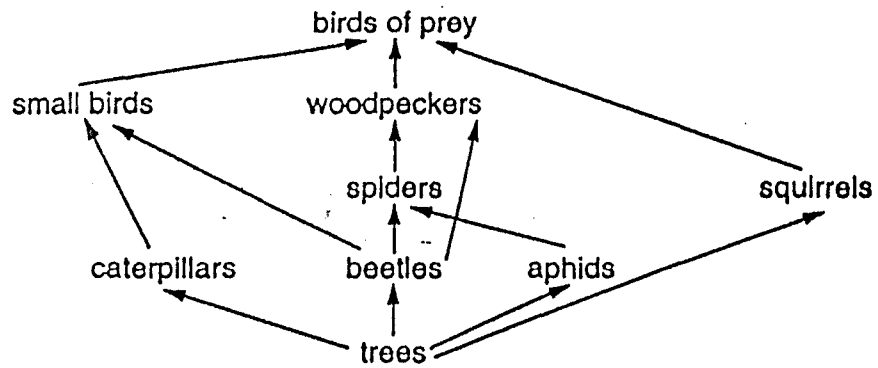
Which statement is true of the grandparents?

- A Each carries two recessive alleles for this defect.
- B Each carries only one recessive allele for this defect.
- C Only the grandmothers are heterozygous.
- D Only the grandfathers are heterozygous.
- 30 In a plant species, the allele for red flowers ( $R$ ) is dominant to the allele for white flowers ( $r$ ). Homozygous red-flowered plants ( $RR$ ) are crossed with homozygous white-flowered plants ( $rr$ ).

What is the colour of the flowers produced by the offspring?

- A all red
- B all white
- C equal numbers of red and white
- D three red to one white
- 31 Which of the following, found in an area of grassland, forms an ecosystem?
- A a family of lions
- B a herd of buffalo
- C all the animals and all the plants
- D all the animals, all the plants and the complete environment in which they live

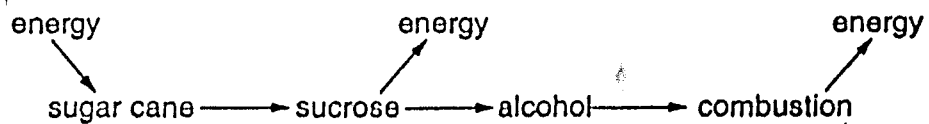
32 The diagram represents a food web in a forest.



Which of the following is a food chain from this web?

- A trees → aphids → spiders → small birds
- B trees → beetles → spiders → squirrels
- C trees → caterpillars → woodpeckers
- D trees → squirrels → birds of prey

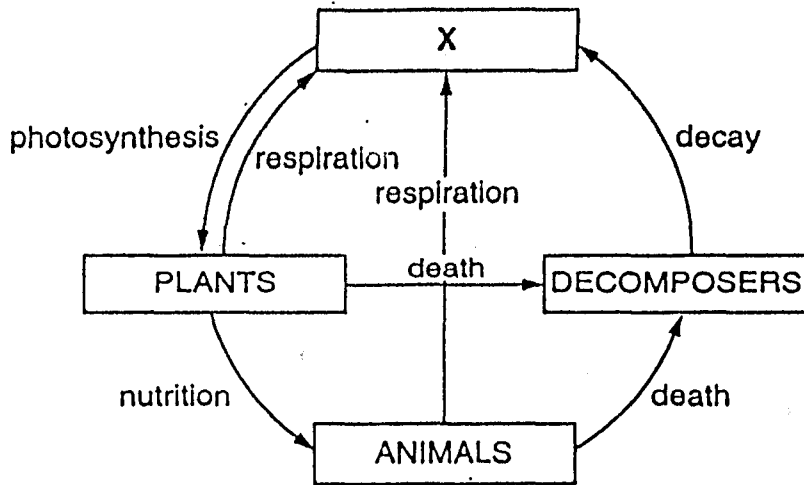
33 The diagram shows energy flowing through a system.



Which process releases energy from the sucrose?

- A aerobic respiration
- B anaerobic respiration
- C evaporation
- D photosynthesis

34 The diagram shows the carbon cycle.

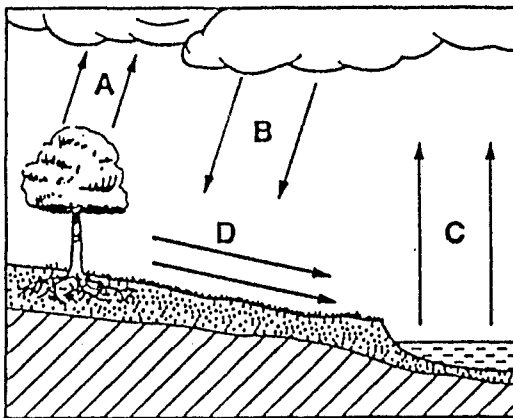


What is substance X?

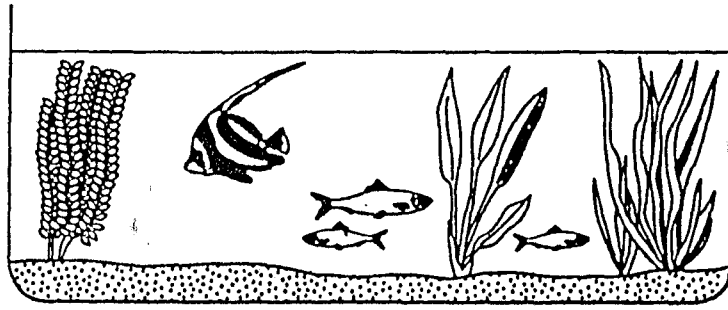
- A carbon dioxide
- B oxygen
- C starch
- D water

35 The diagram shows part of the water cycle.

Which arrows represent transpiration?



36 The oxygen concentration in this aquarium was measured over a period of time.



It increased during daylight and decreased at night.

Which processes caused these results?

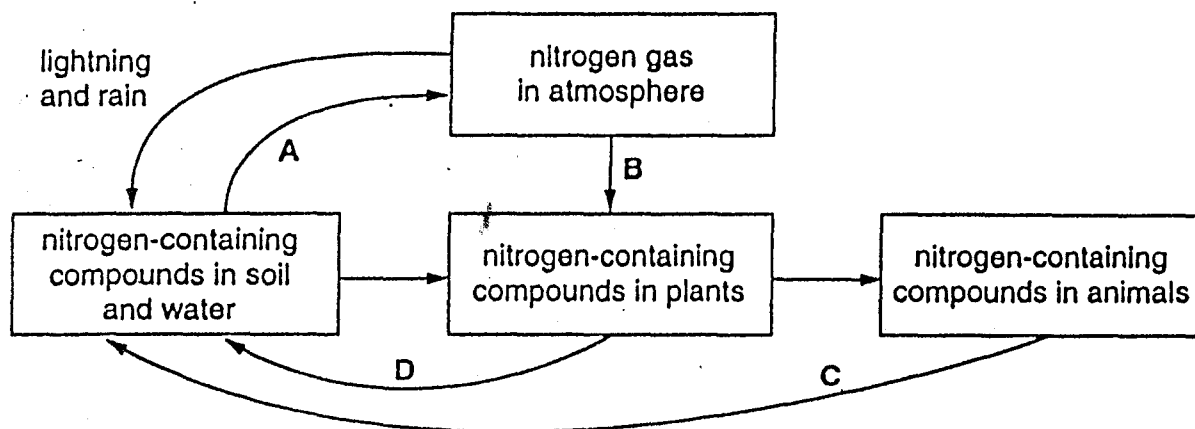
	oxygen increase (day)	oxygen decrease (night)
A	animal nutrition	decay
B	decay	animal nutrition
C	movement	photosynthesis
D	photosynthesis	respiration

37 What will lead to an increase in the human population?

- A decreased food production
- B improved treatment of disease
- C increased air pollution
- D increased use of contraception

38 The diagram shows part of the nitrogen cycle.

Where does human sewage enter the cycle?



39 The table records the levels of radioactive substances for a lake into which waste radioactive substances were discharged.

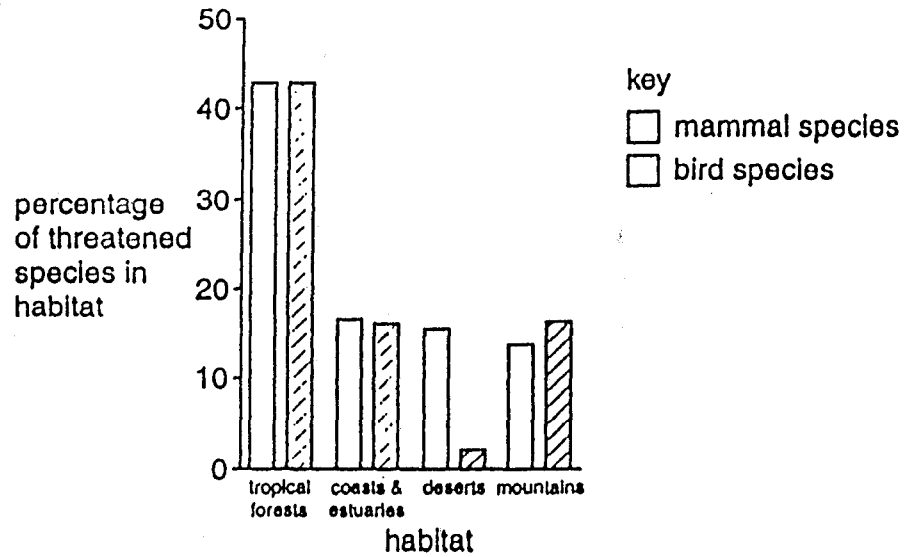
sample taken from	concentration of radioactive substances (arbitrary units)
water	1
mud	20
water plants	300
small fish	1000
large fish	3000

The table shows that the concentration of radioactivity

- A decreased along a food chain.
- B increased along a food chain.
- C was higher in producers than in consumers.
- D was the same in producers and consumers.



- 10 The bar chart shows the percentage of mammal species and bird species that are threatened with extinction in four habitats.



In which habitat is a lower percentage of mammal species than bird species threatened with extinction?

- A coasts and estuaries
- B deserts
- C mountains
- D tropical forests

International General Certificate of Secondary Education  
UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE  
**BIOLOGY** **0610/1**  
PAPER 1 Multiple Choice  
OCTOBER/NOVEMBER SESSION 2001 45 minutes

Additional materials:  
Multiple Choice answer sheet  
Soft clean eraser  
Soft pencil (type B or HB is recommended)

**TIME** 45 minutes

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**INFORMATION FOR CANDIDATES**

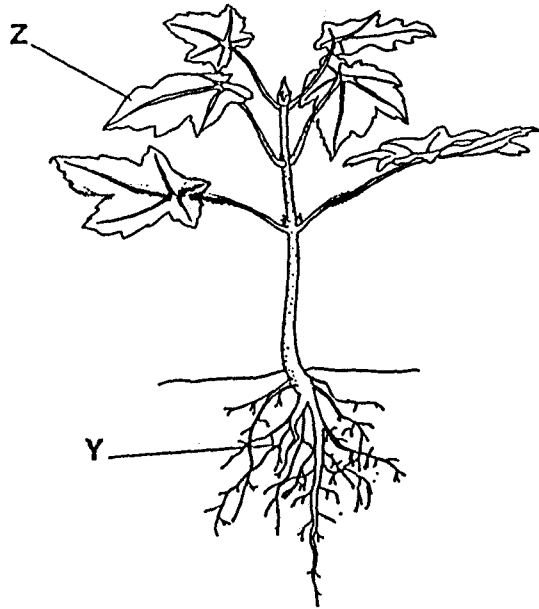
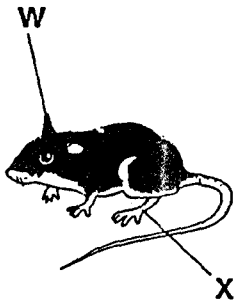
Each correct answer will score one mark. A mark will not be deducted for a wrong answer.

Any rough working should be done in this booklet.

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This question paper consists of 16 printed pages.

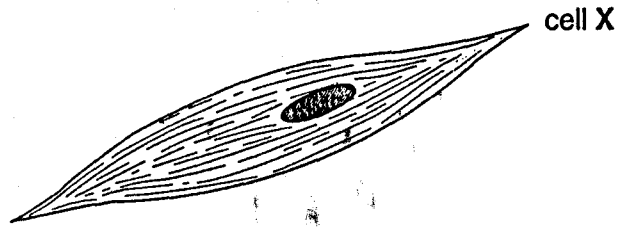
- 1 Which kind of skin do amphibians have?
- A dry without scales
  - B dry with scales
  - C moist without scales
  - D moist with scales
- 2 Respiration is the release of energy from food.



Where does respiration occur in the animal and in the plant shown?

- A W only
- B W and X only
- C W, X and Y only
- D W, X, Y and Z

3 The diagram shows the structure of a cell X from a living organism.



The key identifies 4 cell types.

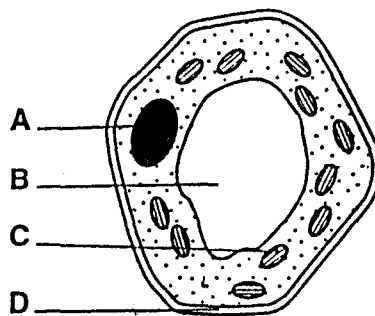
Use the key to identify cell X.

- |   |                                     |         |
|---|-------------------------------------|---------|
| 1 | plant cell with a cell wall .....   | go to 2 |
|   | animal cell with no cell wall ..... | go to 3 |
| 2 | cell contains chloroplasts .....    | A       |
|   | cell lacks chloroplasts .....       | B       |
| 3 | cell with a nucleus .....           | C       |
|   | cell without a nucleus .....        | D       |

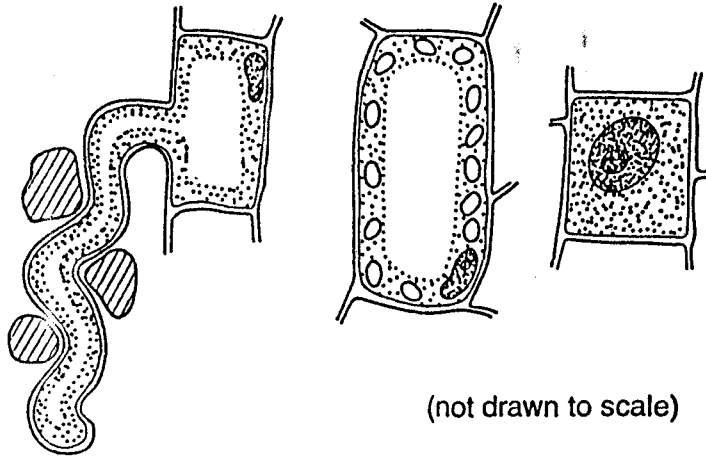
4 The diagram shows a plant cell.

A biologist wishes to find out whether this cell is haploid or diploid.

Which labelled part should be examined more closely?



The diagram shows three plant cells.



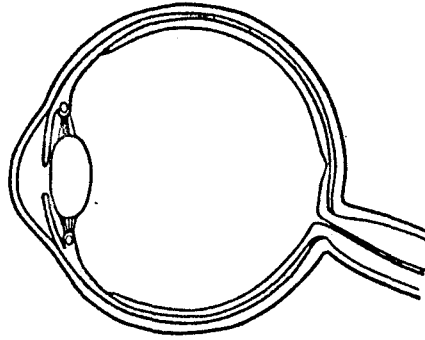
Which features do the three cells have in common?

- A chloroplasts and cell wall
- B cell wall and nucleus
- C nucleus and large vacuole
- D large vacuole and chloroplasts

How is a red blood cell modified for oxygen transport?

- A It has a cell wall.
- B It has a large vacuole.
- C It has a nucleus.
- D It has haemoglobin.

- 7 The diagram shows a structure found in the human body.



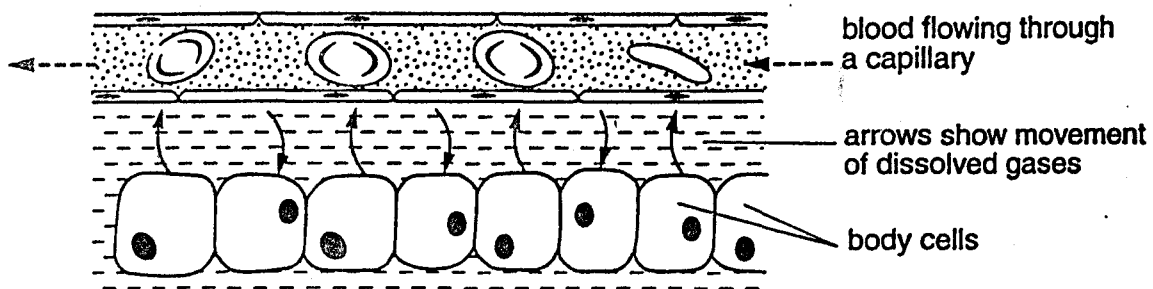
This is an example of

- A an organ.
  - B an organism.
  - C an organ system.
  - D a tissue.
- 8 A red blood cell is placed in a concentrated salt solution.

Why does its appearance change?

- A Salt enters the cell.
- B Salt leaves the cell.
- C Water enters the cell.
- D Water leaves the cell.

- 9 The diagram shows the movement of dissolved gases between the blood and body cells.

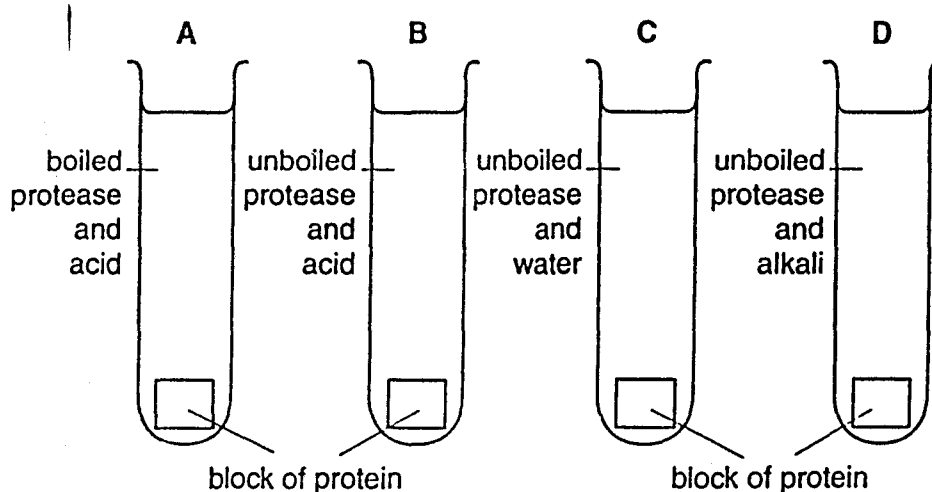


By which process do the dissolved gases move?

- A absorption
- B diffusion
- C osmosis
- D respiration

10 Protease was taken from the stomach of a mammal and used in an experiment.

In which test-tube would the block of protein be digested?



11 Six test-tubes were set up at different temperatures. Each contained identical starch-amylose mixtures. The table shows the time taken for the reactions to finish in each test-tube.

temperature (°C)	15	25	35	45	55	65
time (seconds)	35	22	13	5	35	66

At which temperature does the amylase work best?

- A 15 °C      B 35 °C      C 45 °C      D 65 °C

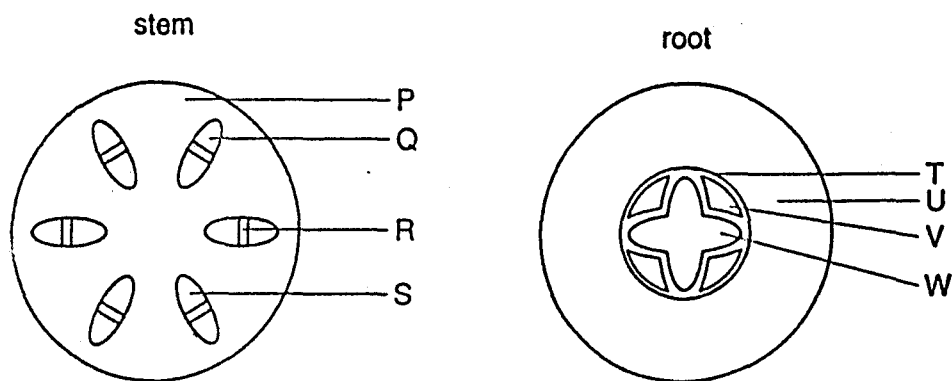
12 What will happen to a green plant grown in soil that does **not** contain much nitrogen?

- A It will have large leaves and good root growth.
- B It will have purple leaves and poor root growth.
- C It will have small leaves and a thin stem.
- D It will have white leaves and a thick stem.

13 Why do flowering plants need light?

- A to absorb water
- B to help produce food
- C to make enzymes work
- D to reduce water loss

14 The diagrams show cross-sections through a stem and a root of a flowering plant.

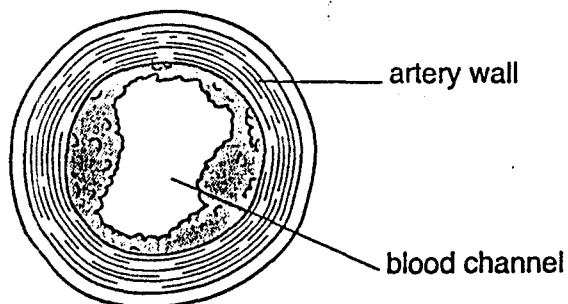


Which pair of letters indicates similar tissues?

- A P and T      B Q and U      C R and V      D S and W
- 15 What is the function of blood platelets?

- A They destroy bacteria.  
 B They destroy damaged body cells.  
 C They help in blood clotting.  
 D They transport oxygen.

16 The diagram shows a section through the coronary artery of a person who died of a heart attack.



The appearance of the artery is most likely to be due to a diet high in

- A carbohydrates.  
 B fats.  
 C fibre.  
 D protein.



17 Which of the following should be added to the diet of a person who has too few red blood cells?

- A calcium
- B iron
- C magnesium
- D vitamin C

18 Yeast is placed inside a container of glucose solution.

Which word equation summarises the process that takes place inside the container?

- A glucose  $\rightarrow$  ethanol + carbon dioxide
- B glucose  $\rightarrow$  lactic acid
- C glucose + oxygen  $\rightarrow$  carbon dioxide + water
- D glucose + oxygen  $\rightarrow$  ethanol

19 Compared with the air breathed in, how are the concentrations of carbon dioxide and oxygen different in the air that is breathed out?

	carbon dioxide	oxygen
A	decreased	decreased
B	decreased	increased
C	increased	decreased
D	increased	increased

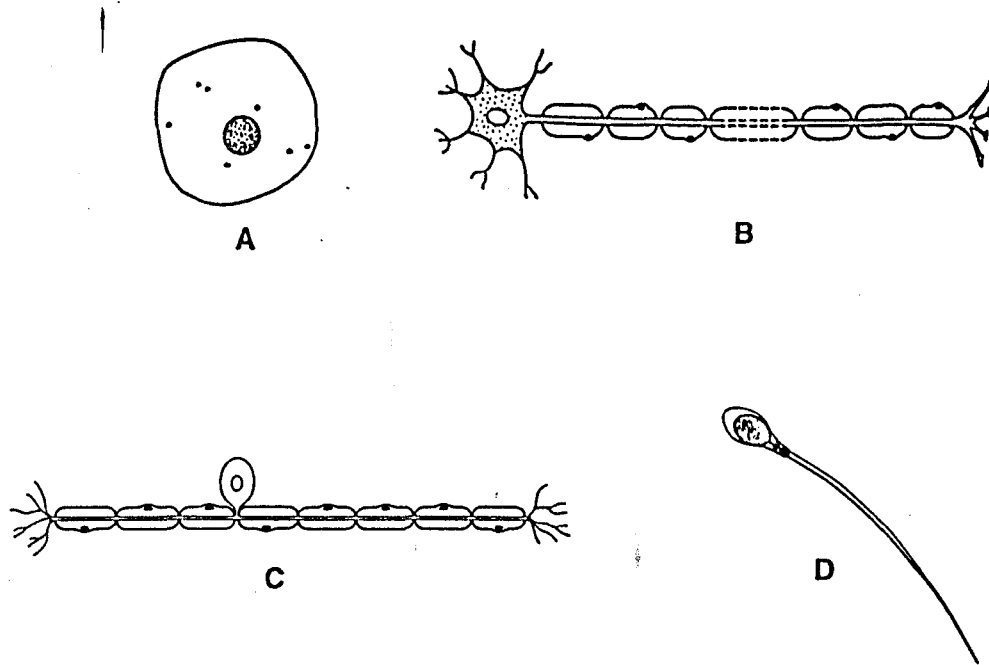
20 What is a function of the kidneys?

- A breakdown of hormones
- B formation of urea
- C removal of excess water
- D secretion of bile

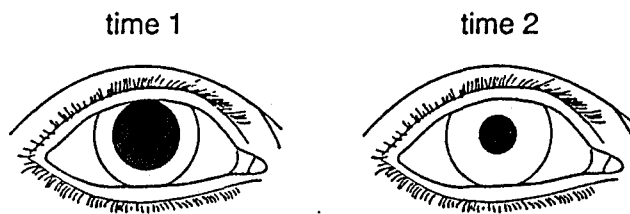
21 How does sweating cool the body?

- A Sweating causes vasodilation.
- B Sweating decreases the water content of the blood.
- C Urea and salt are lost from the body in sweat.
- D Water in sweat evaporates from the skin.

22 Which diagram shows a motor neurone?



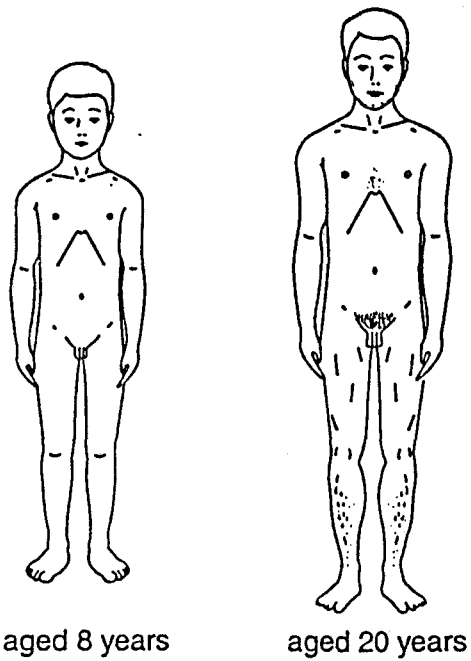
23 The diagrams show the same eye at two different times.



What happens between time 1 and time 2?

- A A bright light is shone into the eye.
- B The eye closes and then opens.
- C The eye focuses on a more distant object.
- D The person walks into a dark room.

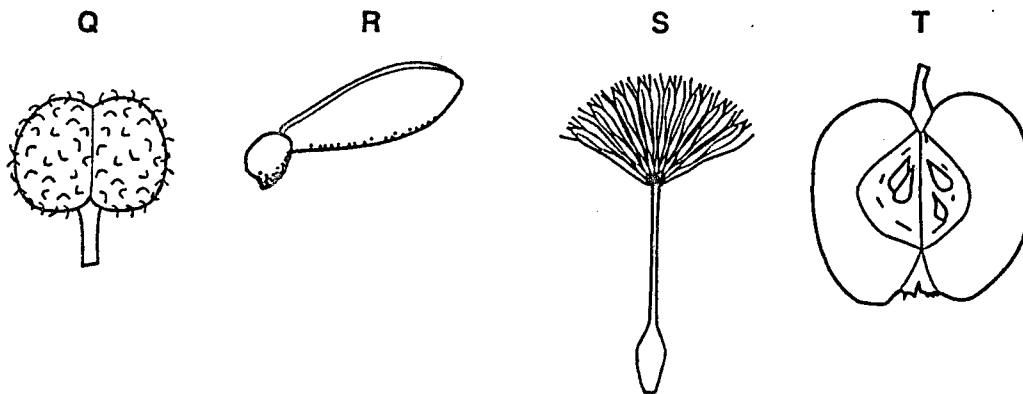
24 The diagrams show a male at different ages.



Which hormone causes the changes between age 8 and age 20?

- A insulin
- B oestrogen
- C progesterone
- D testosterone

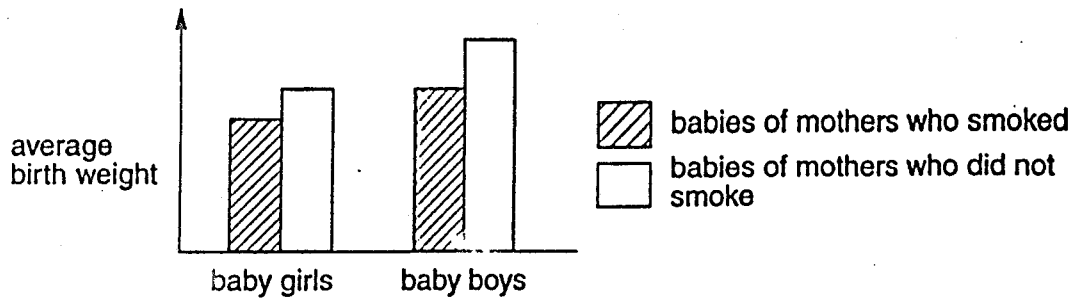
25 The diagram shows four different fruits.



The seeds of which fruits are dispersed by the wind?

- A R only
- B T only
- C Q and T
- D R and S

- 26 The diagram shows the average birth weights of babies born to smoking and non-smoking mothers.



On average, which group of babies is heaviest?

- A boys of mothers who did not smoke  
 B boys of mothers who smoked  
 C girls of mothers who did not smoke  
 D girls of mothers who smoked
- 27 Which process results in an increase in dry mass of a plant?
- A germination  
 B photosynthesis  
 C respiration  
 D translocation
- 28 The table shows the conditions in which four samples of seeds were kept.

Which sample germinated?

sample	temperature	water	oxygen
A	0°C	present	absent
B	10°C	absent	absent
C	20°C	present	present
D	40°C	absent	present

29 Which shows the sex chromosomes in the body cells and in the sex cells in a man?

	body cells	sex cells
A	XX	X
B	XX	XX
C	XY	X or Y
D	XY	XY

30 In fruit flies, the allele for grey body (G) is dominant over the allele for black body (g).

The result of a mating between two flies is shown.

parents: grey-bodied fly x black-bodied fly

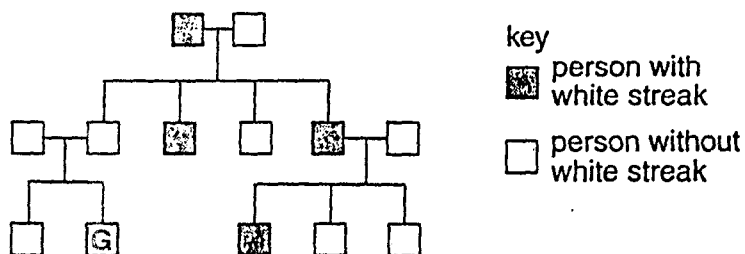
offspring: 33 grey-bodied flies + 38 black-bodied flies

What were the genotypes of the parents?

- A Gg x gg      B Gg x Gg      C GG x gg      D GG x Gg

31 A white streak in dark hair is caused by the presence of a dominant allele.

The diagram shows how this white streak was inherited in a family.



What is the chance that G will inherit the white streak?

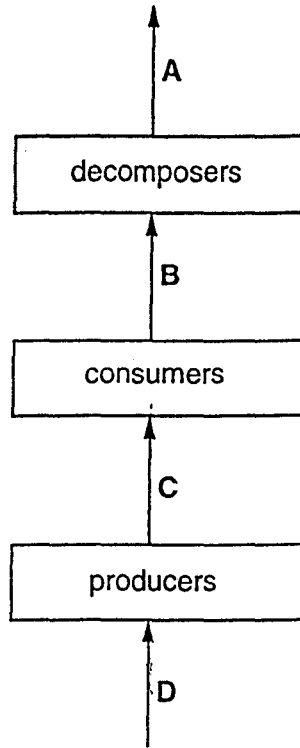
- A 0%      B 25%      C 75%      D 100%

32 Which is a food chain made up of a producer, a herbivore and a carnivore?

- A bee → bee-eater → hawk  
 B hen → rat → owl  
 C maize → mouse → eagle  
 D Sun → grass → sheep

33 The diagram shows organisms in an ecosystem.

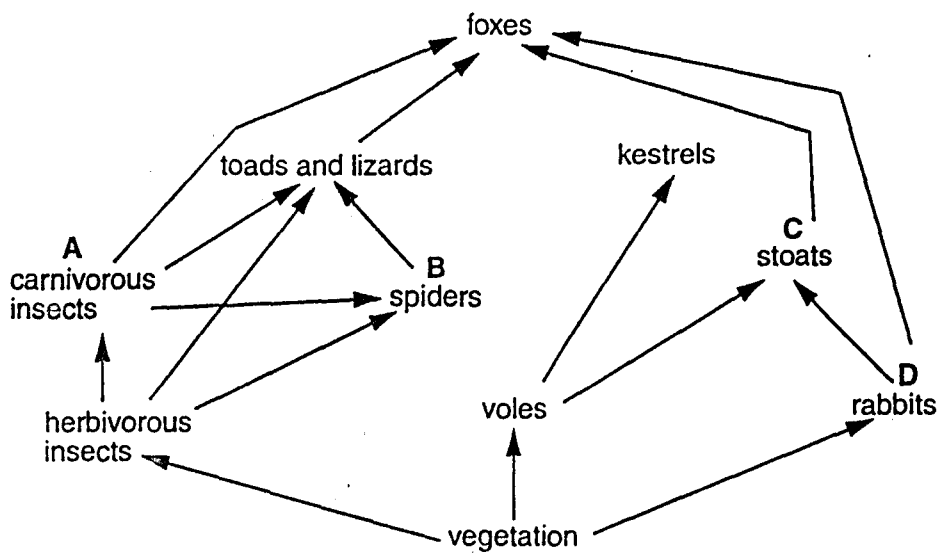
Which arrow represents energy input from the Sun?



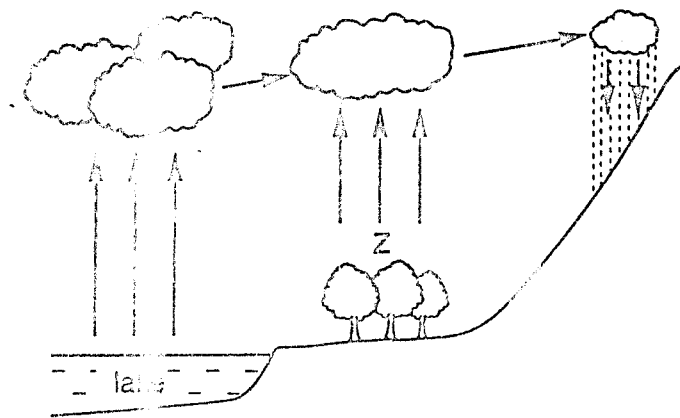
34 A generalised food chain may be shown as follows.

producer → primary consumer → secondary consumer → tertiary consumer

Which labelled organisms in the food web below are both secondary and tertiary consumers?



35 The diagram shows part of the water cycle.



Which process is taking place at Z?

- A absorption
- B condensation
- C precipitation
- D transpiration

36 The diagram shows the movement of two gases during the day and during the night.



Which letters represent carbon dioxide?

- A W and Y
- B W and Z
- C X and Y
- D X and Z

37 A population exists where there are no limiting factors.

This population is likely to

- A be consumed by predators.
- B develop disease.
- C increase in size.
- D run out of food.

99 The graph shows the average thickness of eggshells of birds of prey between 1900 and 1970.

The arrow shows when the pesticide DDT was first used.



Which statement is correct?

- A DDT affected the eggshells only of birds of prey.
- B DDT had no effect on the thickness of eggshells.
- C DDT made eggshells thinner.
- D Eggshells were becoming thinner before DDT was first used.

100 The table shows the numbers of fish in a river downstream of a factory that started to release waste hot water into the river in 1990.

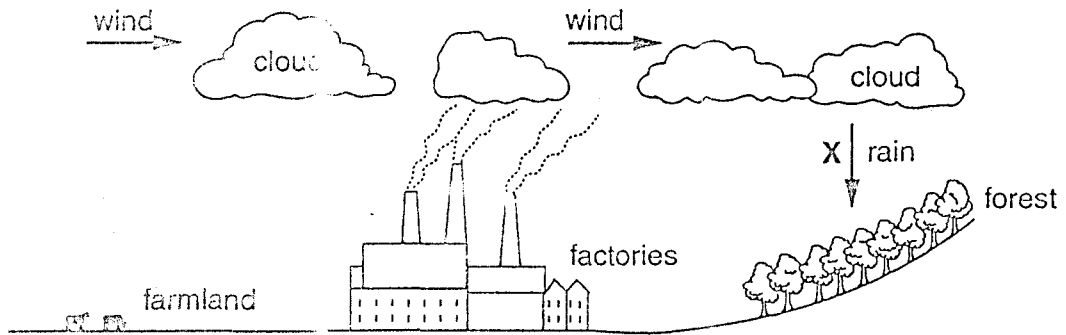
number of fish in:	species								
	L	M	N	O	P	Q	R	S	T
1990	5000	100	20	1100	2	3	85	0	0
1992	100	2	150	65	0	0	560	30	26

What effect did the hot water have on the fish?

- A a decrease in the number of species
- B a decrease in the total number of fish
- C an increase in the number of species
- D an increase in the total number of fish



20 The diagram shows three uses of land.



Which pollutant is likely to be found in the rain at X?

- A herbicide
- B inorganic waste
- C pesticide
- D sulphur dioxide

International General Certificate of Secondary Education  
CAMBRIDGE INTERNATIONAL EXAMINATIONS

BIOLOGY

0610/1

PAPER 1 Multiple Choice

MAY/JUNE SESSION 2002

45 minutes

Additional materials:

Multiple Choice answer sheet

Soft clean eraser

Soft pencil (type B or HB is recommended)

TIME 45 minutes

**INSTRUCTIONS TO CANDIDATES**

Do not open this booklet until you are told to do so.

Write your name, Centre number and candidate number on the answer sheet in the spaces provided unless this has already been done for you.

There are forty questions in 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 very carefully the instructions on the answer sheet.

**INFORMATION FOR CANDIDATES**

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.

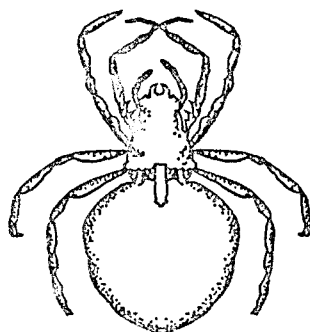
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This question paper consists of 16 printed pages.

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- 1 Which activities are carried out by **all** living things?
- A excreting, growing, reproducing, respiring
  - B excreting, moving, reproducing, sleeping
  - C growing, moving, respiring, thinking
  - D growing, respiring, swimming, thinking
- 2 An organism has a segmented body, pairs of jointed legs and a hard exoskeleton (outer covering).  
To which group does it belong?
- A annelids
  - B arthropods
  - C molluscs
  - D nematodes
- 3 Use the key to identify this animal.

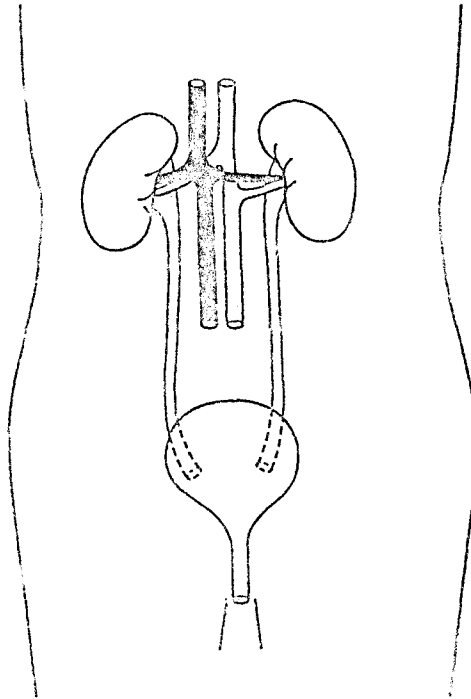


- 1 legs present ..... go to 2  
legs absent ..... A
- 2 five pairs of legs ..... B  
four pairs of legs ..... go to 3
- 3 two body sections ..... C  
three body sections ..... D

4 Which parts are found both in plant and in animal cells?

- A cell membrane, chloroplast, vacuole
- B cell membrane, cytoplasm, nucleus
- C cell wall, chloroplast, cytoplasm
- D cell wall, nucleus, vacuole

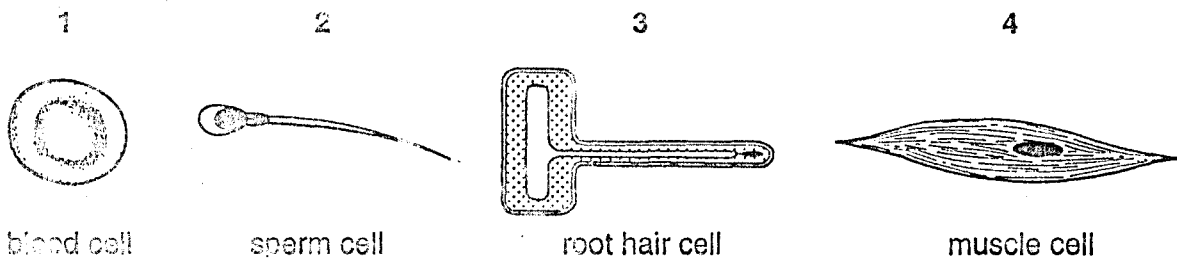
5 The diagram shows some internal parts of the human body.



What do these parts form?

- A an organ
- B an organism
- C an organ system
- D a tissue

6 The diagram shows four different cells (not drawn to scale).



Which cells provide a large surface area for absorption?

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

7 The diagram shows a plant cell before and after being placed in a sugar solution for ten minutes.



What describes the concentration of the sugar solution compared with that of the cell sap, and the type of molecules moving into the cell?

	concentration of sugar solution compared with cell sap	molecules moving into the cell
A	higher	sugar
B	higher	water
C	lower	sugar
D	lower	water

8 Why are all gaseous exchange surfaces moist?

- A Concentration gradients occur only in liquids.  
 B Gases dissolve before diffusing across the surfaces.  
 C Gases move across the surfaces by osmosis.  
 D Molecules cannot diffuse in air.

- 9 The table shows two properties of four different chemicals.

Which chemical is an enzyme?

chemical	molecular structure includes nitrogen	destroyed by temperatures above 65 °C
A	✓	✓
B	✓	X
C	X	✓
D	X	X

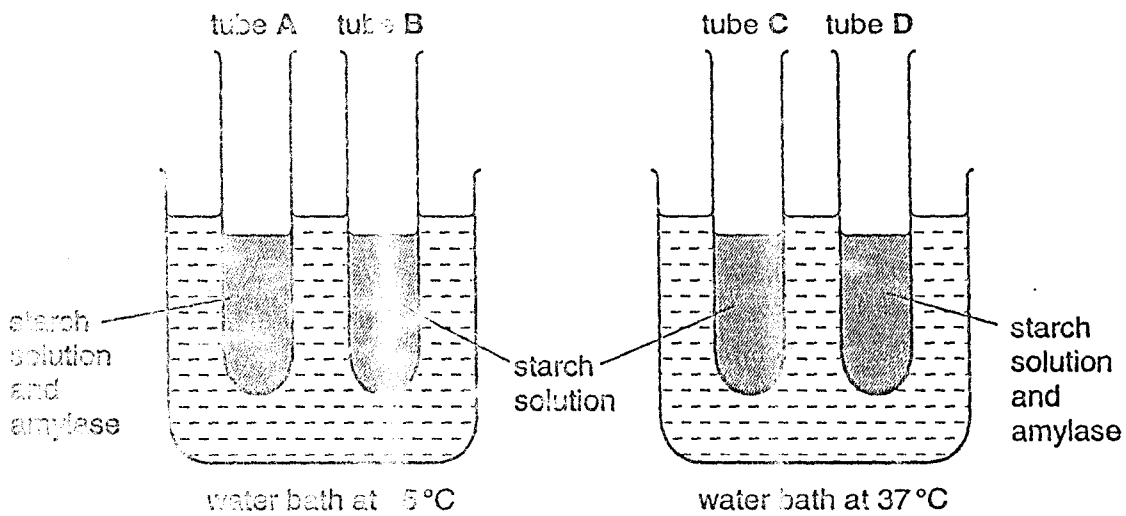
key

✓ = true

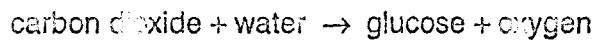
X = false

- 10 The apparatus shown in the diagram was used for an experiment on starch digestion.

Which tube would contain most maltose after 20 minutes?



- 11 The equation represents a process that occurs in plants.



What is the name of this process?

- A evaporation
- B photosynthesis
- C respiration
- D transpiration

12 What is carried by the phloem?

- A chlorophyll
- B mineral salts
- C starch
- D sugar

13 How is the rate of transpiration affected by increasing humidity and by increasing light intensity?

	increasing humidity	increasing light intensity
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

14 The table shows the results of food tests carried out on a fruit.

test	Benedict's	biuret	ethanol	iodine
result	positive	positive	negative	negative

What did the fruit contain?

- A fat and reducing sugar
- B fat and starch
- C protein and reducing sugar
- D protein and starch

15 Why is iron needed by the body?

- A to form strong bones
- B to make haemoglobin
- C to provide energy
- D to repair cells

16 Four foods were analysed to discover their chemical structure.

Which food is an oil?

	food			
	A	B	C	D
contains the elements carbon, hydrogen and oxygen	✓	✓	✓	X
contains the elements carbon, hydrogen, oxygen and nitrogen	X	X	X	✓
made up of amino acids	X	X	X	✓
made up of fatty acids and glycerol	✓	X	X	X
storage compound in plants	✓	✓	X	X
storage compound in animals	✓	X	✓	X

key

✓ = present

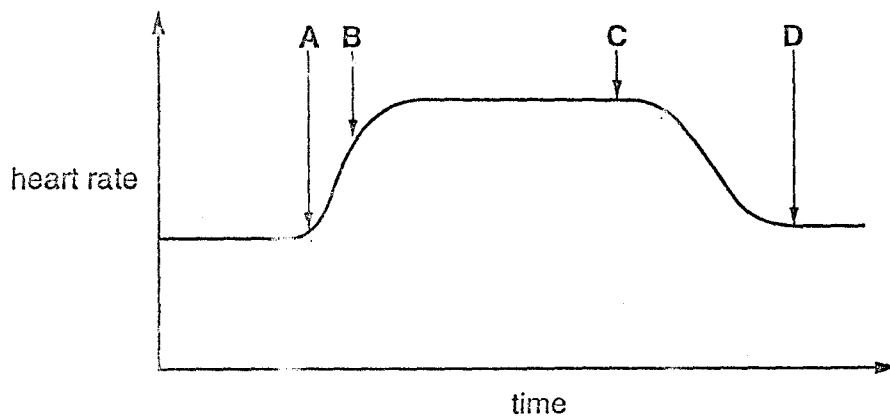
X = absent

17 What is the most likely cause of a heart attack?

- A blocked coronary arteries
- B diet lacking in vitamins C and D
- C infection by microorganisms
- D regular exercise

18 The graph shows a person's heart rate before, during and after a period of exercise.

At which point did the period of exercise stop?

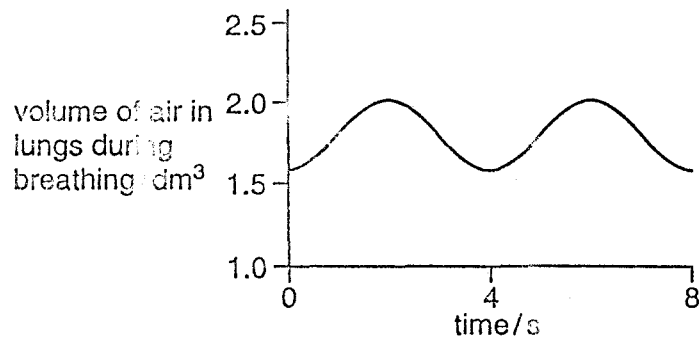




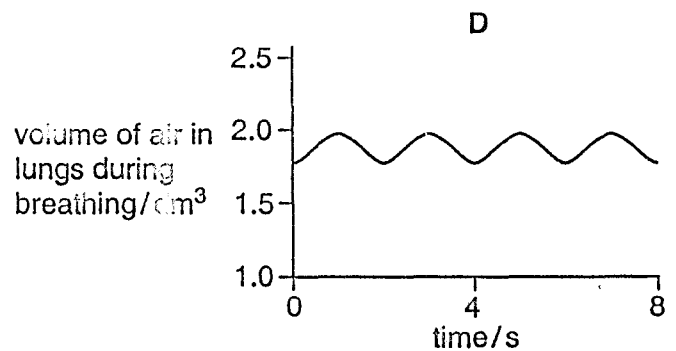
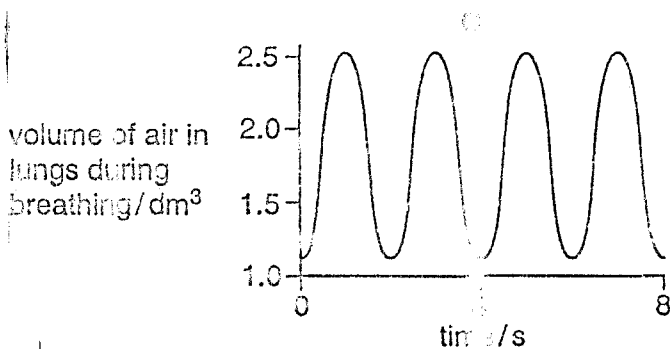
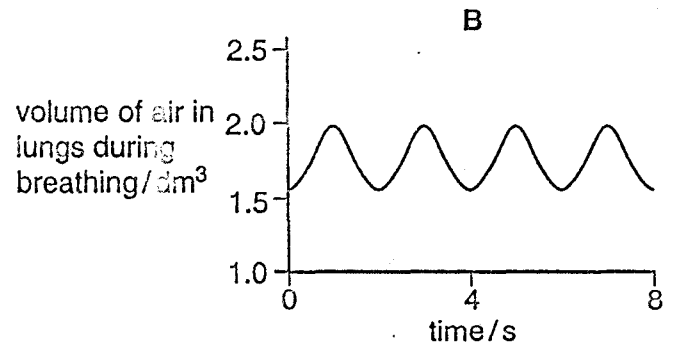
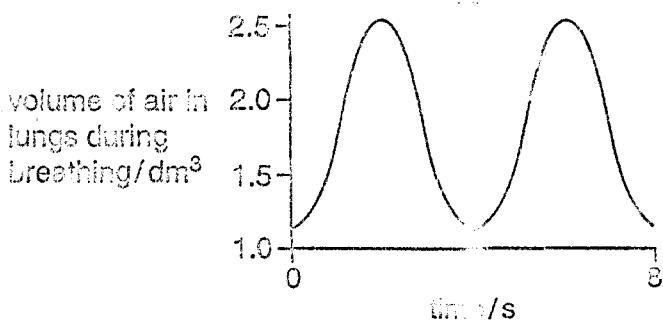
19 Why is yeast used in breadmaking?

- A to produce alcohol
- B to produce carbon dioxide
- C to use up oxygen
- D to use up sugar

20 The graph shows the rate and depth of breathing in a person before exercise.



Which graph shows the rate and depth of breathing of the same person immediately after a period of exercise?



21 Which of these describes excretion?

- A getting rid of undigested food
- B releasing energy from food
- C removing waste products of metabolism
- D transporting carbon dioxide in the blood

22 What happens to hormones and to urea in the liver?

	hormones	urea
A	broken down	broken down
B	formed	broken down
C	broken down	formed
D	formed	formed

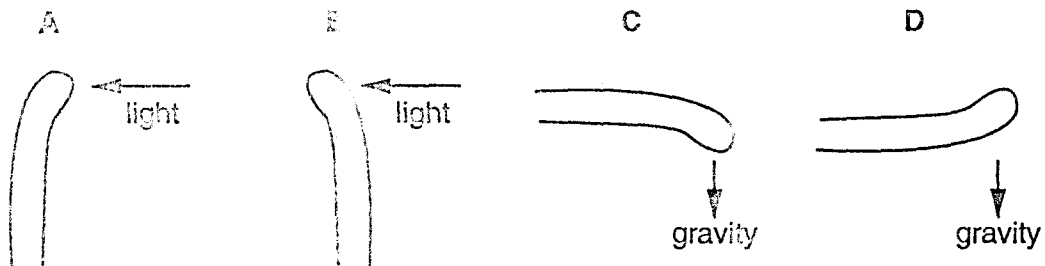
23 After a meal, the concentration of blood glucose increases.

Which organ removes this blood glucose and converts it into a storage compound?

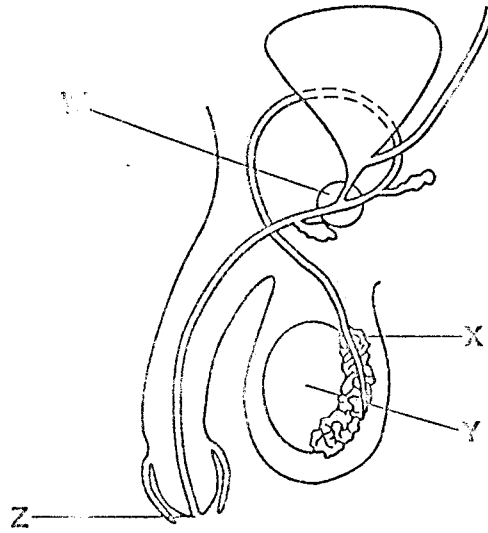
- A kidney
- B liver
- C pancreas
- D rectum

24 The diagram shows shoots of maize seedlings.

Which shoot shows negative geotropism?



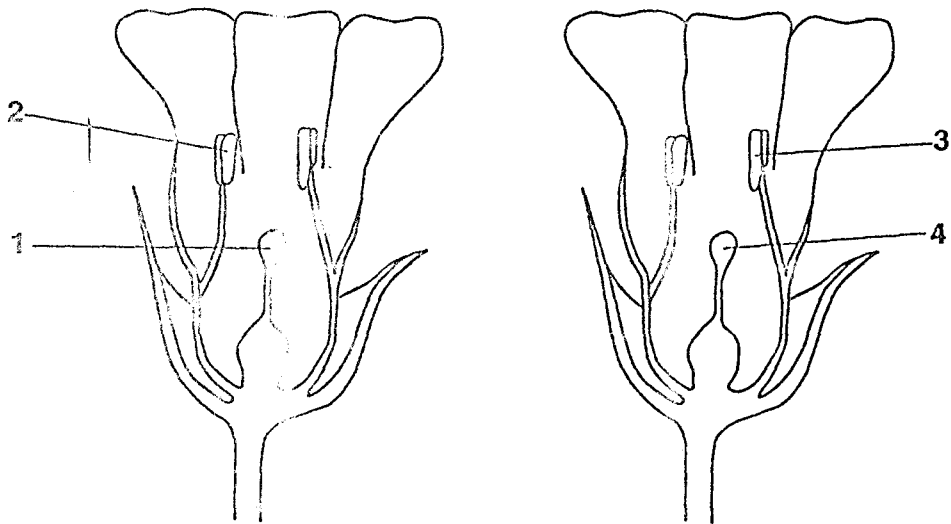
25 The diagram shows the male reproductive system.



Where do sperm production, seminal fluid production and semen release occur?

	sperm production	seminal fluid production	semen release
A	W	Y	X
B	X	Z	Y
C	Y	W	Z
D	Z	X	W

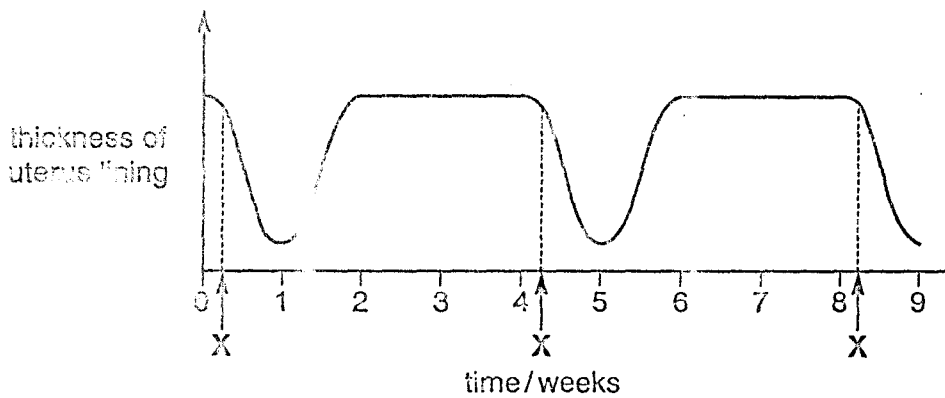
26 The diagram shows two flowers from the same plant.



How can pollination occur between these two flowers?

	pollen transferred from	pollen transferred to
A	1	3
B	1	4
C	2	3
D	2	4

27 The diagram shows changes in the thickness of the uterus lining of a woman.



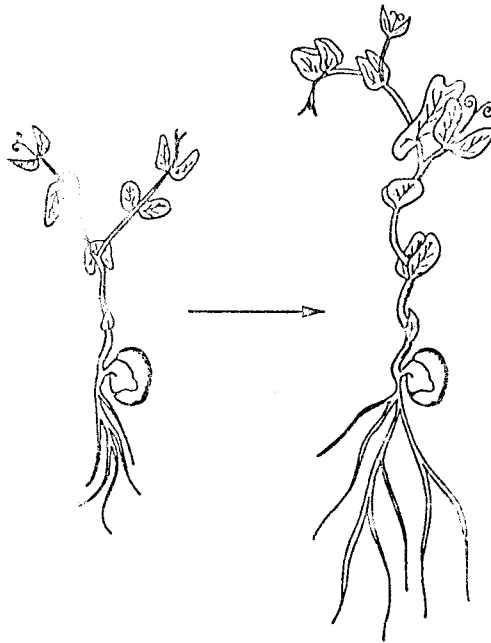
What happens each time at X?

- A fertilisation
- B implantation
- C menstruation
- D ovulation

28 By definition, what increases during growth?

- A complexity
- B dry mass
- C height
- D number of parts

29 The diagram shows the early growth of a green plant.



What is occurring?

	mitosis	development
A	✓	✓
B	✓	x
C	x	✓
D	x	x

key

✓ = occurs

x = does not occur

30 In the life cycle of a mammal, what describes the eggs or sperms and the cells of the embryo?

	eggs or sperms	cells of the embryo
A	diploid	diploid
B	diploid	haploid
C	haploid	diploid
D	haploid	haploid

31 What is always found in female gametes and may be found in male gametes?

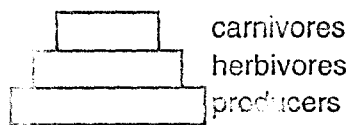
- A one X chromosome
- B one Y chromosome
- C two X chromosomes
- D one X chromosome and one Y chromosome

32 In a species of plant, the allele for red flowers is dominant to the allele for white flowers.

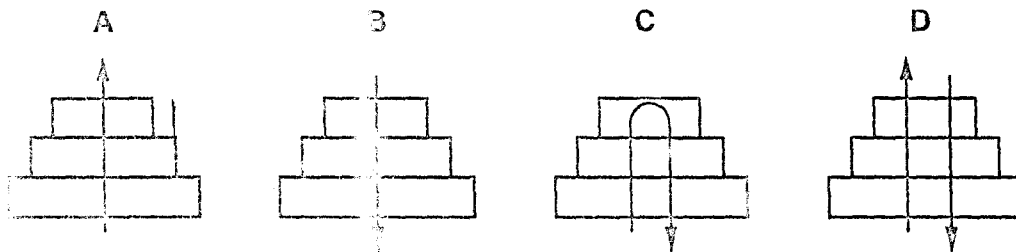
Which offspring could result from a cross between a heterozygous red-flowered plant and a white-flowered plant?

- A heterozygous red and homozygous red
- B heterozygous red and homozygous white
- C heterozygous red only
- D homozygous white only

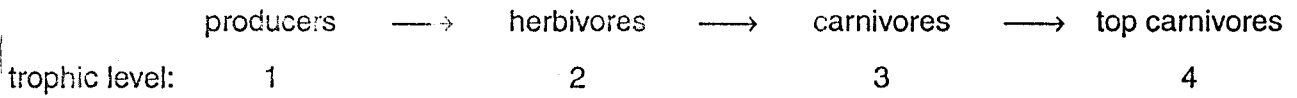
33 The diagram represents a pyramid of biomass within an ecosystem.



Which shows the direction of energy flow through the pyramid?



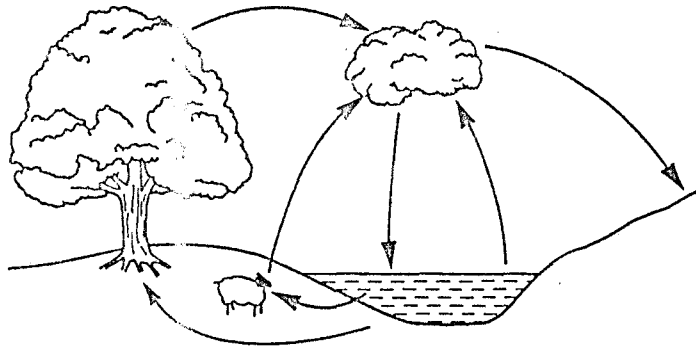
34 The diagram shows a food chain.



If the carnivores in trophic level 3 suddenly die out as a result of disease, in which trophic levels will the number of organisms be likely to decrease?

- A 1 and 2
  - B 1 and 4
  - C 2 only
  - D 2 and 4
- 35 Which process is **not** part of the carbon cycle?
- A combustion
  - B photosynthesis
  - C respiration
  - D transpiration

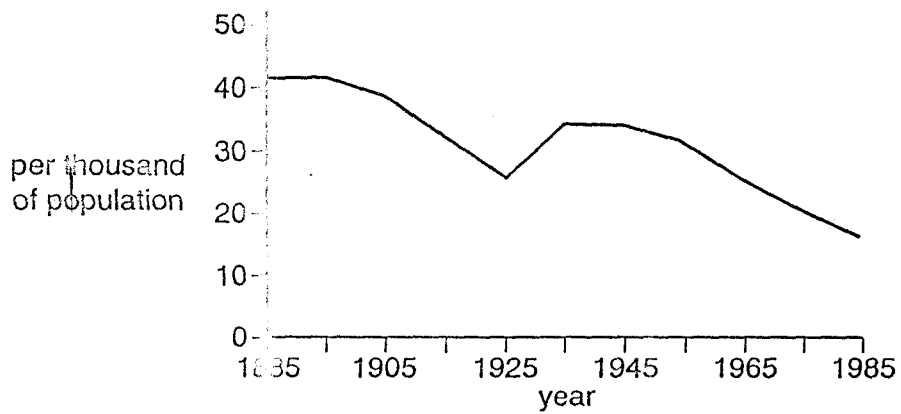
36 The diagram shows the natural cycle of a substance.



What is the substance?

- A carbon dioxide
- B nitrogen
- C oxygen
- D water

37 The graph shows the birth rate in a country.



During which year is the population likely to be increasing at its lowest rate?

- A 1885
- B 1925
- C 1935
- D 1985

38 Why is it that pesticides sprayed in low concentrations may increase the yield of a crop, but may also be harmful to wildlife?

- A Pesticides cause acid rain.
- B Pesticides enter the food chain.
- C Pesticides increase the nitrates in soil.
- D Pesticides kill other plants.



39 The table shows the amount of carbon dioxide in the atmosphere in three different years.

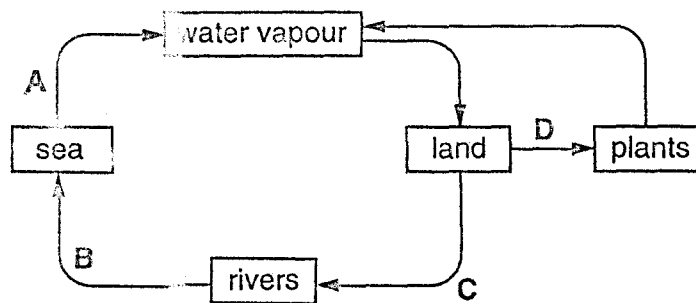
year	1930	1980	1990
carbon dioxide / parts per million	300	330	370

What is the most likely cause of this change?

- A destruction of rainforests
- B increased use of fertilisers containing nitrogen
- C pollution of air by sulphur dioxide
- D rise in the sea level

40 The diagram shows part of the water cycle.

At which stage does the use of nitrate fertilisers in agriculture cause the greatest pollution?



International General Certificate of Secondary Education  
CAMBRIDGE INTERNATIONAL EXAMINATIONS

BIOLOGY

0610/1

PAPER 1 Multiple Choice

OCTOBER/NOVEMBER SESSION 2002

45 minutes

Additional materials:

Multiple Choice answer sheet

Soft clean eraser

Soft pencil (type B or HB is recommended)

TIME 45 minutes

**INSTRUCTIONS TO CANDIDATES**

Do not open this booklet until you are told to do so.

Write your name, Centre number and candidate number on the answer sheet in the spaces provided unless this has already been done for you.

There are forty questions in 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 very carefully the instructions on the answer sheet.

**INFORMATION FOR CANDIDATES**

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.

This question paper consists of 19 printed pages and 1 blank page.

280



1 What are characteristics of all organisms?

- A digestion and excretion
- B digestion and nutrition
- C excretion and nutrition
- D nutrition and photosynthesis

2 The table shows some characteristic features of four vertebrates.

Which vertebrate is a mammal?

vertebrate	feature				
	scales	lays eggs	feathers	wings	hair
A	✓	✓	x	x	x
B	x	✓	x	x	x
C	x	✓	✓	✓	x
D	x	✓	x	✓	✓

key

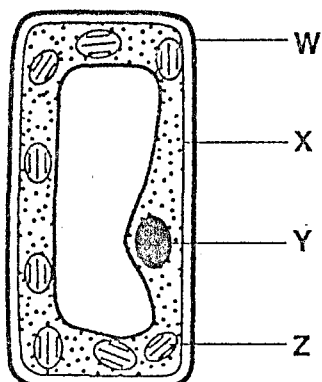
✓ feature present

x feature absent

3 Which information is needed when classifying a frog using the binomial system?

- A class : amphibian
- B genus : *Rana*
- C kingdom : animal
- D phylum : vertebrate

Use this diagram of the plant cell to answer questions 4 and 5.



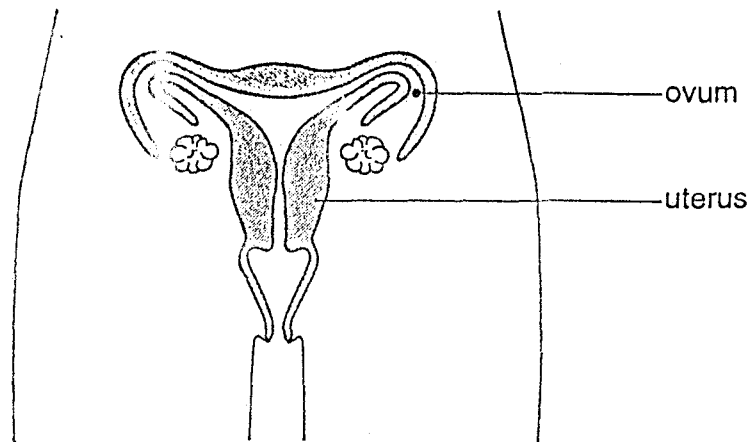
4 Which two parts are also found in liver cells?

- A W and X
- B W and Z
- C Y and X
- D Y and Z

5 In which part of the cell do carbon dioxide and water combine to form glucose?

- A W
- B X
- C Y
- D Z

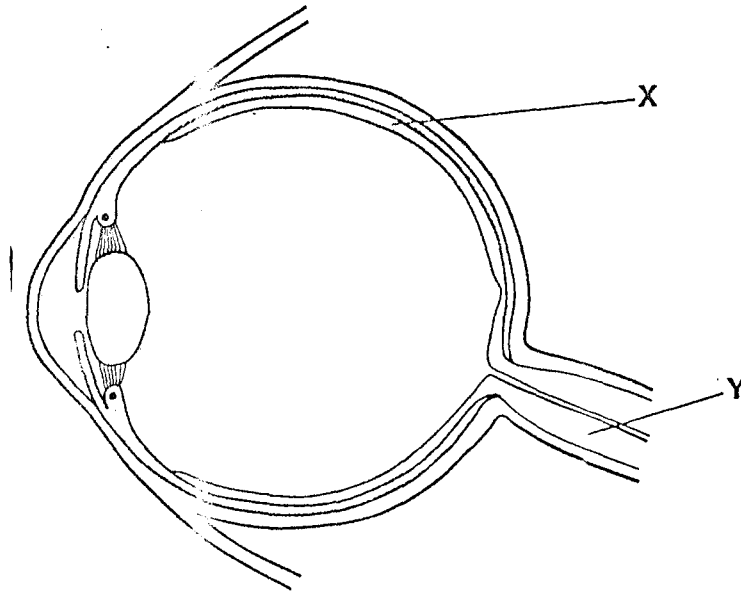
6 The diagram shows the female reproductive system.



At which level of organisation are the ovum and the uterus?

	ovum	uterus
A	cell	organ
B	cell	tissue
C	organ	tissue
D	tissue	organ

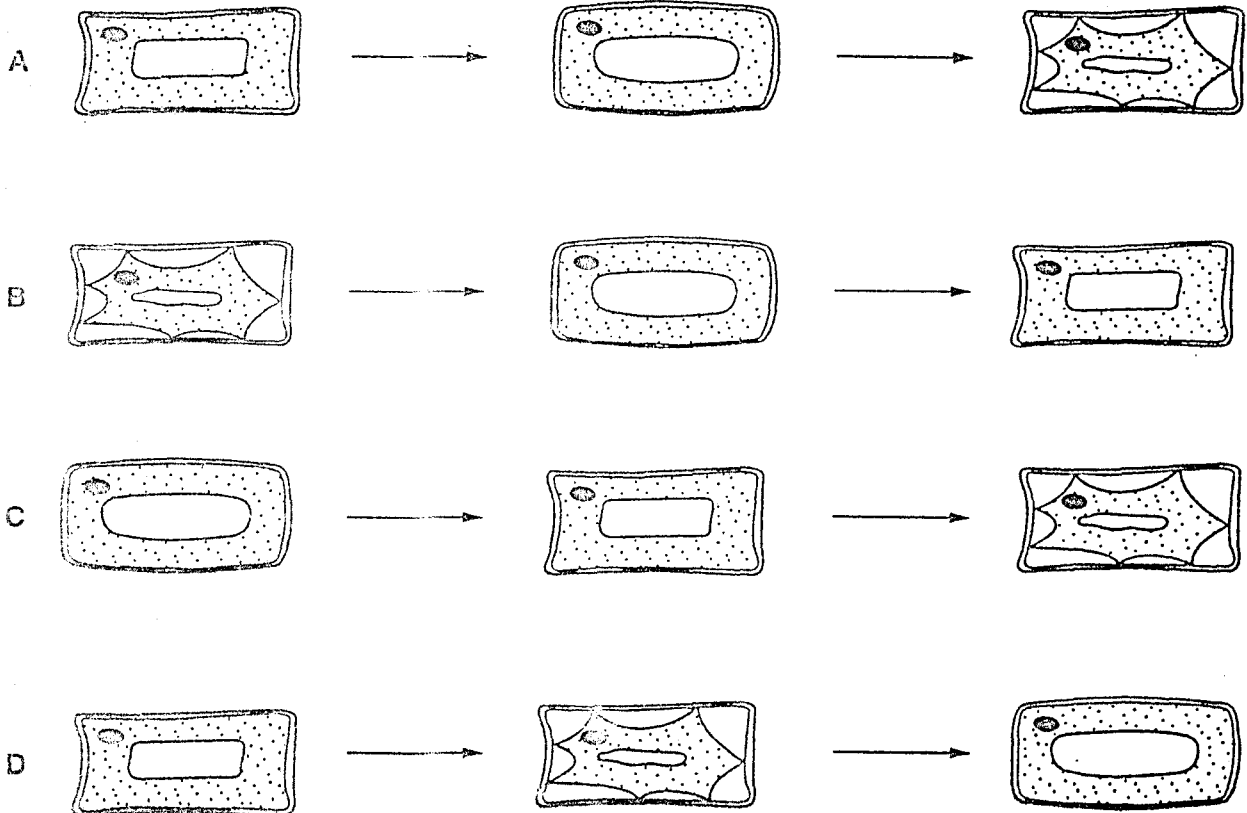
7 The diagram shows a section through an eye.



What are structures X and Y?

- A organs in an organ system
- B organs in a tissue
- C organ systems in an organ
- D tissues in an organ

- 8 Which shows the changes in appearance of a plant cell as it remains in a concentrated sugar solution for thirty minutes?



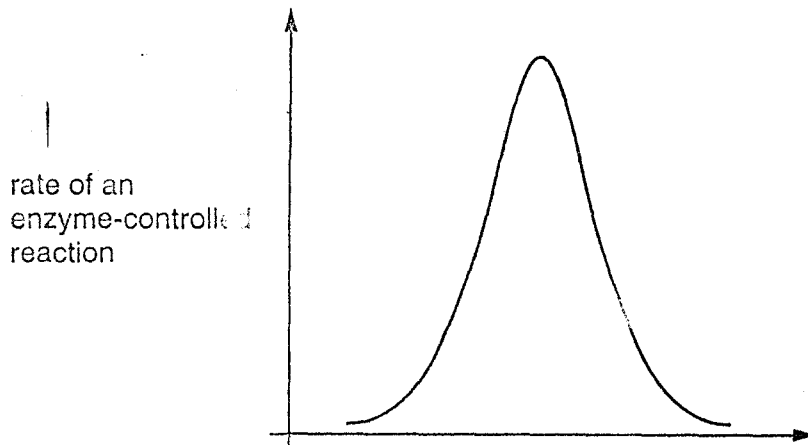
- 9 By which process does oxygen move into the cytoplasm of a root hair cell?

- A diffusion
- B osmosis
- C photosynthesis
- D transpiration

- 10 Which statement about enzymes is correct?

- A Enzymes are carbohydrates.
- B Enzymes are catalysts.
- C Enzymes are not affected by pH.
- D Enzymes are not affected by temperature.

- 11 The graph shows the results of an investigation into enzyme activity.



How should the horizontal axis of the graph be labelled?

- A pH
  - B temperature
  - C time
  - D volume
- 12 What are the features of a xylem vessel?

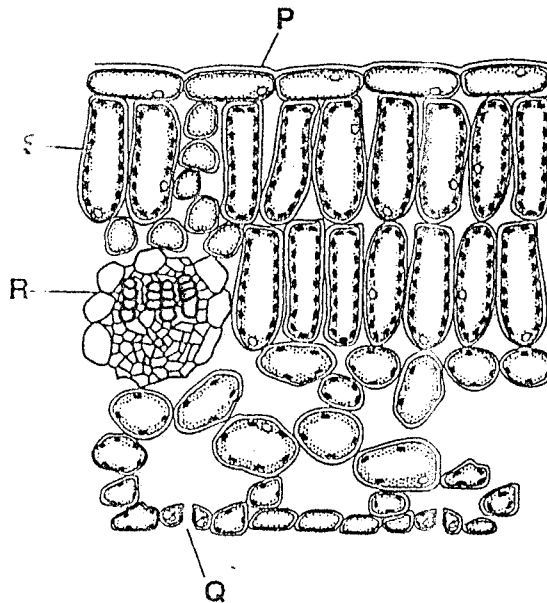
	side wall	end wall
A	thick	absent
B	thick	present
C	thin	absent
D	thin	present

- 13 Which two substances are the products of photosynthesis?

- A carbon dioxide and sugar
- B carbon dioxide and water
- C oxygen and carbon dioxide
- D oxygen and sugar



14 The diagram shows a section through a leaf.



Between which two points does most gaseous exchange take place?

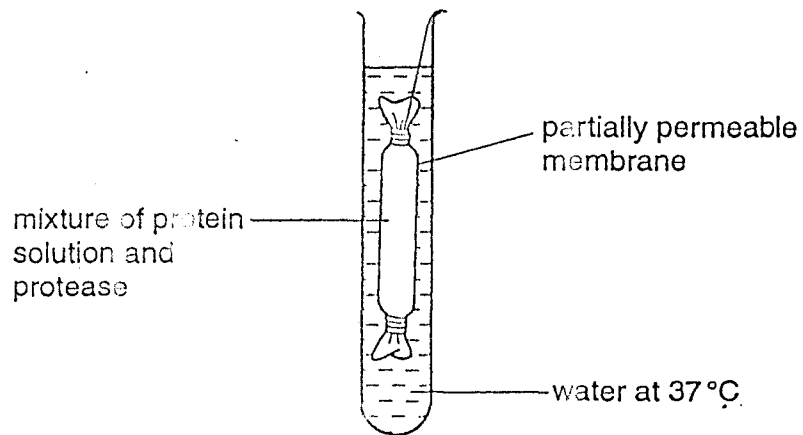
- A P and R
- B Q and S
- C R and Q
- D S and P

15 The table shows the nutritional information of a plain biscuit.

Which nutrient needs no digestion?

A	fat	3.0 g
B	glucose	2.8 g
C	protein	3.5 g
D	starch	5.5 g

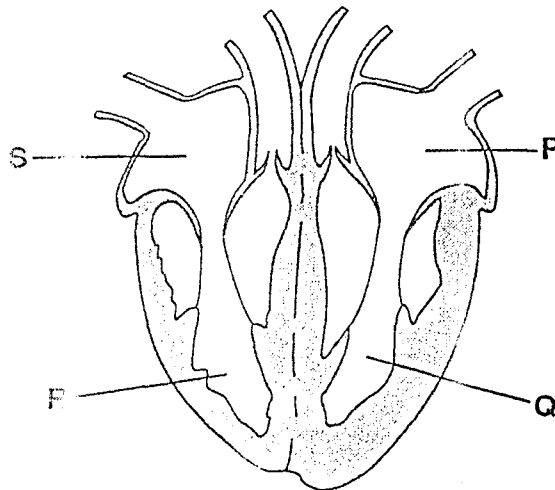
16 An experiment on diffusion was set up as shown in the diagram.



What was found in the water in the test-tube after 15 minutes?

- A amino acids
- B fatty acids
- C glucose
- D glycerol

17 The diagram shows the four chambers of a human heart.



Which statement describes the direction of blood flow?

- A Blood enters P directly from the lungs.
- B Blood enters S directly from the lungs.
- C Blood passes directly from Q to P.
- D Blood passes directly from Q to the lungs.

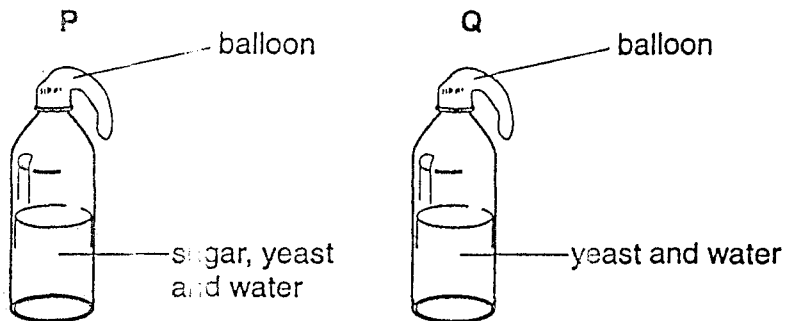
18 The double circulation of the blood means that, for every complete circuit of the body,

- A atria and ventricles contract alternately.
- B blood flows through the arteries and veins.
- C blood flows through atria and ventricles.
- D blood flows twice through the heart.

19 Which air sample has just been breathed out?

air sample	percentage of oxygen	percentage of carbon dioxide	percentage humidity
A	21	0.04	20
B	16	4.04	100
C	4	0.40	80
D	20	4.00	60

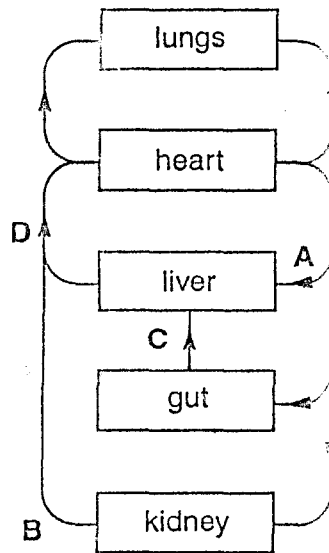
20 In an experiment to investigate the anaerobic respiration of yeast, two bottles are set up in a warm room.



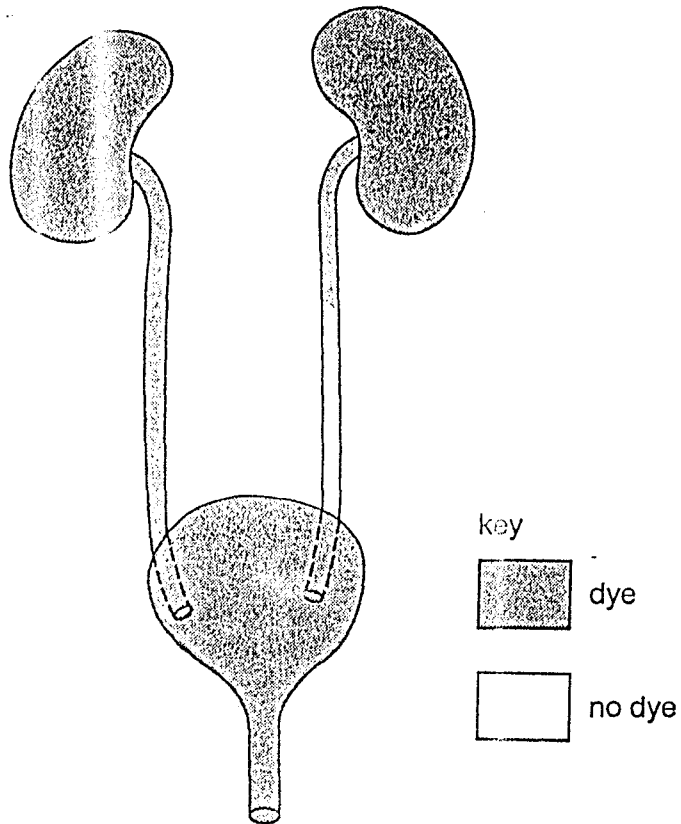
What describes the appearance of the balloons after one day?

	balloon P	balloon Q
A	inflated	inflated
B	inflated	no change
C	no change	inflated
D	no change	no change

- 21 The diagram shows a plan of part of the human circulatory system.  
In which vessel are the breakdown products of alcohol first found?



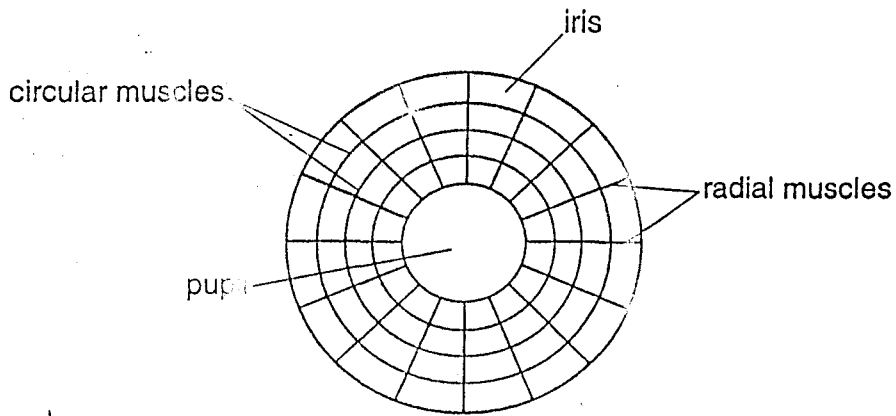
- 22 A patient has dye injected into the blood supply to his kidneys. The dye appears in his excretory system as shown.



Which part is blocked?

- A one kidney
  - B one ureter
  - C the bladder
  - D the urethra
- 23 In a reflex action, which term describes light, temperature and chemicals?
- A effectors
  - B impulses
  - C receptors
  - D stimuli

24 The diagram shows the muscles that control the size of the pupil in an eye.

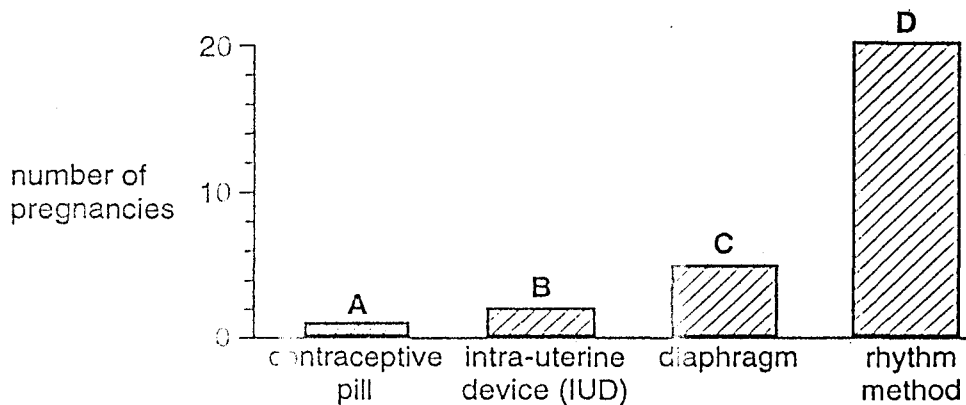


How do the muscles make the pupil larger?

	circular muscles	radial muscles
A	contract	contract
B	contract	relax
C	relax	contract
D	relax	relax

25 The graph shows the number of pregnancies that resulted while four groups of 100 women were each using a different method of contraception.

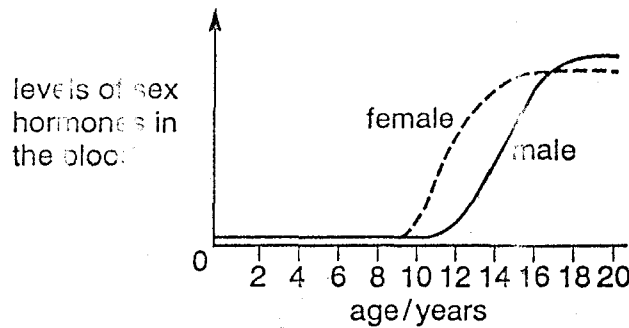
Which method of contraception is the most effective?



26 Which best describes sexual reproduction?

	number of parents	offspring
A	one	genetically different from parent
B	one	genetically identical to parent
C	two	genetically different from parents
D	two	genetically identical to parents

27 The graph shows the average level of sex hormones in the blood of females and males.



What are these hormones?

	female	male
A	adrenaline	oestrogen
B	insulin	adrenaline
C	oestrogen	testosterone
D	testosterone	insulin

28 The table shows the conditions provided for four sets of seeds. All the seeds are well-watered.

Which of the seeds germinate?

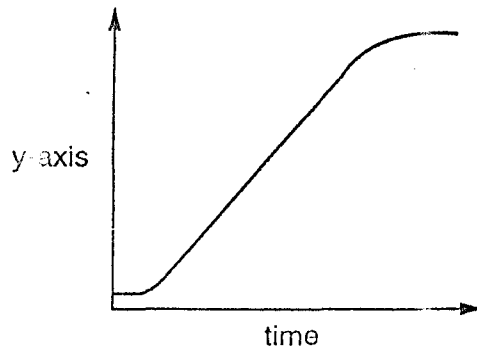
	oxygen	suitable temperature	carbon dioxide
A	✓	✓	✗
B	✗	✓	✗
C	✗	✗	✓
D	✓	✗	✓

key

✓ = condition present

✗ = condition absent

29 The graph shows a growth curve.



Which is the most accurate variable to plot on the y-axis?

- A dry mass
- B fresh mass
- C length
- D volume

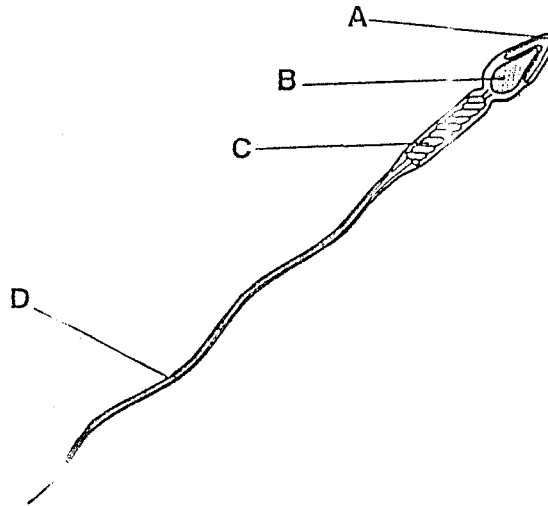
30 Which sex chromosomes in the egg and the sperm will produce a male child?

	sex chromosome in egg	sex chromosome in sperm
A	X	X
B	X	Y
C	Y	X
D	Y	Y



31 The diagram shows a sperm cell.

Which part contains genes?

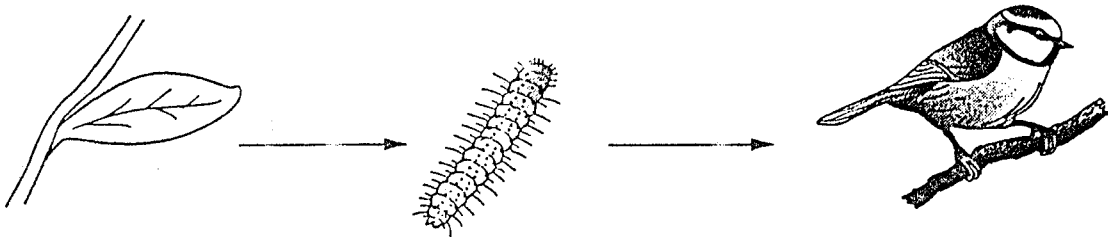


32 In a pea plant, the allele for round seeds (R) is dominant to the allele for wrinkled seeds (r).

If plants with the genotype Rr are crossed, what are the likely proportions of offspring?

- A all with round seeds
- B all with wrinkled seeds
- C 1 with round seeds : 1 with wrinkled seeds
- D 3 with round seeds : 1 with wrinkled seeds

33 The diagram shows a simple food chain.



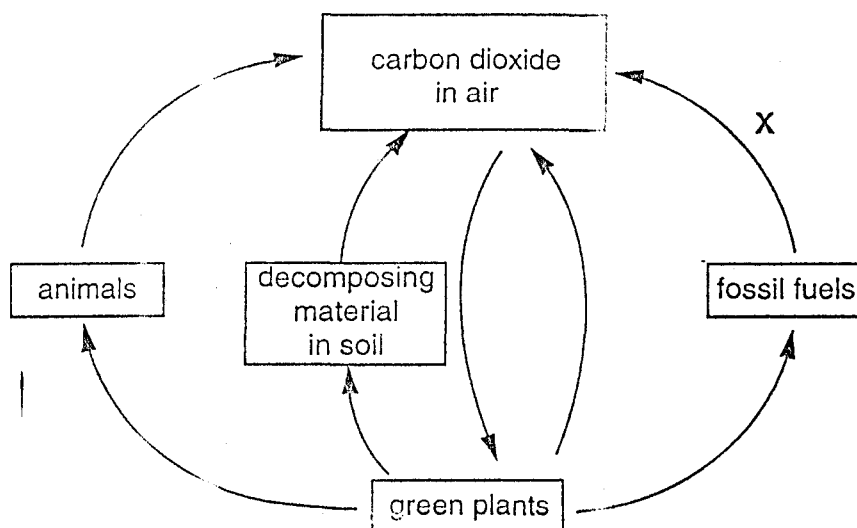
What is the source of energy for this food chain?

- A carbon dioxide
- B minerals
- C Sun
- D water

34 From which food chain is least energy lost?

- A corn → hens → humans
- B grass → cows → humans
- C potatoes → humans
- D water plants → small fish → large fish → humans

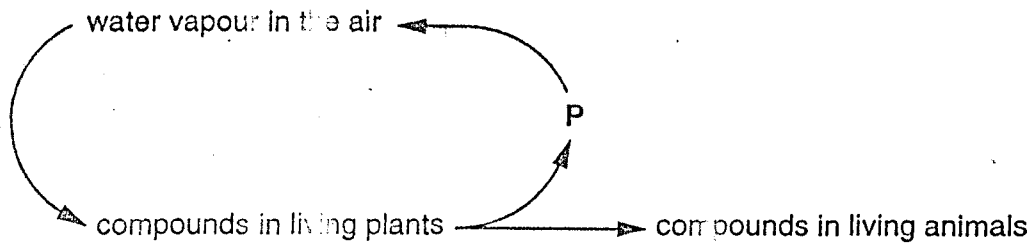
35 The diagram represents the carbon cycle.



Which process is represented by arrow X?

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

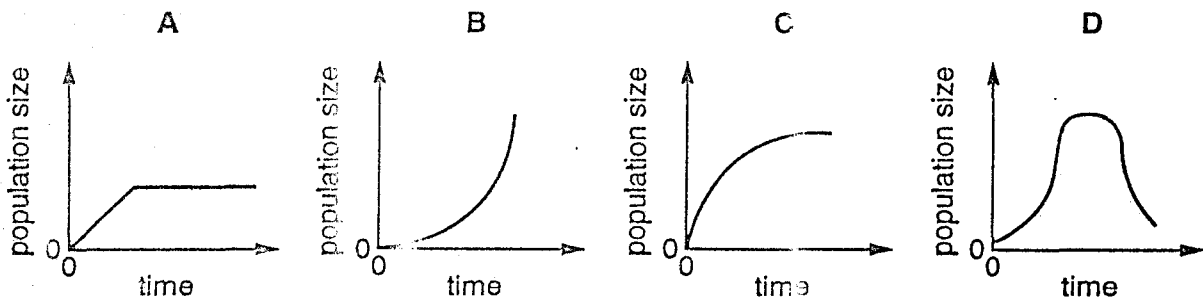
36 The diagram shows part of the water cycle.



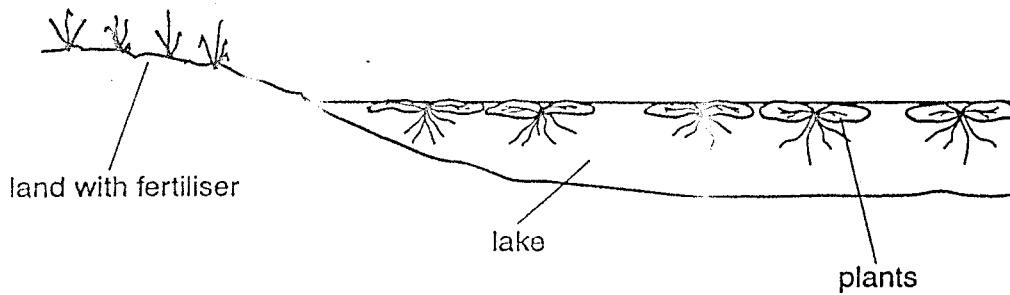
Which process is responsible for returning water vapour to the air at P?

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

37 Which graph shows the growth of a population where there are no limiting factors?



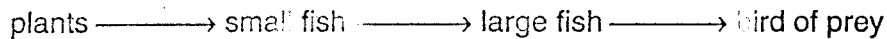
- 38 A farmer put some fertiliser on his field. Soon afterwards, there was a heavy storm and some of the fertiliser drained into a lake.



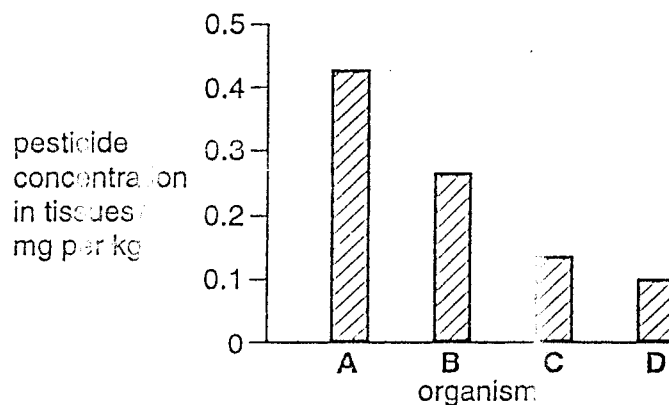
What is the effect of the fertiliser on the growth of the crop plants in the field and the plants in the lake?

	crop plants	lake plants
A	decrease	decrease
B	decrease	increase
C	increase	decrease
D	increase	increase

- 39 The concentration of a pesticide in the tissues of the organisms in the following food chain was measured.



Which organism on the bar chart is the large fish?



- 40 Which activity will be least likely to lead to the extinction of species?

- A conservation
- B deforestation
- C use of herbicides
- D use of pesticides

CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

BIOLOGY

0610/01

Paper 1 Multiple Choice

May/June 2003

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, highlighters, 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.

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.

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

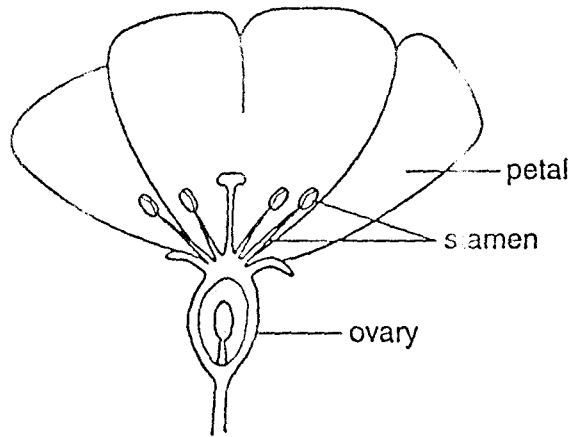
299



1 Which of the following lists contains **only** arthropods?

- A annelids, insects, myriapods
- B arachnids, crustaceans, myriapods
- C crustaceans, insects, molluscs
- D insects, myriapods, nematodes

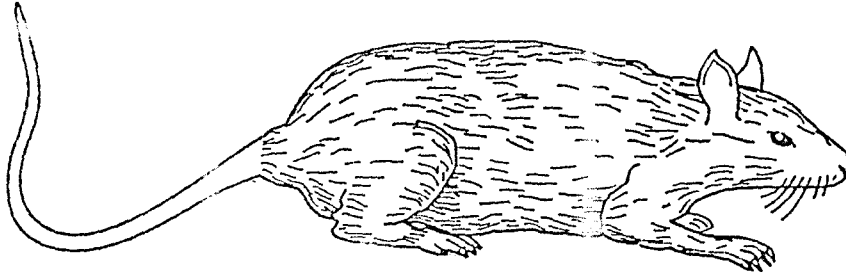
2 The diagram shows a half-flower.



Use the following key to identify the type of flower.

- |   |                                       |         |
|---|---------------------------------------|---------|
| 1 | petals attached above the ovary ..... | go to 2 |
|   | petals attached below the ovary ..... | go to 3 |
| 2 | stamens less than ten .....           | type A  |
|   | stamens more than ten .....           | type B  |
| 3 | sepals absent .....                   | type C  |
|   | sepals present .....                  | type D  |

3 The diagram shows some external features of a rat.



Which features, seen in the diagram, show that a rat is a mammal?

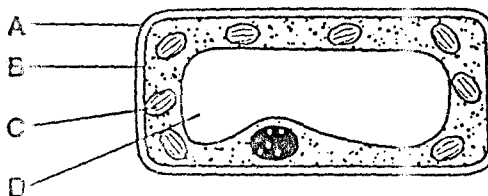
- A diaphragm and lungs
  - B fur and whiskers
  - C legs and tail
  - D milk and sweat production
- 4 The table shows features that may be found in living cells.

Which features are found in a liver cell?

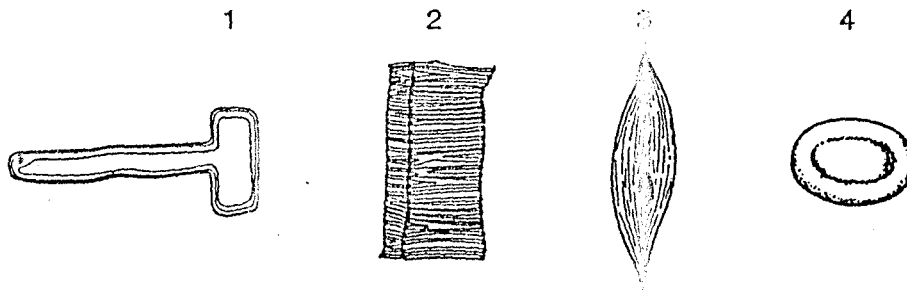
	large central vacuole	chloroplasts	cellulose cell wall
A	✓	✓	✓
B	✓	✓	X
C	X	X	✓
D	X	X	X

5 The diagram shows a section through a mesophyll cell of a leaf.

Which part is partially permeable?



6 The diagram shows four cells.



Which cells transport water?

- A 1 and 2  
 B 1 and 3  
 C 2 and 4  
 D 3 and 4
- 7 In the pancreas, there are groups of cells that make insulin.  
 What describes these cells?
- A an organ in an organism  
 B an organ system in an organism  
 C cells within a cell wall  
 D tissue in an organ
- 8 In an osmosis experiment, four potato strips, each 5 cm in length, were left in salt solutions of different concentrations.

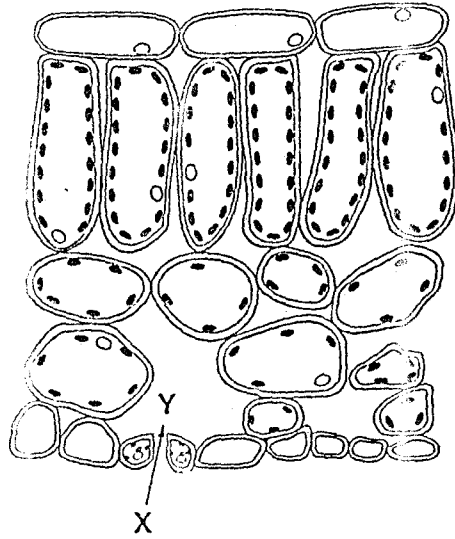
The table shows the lengths of the strips after 30 minutes.

Which salt solution was the most concentrated?

salt solution	length of strips after 30 minutes
A	4.5 cm
B	4.8 cm
C	5.0 cm
D	5.3 cm



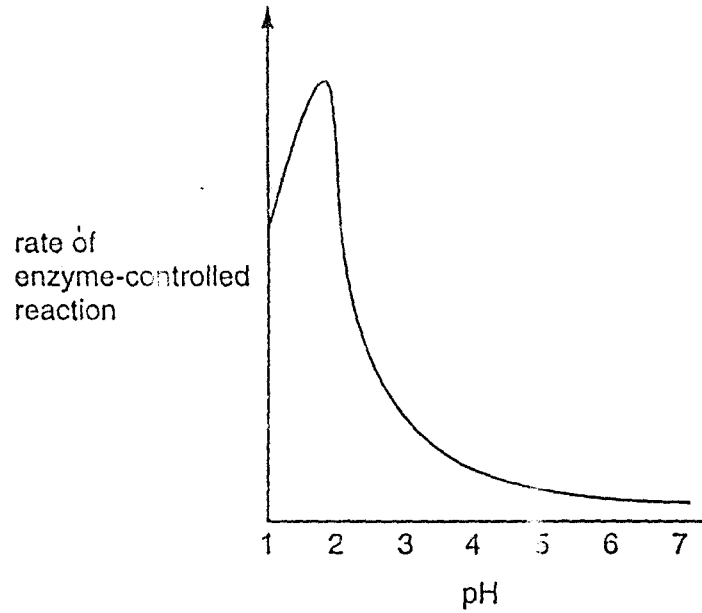
9 The diagram shows a section through a leaf.



By which process does carbon dioxide pass from X to Y?

- A diffusion
- B osmosis
- C translocation
- D transpiration

10 The graph shows how the rate of an enzyme-controlled reaction changes with pH.



Which statement is correct?

- A This enzyme is destroyed by acidic conditions.
- B This enzyme works best in acidic conditions.
- C This enzyme works best in alkaline conditions.
- D This enzyme works best in neutral conditions.

11 Which kind of molecule could be an enzyme?

- A fat
- B glucose
- C protein
- D starch

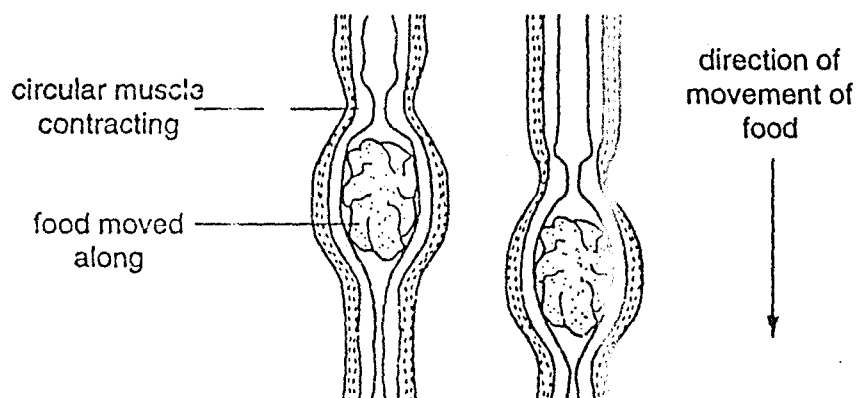
12 The table shows the mass of some nutrients found in 100 g of four different foods.

food	carbohydrate /g	fat /g	protein /g	vit C /mg	vit D /mg
beans	10.0	0.4	5.0	3.0	0.0
bread	48.0	1.5	9.0	0.0	0.0
cheese	0.0	34.0	25.0	0.0	0.4
eggs	0.0	11.0	13.0	0.0	1.5

Which foods would best prevent rickets and scurvy?

	rickets	scurvy
A	beans	bread
B	bread	cheese
C	cheese	eggs
D	eggs	beans

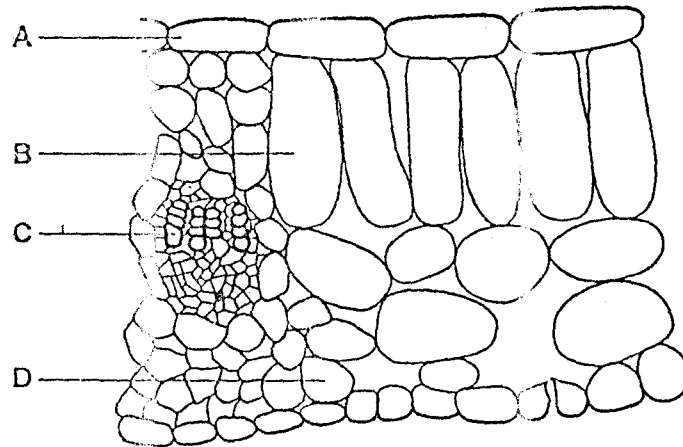
13 The diagram shows some food moving along the alimentary canal.



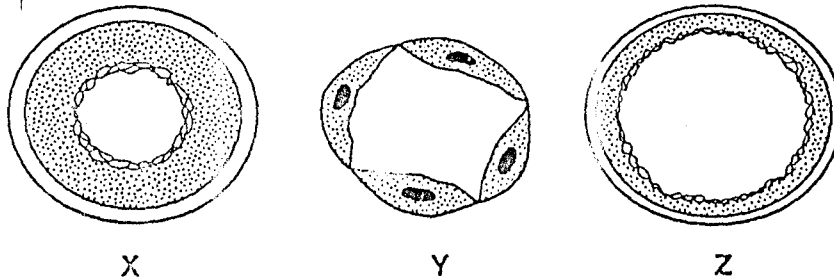
What is the name of the process that pushes the food along?

- A absorption
- B digestion
- C peristalsis
- D swallowing

Use this diagram, which shows a cross-section through a leaf, to answer questions 14 and 15.



- 14 Which cell type absorbs the most carbon dioxide during the day?
- 15 A leafy shoot is placed in a solution of red dye.  
After 30 minutes, which part of a leaf from this shoot will contain the red dye?
- 16 The diagram shows cross-sections of three types of blood vessel (not drawn to the same scale).



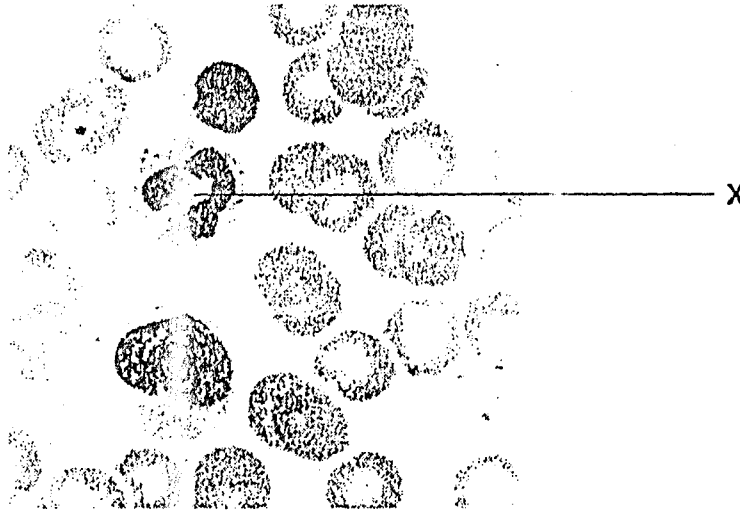
What is the identity of the three vessels?

	artery	capillary	vein
A	X	Y	Z
B	Y	X	Z
C	X	Z	Y
D	Y	Z	X

17 What is happening in a bolus of food as it passes along the oesophagus?

- A Fats are being digested.
- B Fats are being emulsified.
- C Protein is being digested.
- D Starch is being digested.

18 The photograph shows some blood as seen under the microscope.



What is the function of the cell labelled X?

- A blood clotting
- B carrying oxygen
- C defending against disease
- D transporting hormones

19 The roots of green plants take up nitrates from the soil.

What are the nitrates used to make?

- A fat
- B glucose
- C protein
- D starch

20 Which substance in cigarette smoke causes lung cancer?

- A carbon dioxide
- B carbon monoxide
- C nicotine
- D tar

21 Why does anaerobic respiration by yeast release less energy than aerobic respiration?

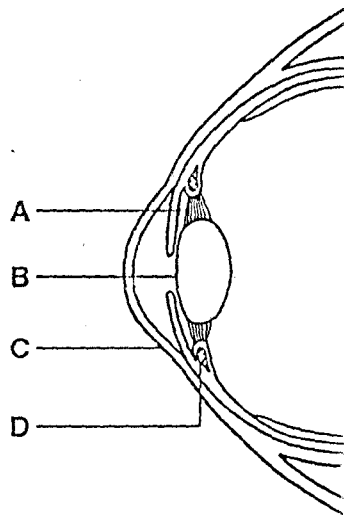
- A Energy is lost in carbon dioxide.
- B Energy is lost in oxygen.
- C Energy remains trapped in ethanol.
- D Energy remains trapped in lactic acid.

22 In which organ are excess amino acids broken down?

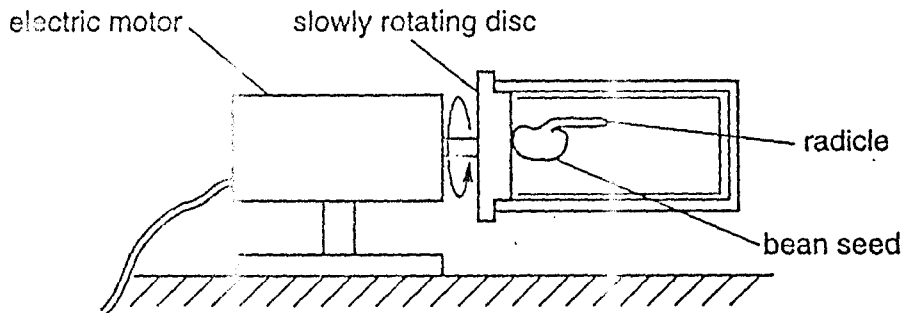
- A bladder
- B brain
- C kidneys
- D liver

23 The diagram shows a section through part of the human eye.

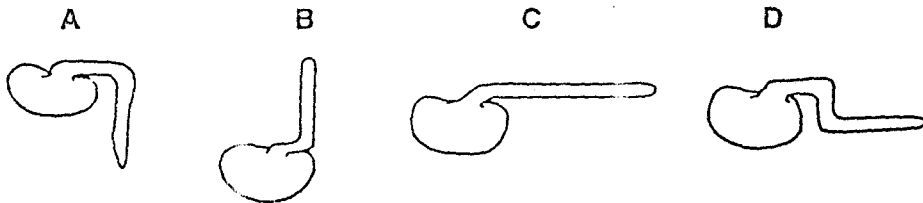
Which part contains muscles?



24 The diagram shows a germinated bean seed with a horizontal radicle. This is placed on a slowly rotating disc and is left for three days.

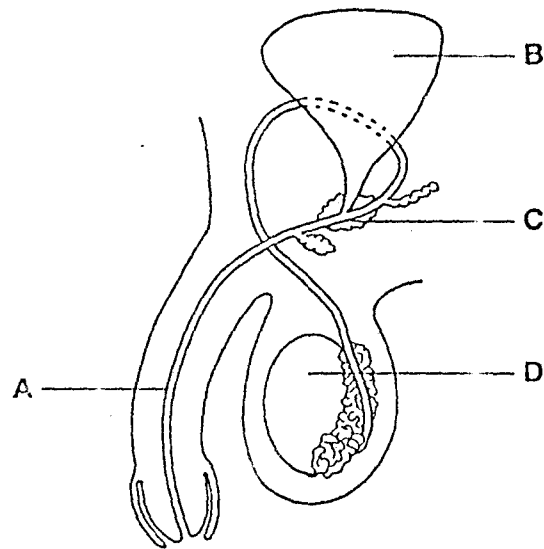


Which diagram shows the appearance of the radicle after three days?

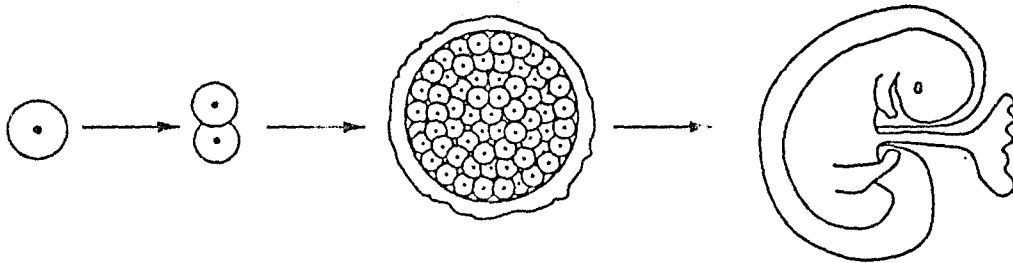


25 The diagram shows the male reproductive system.

Where is testosterone produced?



26 The diagram shows stages in the life of a human from zygote to fetus.



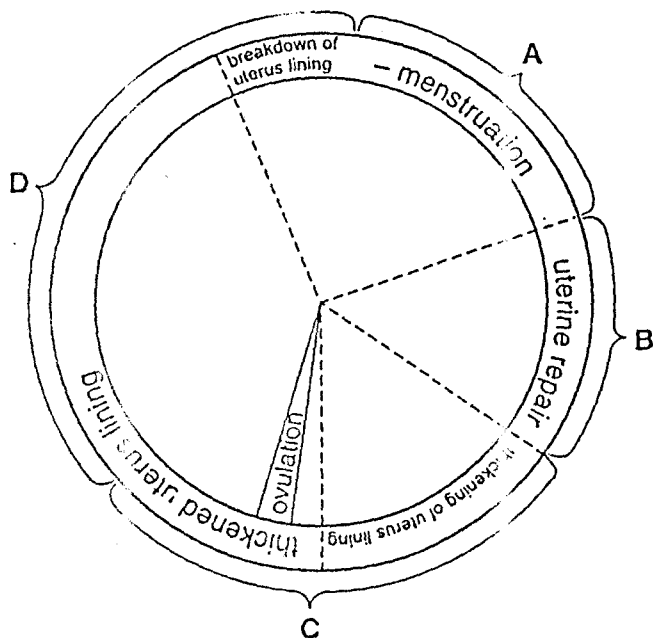
Which processes occur during these stages?

	fertilisation	growth	development
A	✓	X	✓
B	✓	X	X
C	X	✓	X
D	X	✓	✓

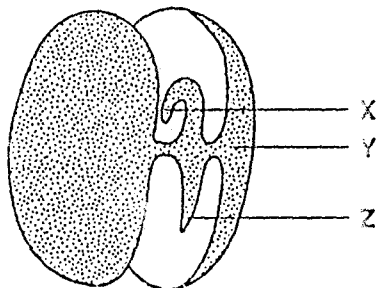


27 The diagram shows stages of a menstrual cycle.

During which stage is a woman most fertile?



28 The diagram shows a germinating bean seed with the seed coat removed.



What are the structures X, Y and Z?

	structure		
	X	Y	Z
A	cotyledon	radicle	plumule
B	plumule	cotyledon	radicle
C	plumule	radicle	cotyledon
D	radicle	plumule	cotyledon

29 Which are needed for seed germination?

- A carbon dioxide and oxygen
- B chlorophyll and light
- C soil particles and mineral salts
- D water and a suitable temperature

30 The nucleus in each cell in the stem of a plant contains 32 chromosomes.

How many chromosomes are there in the nuclei of its pollen grains?

- A 8
- B 16
- C 32
- D 64

31 A heterozygous, brown-eyed woman and a blue-eyed man have a child.

If the allele for brown eyes is dominant to the allele for blue eyes, what are the chances that the child is blue-eyed?

- A 1 in 2
- B 1 in 3
- C 1 in 4
- D none

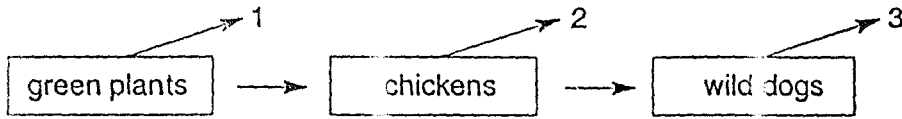
32 A female fruit fly with short wings mates with a male with long wings. All the offspring are long-winged.

Two of these offspring mate with each other.

What percentage of their offspring will have long wings?

- A 25 %
- B 50 %
- C 75 %
- D 100 %

33 The diagram shows a simple food chain.

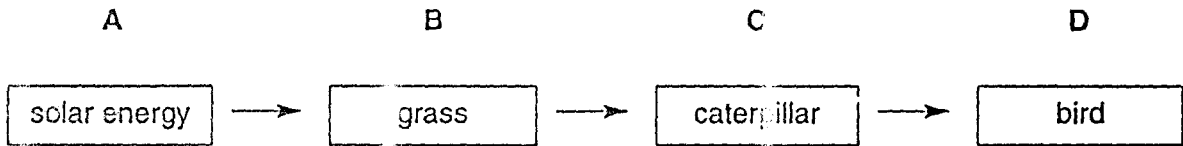


Which process releases the energy which is then lost at 1, 2 and 3?

- A evaporation
- B photosynthesis
- C respiration
- D translocation

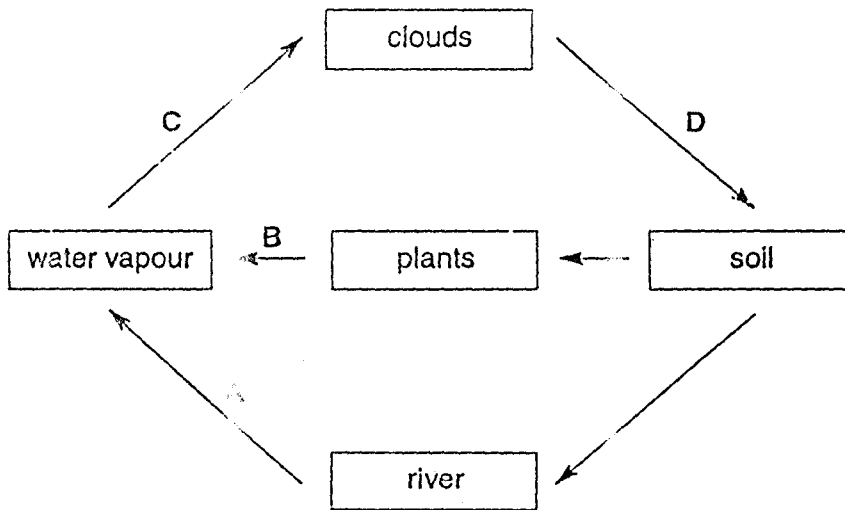
34 The diagram shows another simple food chain.

Which is the primary (first) consumer?

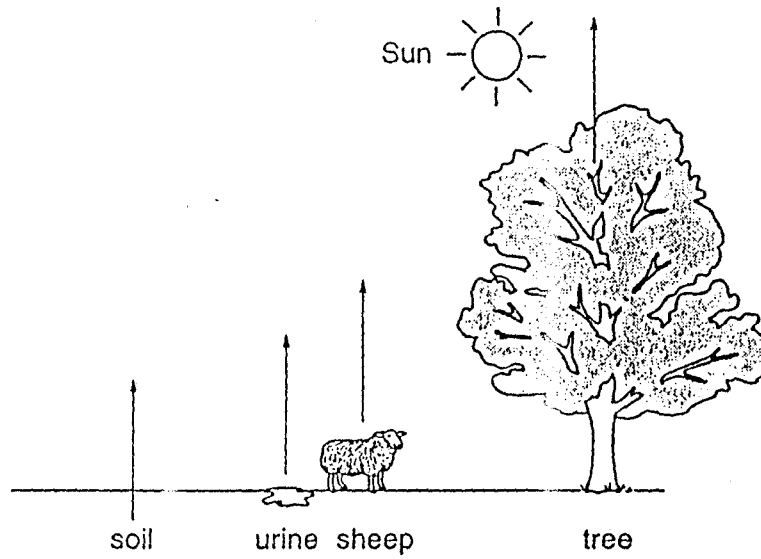


35 The diagram shows part of the water cycle.

Which arrow represents condensation?



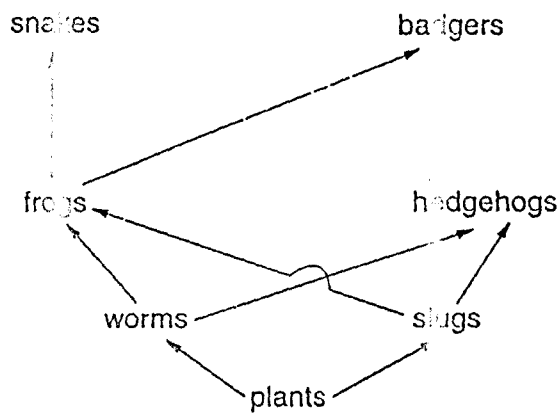
36 The diagram shows the release of a gas into the atmosphere from different sources.



What is this gas?

- A carbon dioxide
- B nitrogen
- C oxygen
- D water vapour

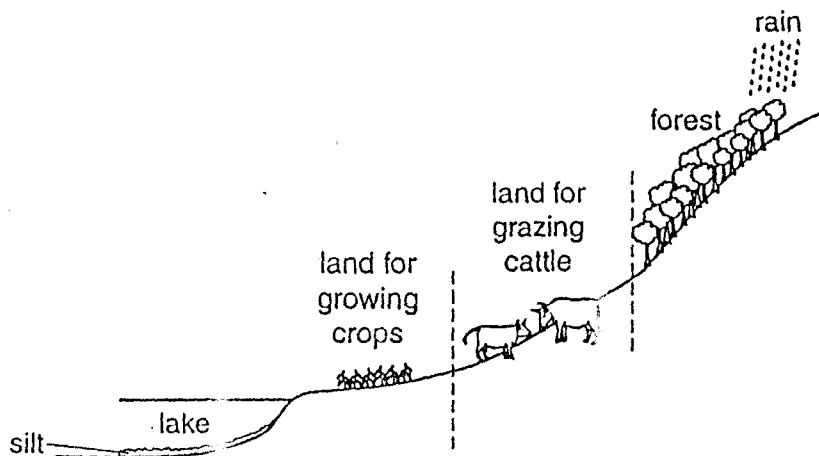
37 The diagram shows part of a food web.



What is most likely to increase the size of the frog population?

- A fewer hedgehogs
- B fewer worms
- C more badgers
- D more snakes

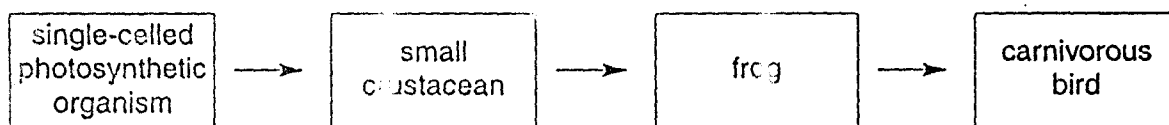
38 The diagram shows how some land near a lake is used.



Which of the following is most likely to cause the lake to flood?

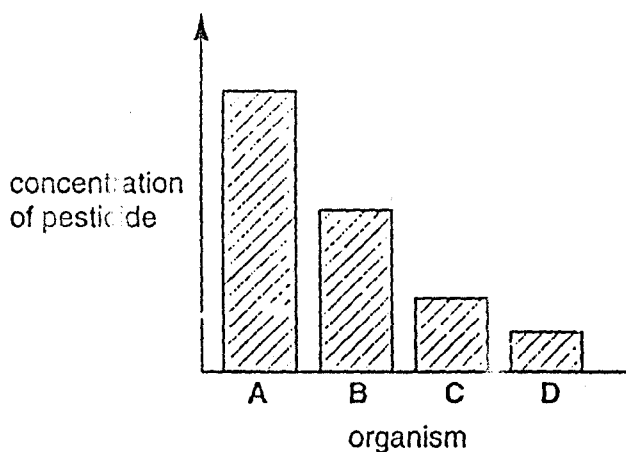
- A cutting down the forest
- B removing the cattle
- C taking the silt out of the lake
- D using pesticides on the crops

39 The diagram shows part of a food chain in a lake.

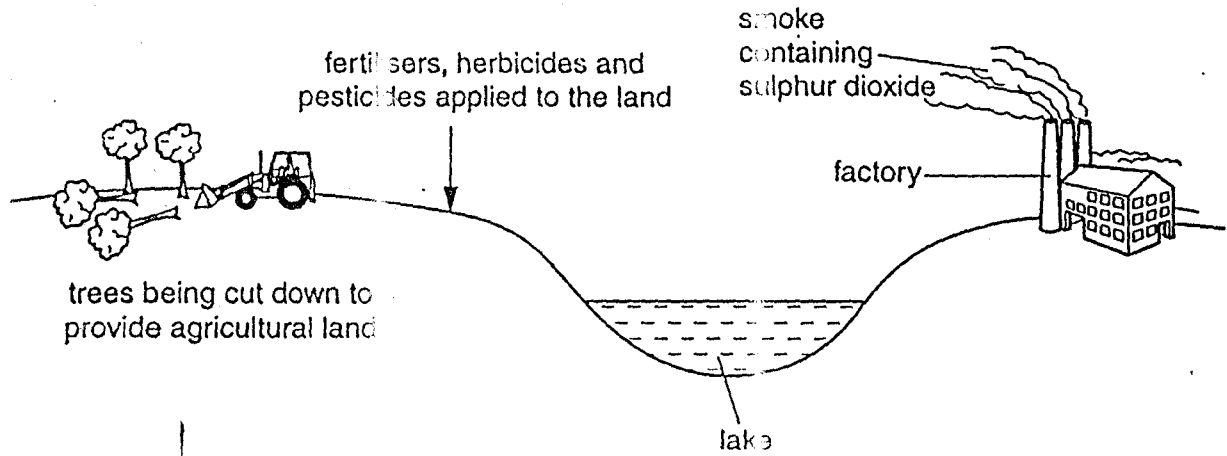


The chart shows the concentration of a pesticide in the bodies of each organism in the chain.

Which organism on the chart is the frog?



40 The diagram shows an area being developed for industry and agriculture.



Which would be the most likely to cause an initial increase in plant life in the lake?

- A fertilisers
- B herbicides
- C pesticides
- D smoke

CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

**BIOLOGY**

**0610/01**

Paper 1 Multiple Choice

October/November 2003

**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, highlighters, 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.

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.

This document consists of 17 printed pages and 3 blank pages.



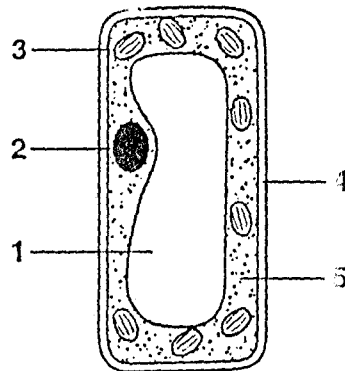
1 Which organisms carry out respiration, growth, movement and excretion?

- A all animals and all plants
- B animals only
- C plants only
- D some animals and some plants

2 Which characteristics do fish have?

	backbone	scales	hair
A	X	X	✓
B	X	✓	X
C	✓	✓	X
D	✓	X	✓

Use this diagram, which shows the structure of a palisade cell, to answer questions 3 and 4.



3 Which features are also found in a liver cell?

- A 1 and 2
- B 2 and 5
- C 3 and 4
- D 4 and 5

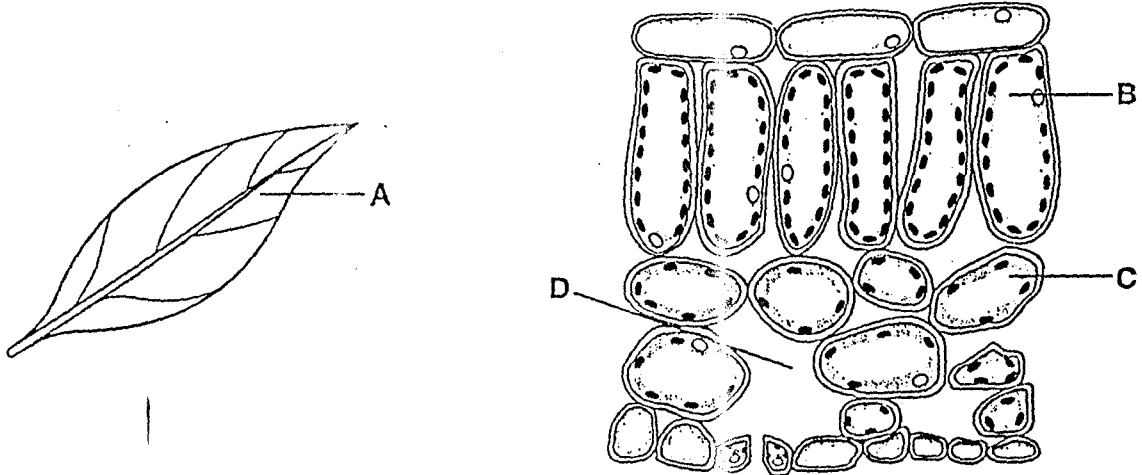
4 In which part does photosynthesis take place?

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



- 5 The diagrams show a leaf and a section through part of the same leaf.

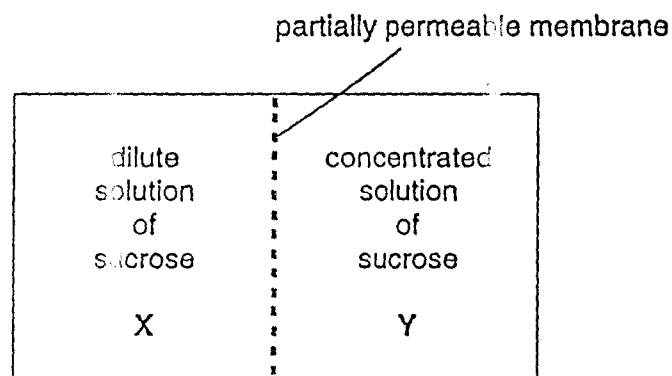
Which label indicates an organ?



- 6 Which features are shown by a red blood cell?

	shape	nucleus
A	disc	absent
B	disc	lobed
C	irregular	absent
D	irregular	lobed

- 7 The diagram shows two solutions that are separated by a partially permeable membrane.



In which direction will most water molecules move?

- A from X to Y, against their concentration gradient
- B from X to Y, down their concentration gradient
- C from Y to X, against their concentration gradient
- D from Y to X, down their concentration gradient

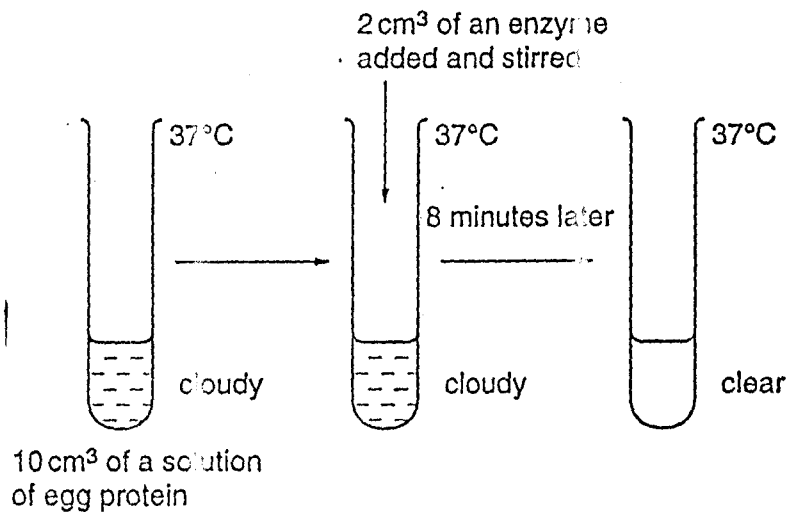
8 By which process do oxygen molecules move down a concentration gradient?

- A breathing
- B diffusion
- C osmosis
- D respiration

9 What is the chemical nature of an enzyme?

- A an amino acid
- B a carbohydrate
- C a protein
- D a vitamin

10 The diagram shows an experiment using an enzyme.



The suspension might have become clear more quickly if

- A more egg protein had been used.
- B the mixture had not been stirred.
- C the pH of the mixture had been changed.
- D the temperature had been raised to 75 °C.

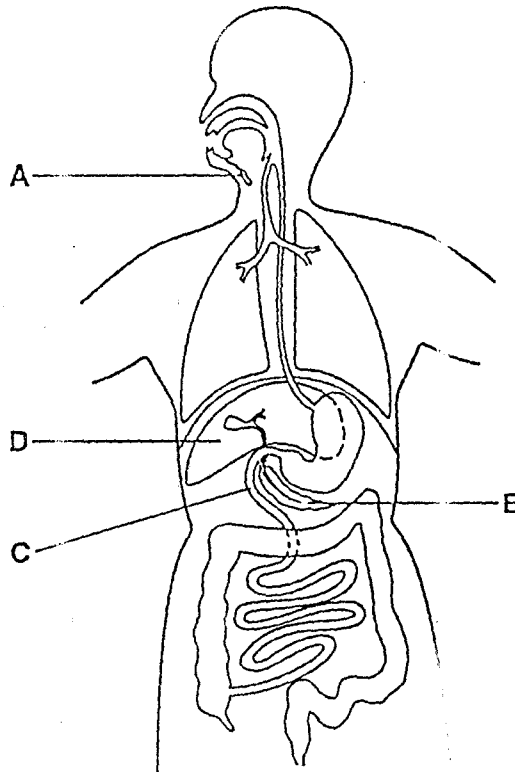
11 Glycogen, protein and starch are all large molecules made from smaller basic units.

Which basic units form these molecules?

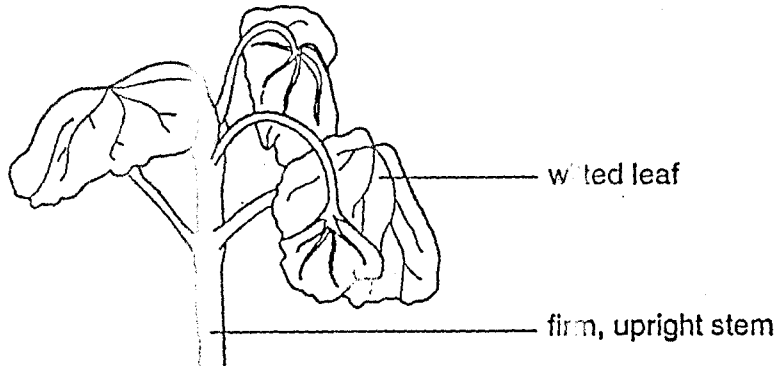
	glycogen	protein	starch
A	amino acids	simple sugars	fatty acids
B	fatty acids	simple sugars	simple sugars
C	simple sugars	amino acids	simple sugars
D	simple sugars	fatty acids	amino acids

12 The diagram shows the human alimentary canal.

Which structure does not secrete digestive enzymes?



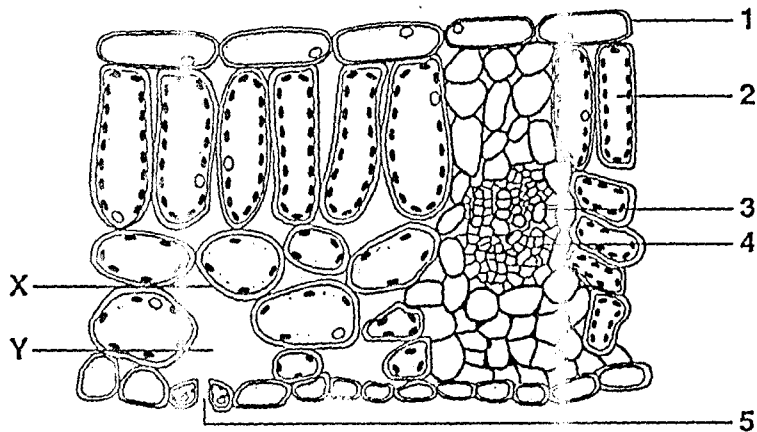
- 13 The diagram shows part of a plant with a woody stem, which does not have enough water. The leaves have wilted, but the stem is still firm and upright.



Why have the leaves wilted?

- A Photosynthesis cannot take place without water.
- B The cells in the leaves have lost their internal pressure.
- C The humidity in the air is too high.
- D The lignin in the leaves has become soft.

Use this diagram, which shows a section through a leaf, to answer questions 14 and 15.



- 14 What takes place in the structures indicated?

	transport of water to the cells of the leaf	use of water to make sugar	transport of sugar to the stem and root
A	4	1	5
B	3	2	4
C	3	1	4
D	4	2	5

15 The leaf is losing water to the atmosphere.

What processes are occurring at X and Y?

	X	Y
A	diffusion	evaporation
B	evaporation	diffusion
C	osmosis	transpiration
D	transpiration	osmosis

16 The table shows the deficiency symptoms that result from a lack of some substances in the human diet.

Which symptom results from a deficiency in iron?

	deficiency symptom
A	anaemia (haemoglobin deficiency)
B	rickets
C	scurvy
D	soft teeth

17 In an experiment to compare water loss, four similar leaves are treated with petroleum jelly (Vaseline) and left on a table for one hour.

leaf 1 upper surface only covered

leaf 2 lower surface only covered

leaf 3 both surfaces covered

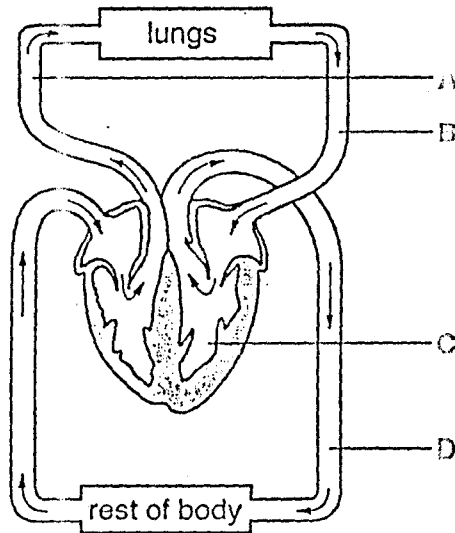
leaf 4 neither surface covered

Which shows the water loss from the leaves?

	water loss			
	most	→	←	least
A	1	4	3	2
B	1	2	4	3
C	4	3	1	2
D	4	1	2	3

18 The diagram shows part of the human circulatory system.

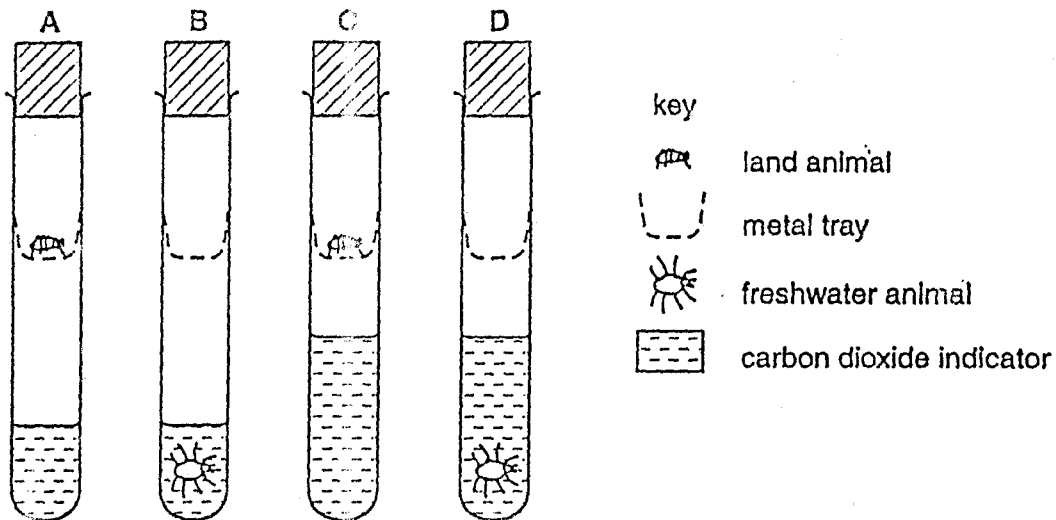
Which part carries oxygenated blood at low pressure?



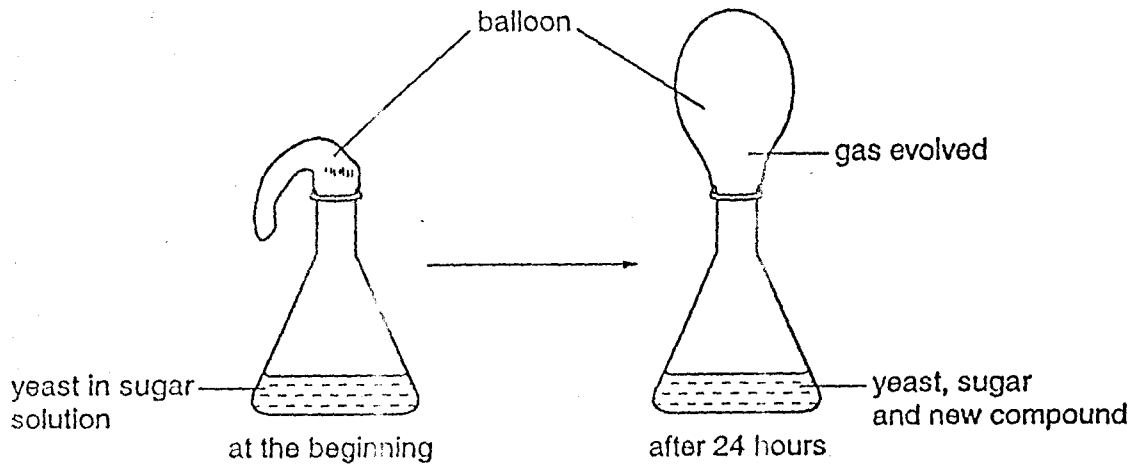
19 The diagram shows an experiment to find out the rate at which small land animals and freshwater animals give off carbon dioxide during respiration.

All the tubes were kept at the same temperature and all animals were equally active.

In which tube would the indicator be the first to change colour?



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

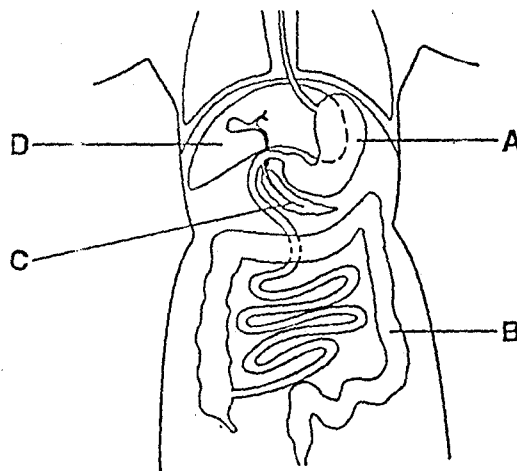


Which gas is evolved and which new compound is present?

	gas evolved	new compound
A	carbon dioxide	ethanol
B	carbon dioxide	lactic acid
C	oxygen	ethanol
D	oxygen	lactic acid

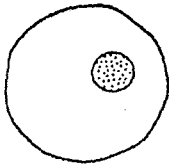
21 The diagram shows some organs in the human body.

In which part are amino acids broken down to urea?

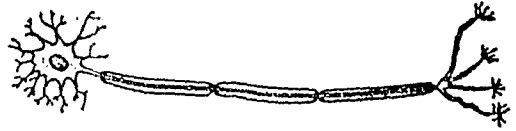


22 Which diagram shows a motor neurone?

A



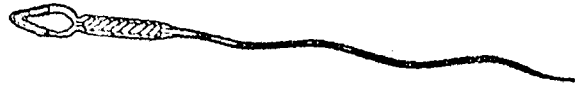
B



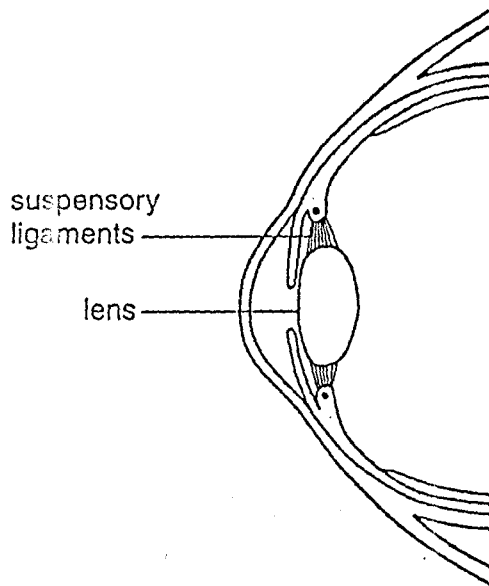
C



D



23 The diagram shows a section through part of the human eye.



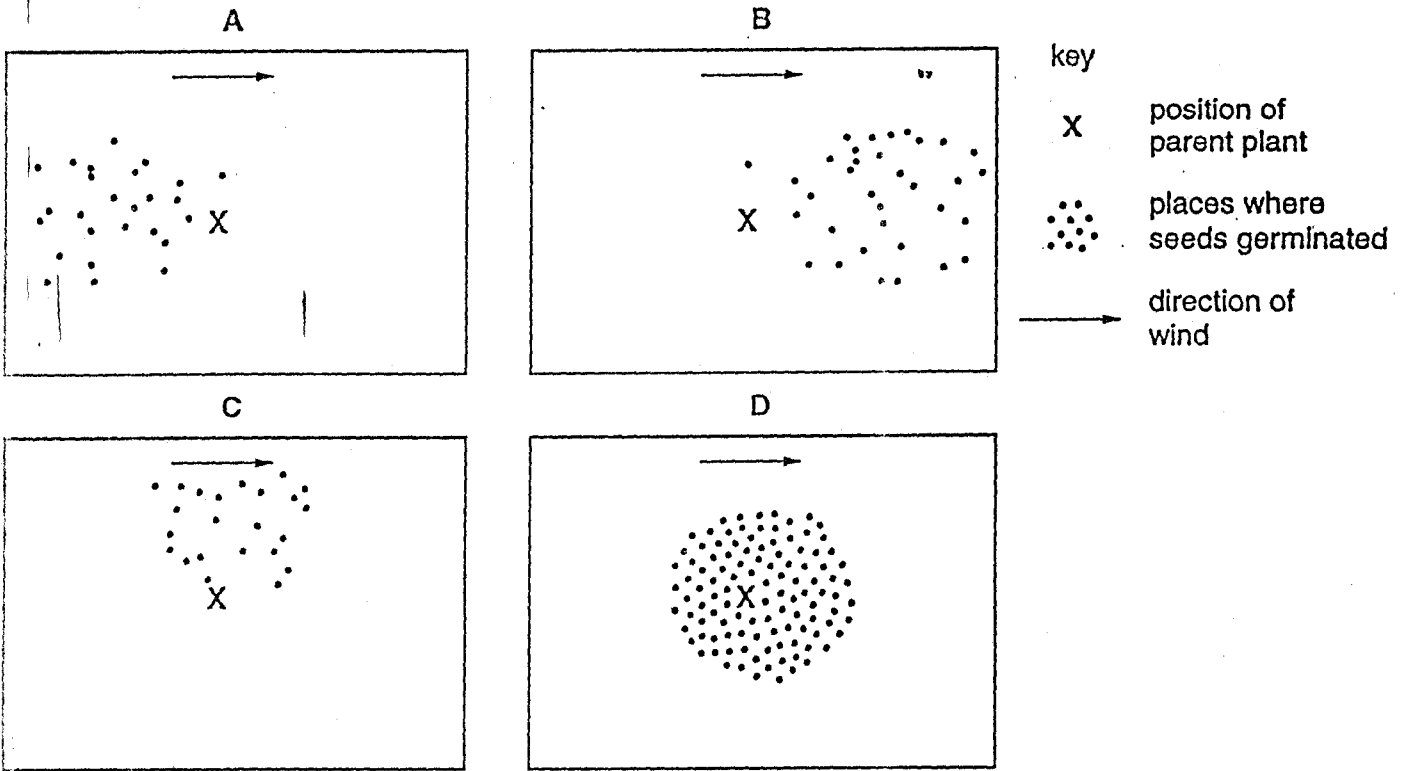
When a person looks at a close object, which of the following takes place?

	suspensory ligaments	lens
A	slacken	becomes fatter
B	slacken	becomes thinner
C	tighten	becomes fatter
D	tighten	becomes thinner



24 The maps show the positions of different parent plants and the places where their seeds germinated during the next year.

Which plant had its seeds dispersed by the wind?

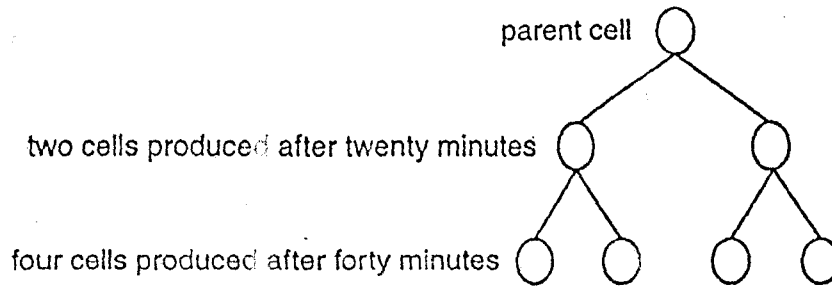


25 Flowers show adaptations for wind or insect pollination.

Which of these adaptations are found in wind-pollinated flowers?

	anther	nectary	petals	stigma
A	firmly attached	present	coloured	inside flower
B	firmly attached	present	green	outside flower
C	loosely attached	absent	coloured	inside flower
D	loosely attached	absent	green	outside flower

- 26 The diagram represents a bacterium reproducing.

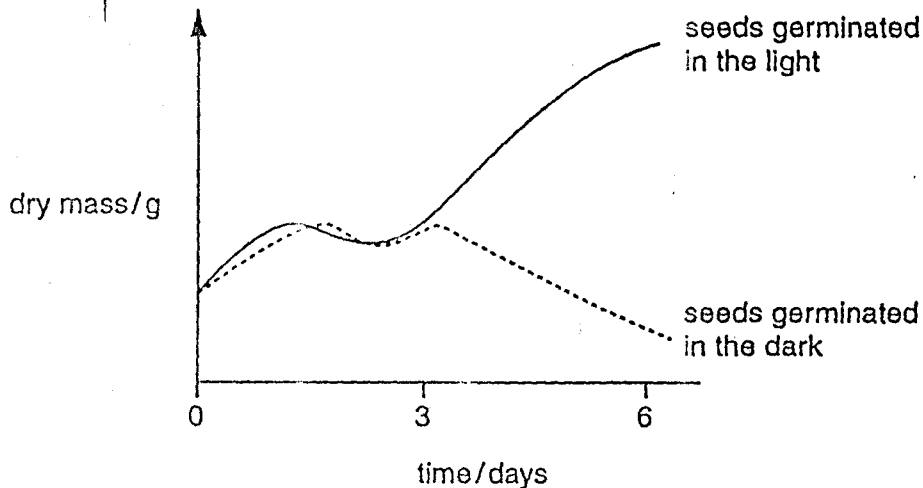


Why is this described as asexual reproduction?

- A Gametes are produced.
  - B It is very quick.
  - C It produces a lot of new cells.
  - D Only one parent is needed.
- 27 Which of the following may be defined as 'an increase in dry mass'?

- A growth
- B nutrition
- C reproduction
- D respiration

- 28 The graph shows the changes in the dry masses of two similar samples of seeds from the start of germination.



What causes the change in dry mass after day 3 of the seeds germinated in the light?

- A All the stored food has been used up.
- B A lot of water has been absorbed.
- C Photosynthesis has begun.
- D The respiration rate has increased.

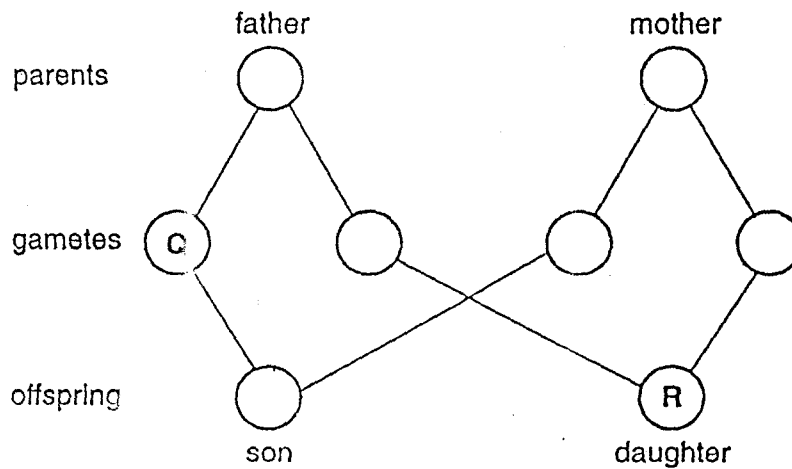
29 Which terms describe the nucleus in the gametes and in the zygote of a human?

	gametes	zygote
A	diploid	diploid
B	diploid	haploid
C	haploid	diploid
D	haploid	haploid

30 What is unlikely to be affected by the environment?

- A blood group
- B body mass
- C health
- D height

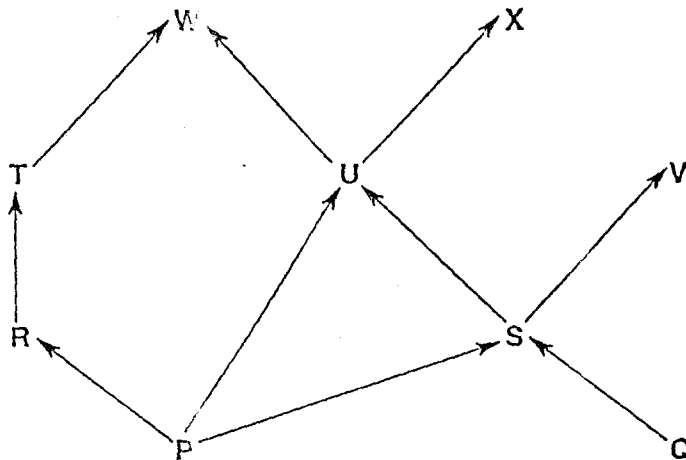
31 The diagram shows the fusion of gametes to produce a son and a daughter.



What are the sex chromosomes in gamete Q and daughter R?

	Q	R
A	X	XX
B	X	XY
C	Y	XX
D	Y	XY

- 32 The diagram represents a food web. The letters represent organisms and the arrows show the direction of the flow of energy.



Which statement is correct?

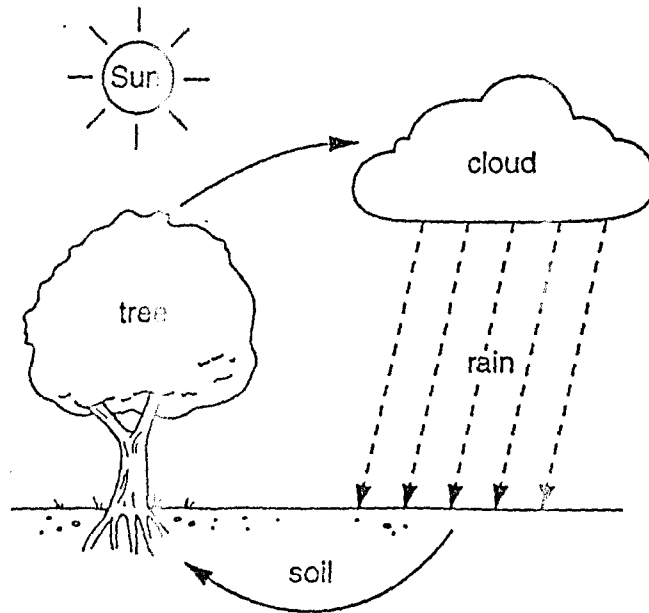
- A P and Q are decomposers.
  - B P and Q are herbivores.
  - C W and X are consumers.
  - D W and X are producers.
- 33 The diagram shows organisms in a food chain.



Which organism is a producer?

- A bird of prey
  - B insect
  - C plant
  - D small bird
- 34 Which term can be described as 'many different species living together, interacting with each other and with their physical environment'?
- A a food chain
  - B a food web
  - C a nutrient cycle
  - D an ecosystem

35 The diagram shows part of the water cycle.

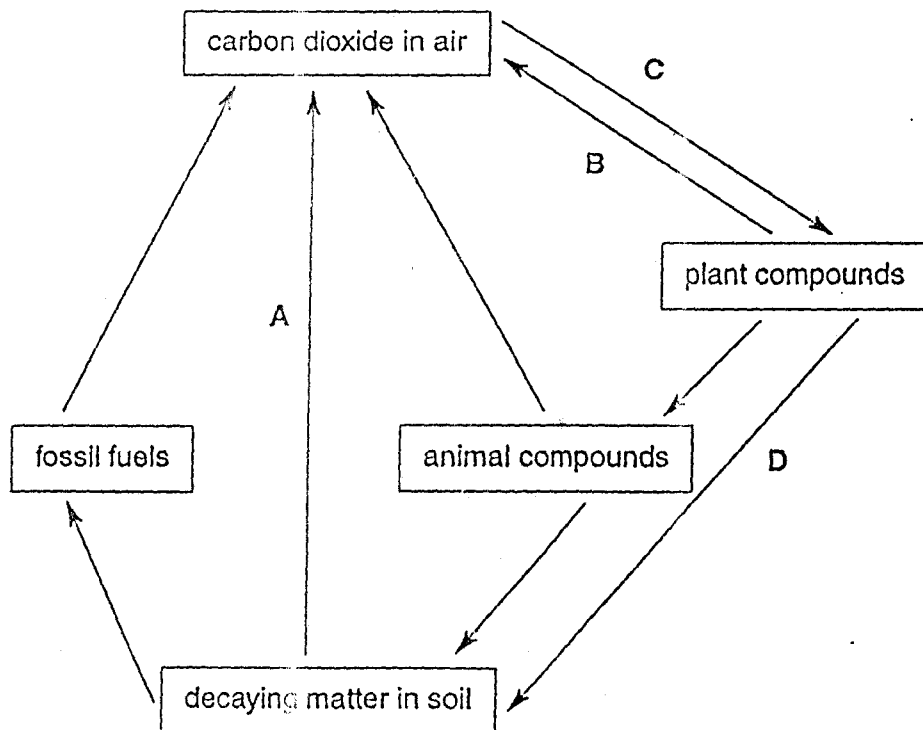


What is responsible for water loss from the trees?

- A condensation
- B respiration
- C translocation
- D transpiration

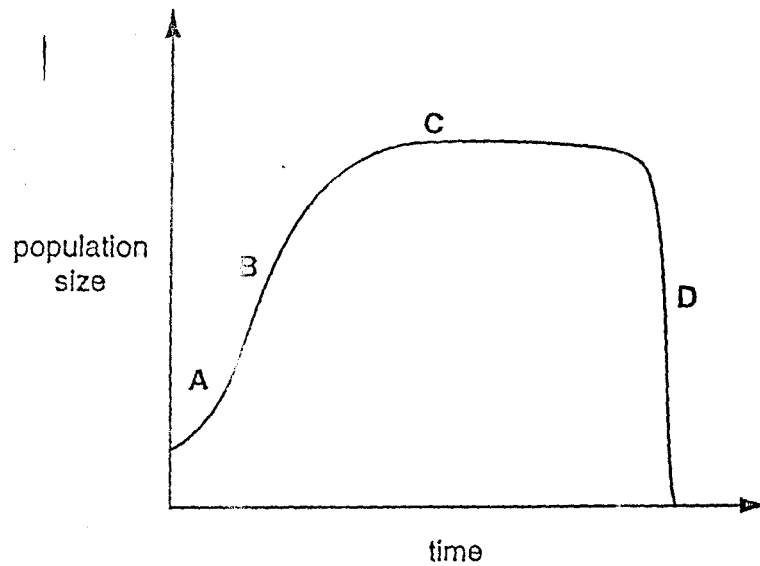
36 The diagram shows part of the carbon cycle.

Which letter represents photosynthesis?

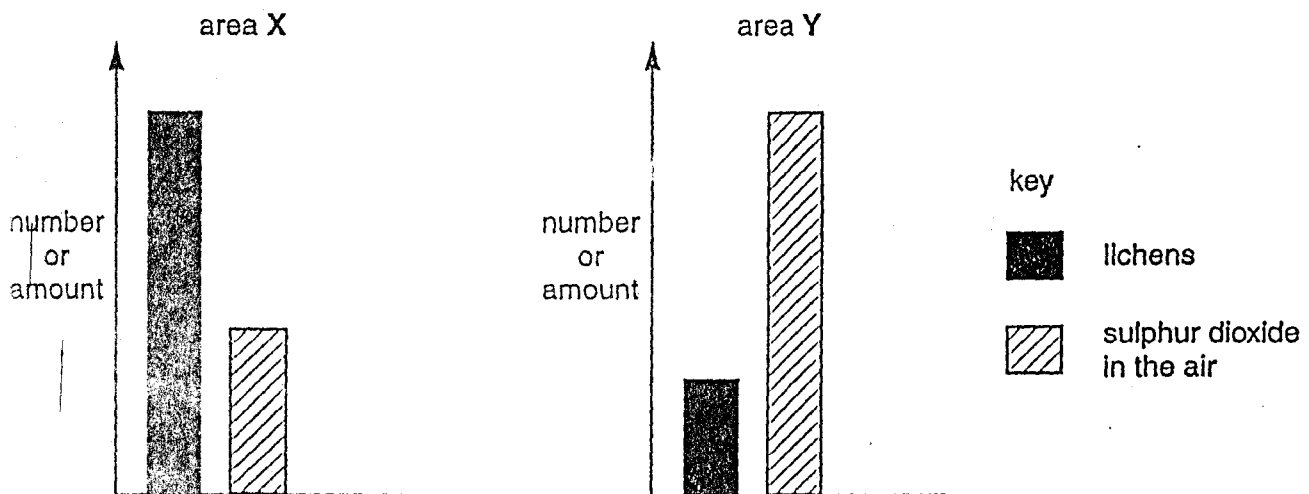


37 The diagram shows how a new population may grow over time.

At which point are the greatest numbers being added to the population?



38 Lichens grow on tree trunks and buildings. The diagrams show the number of lichens and the amount of sulphur dioxide in the air for two areas, X and Y.



Which conclusion can be made from these diagrams?

- A An increase in the amount of sulphur dioxide results in a decrease in the number of lichens.
- B Area X is more heavily polluted by sulphur dioxide than area Y.
- C Lichens need sulphur dioxide to survive.
- D Lichens produce sulphur dioxide and pollute the atmosphere.

39 What is reduced by deforestation?

- A force of rain hitting the ground
- B rainwater run-off
- C soil erosion
- D soil fertility

40 What are the main undesirable effects of sulphur dioxide pollution released by factories, overuse of fertilisers and nuclear fall out?

	sulphur dioxide pollution	overuse of fertilisers	nuclear fall out
A	acid rain	genetic mutations	eutrophication
B	acid rain	eutrophication	genetic mutations
C	genetic mutations	eutrophication	acid rain
D	eutrophication	acid rain	genetic mutations

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

**BIOLOGY**

**0610/01**

Paper 1 Multiple Choice

May/June 2004

**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, highlighters, 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.

There are forty questions on this paper. Answer all questions. For each question there are four possible answers A, B, C, and D.

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**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.

This document consists of 16 printed pages.

IB04 06\_0610\_01/2RP  
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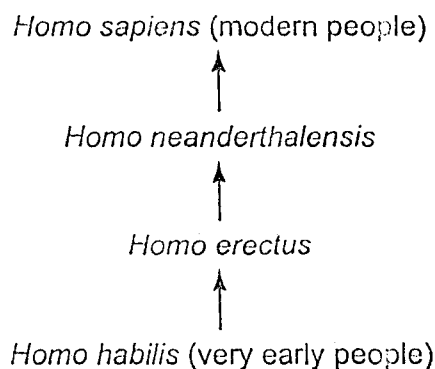
UNIVERSITY of CAMBRIDGE  
International Examinations

**334**

[Turn over



- 1 What is a characteristic of all living organisms?
- A breathing  
B circulation  
C egestion  
D sensitivity
- 2 Which kind of skin do amphibians have?
- A dry without scales  
B dry with scales  
C moist without scales  
D moist with scales
- 3 The diagram shows how *Homo sapiens* (modern people) could have evolved from their ancestors.



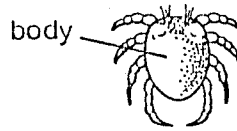
Which statement about modern people and their ancestors is correct?

- A They are in the same species and the same genus.  
B They are in the same species but not the same genus.  
C They are in the same genus but not the same species.  
D They are neither the same species nor the same genus.
- 4 Which structures are found in a human sperm cell?

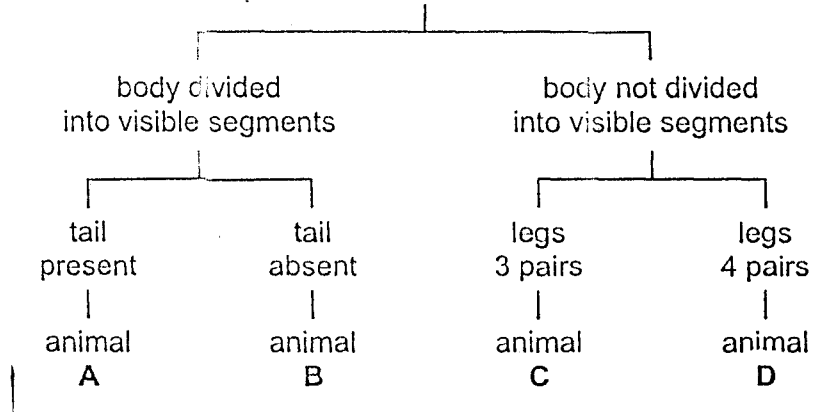
	cell membrane	cell wall	haploid nucleus
A	✓	x	x
B	✓	x	✓
C	✓	✓	✓
D	x	✓	✓

key  
✓ = present  
x = absent

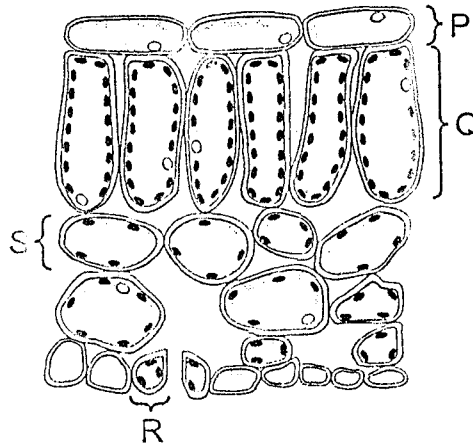
5 The diagram shows an animal.



Using the key, which animal is it?



Use the diagram of a section through a leaf to answer questions 6 and 7.



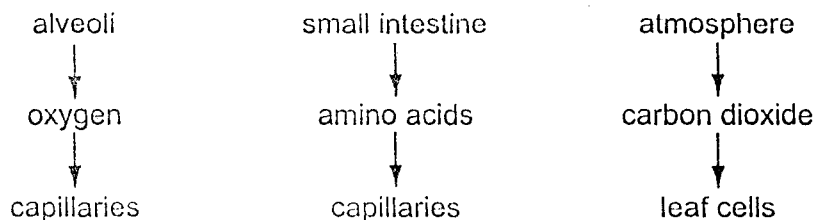
6 Which can perform the most photosynthesis?

- A P                      B Q                      C R                      D S

7 The structures shown are all parts of the same

- A cell.
- B organ.
- C organ system.
- D tissue.

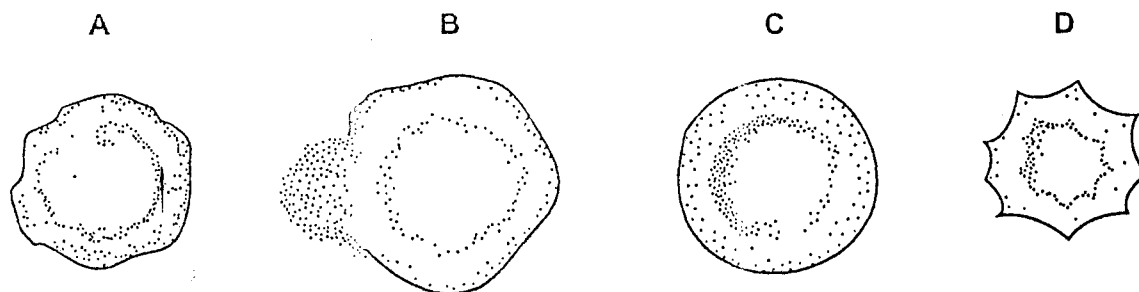
- 8 The diagrams show examples of movement of substances in organisms.



Which process is taking place in all three examples?

- A assimilation  
 B diffusion  
 C osmosis  
 D translocation
- 9 Some red blood cells were placed in distilled water and others were placed in three salt solutions of different concentrations.

Which diagram shows the appearance of a cell has changed after being in the distilled water for a short time?

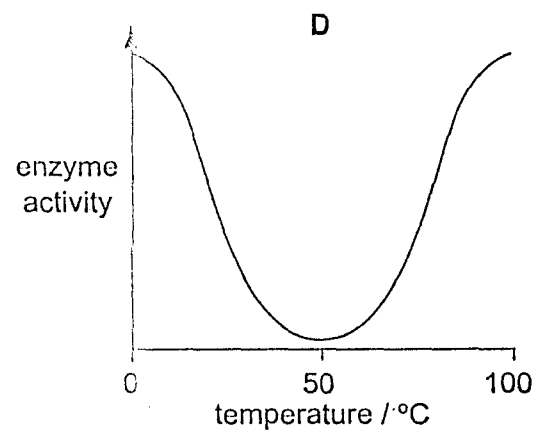
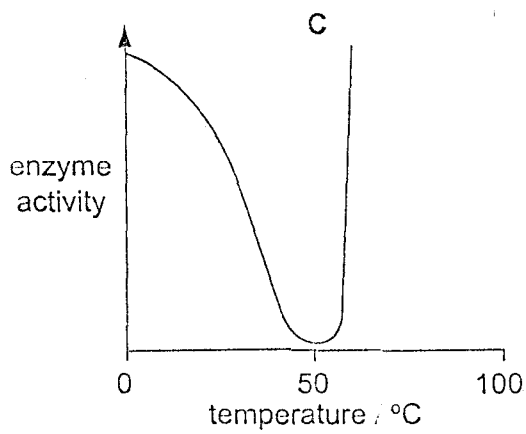
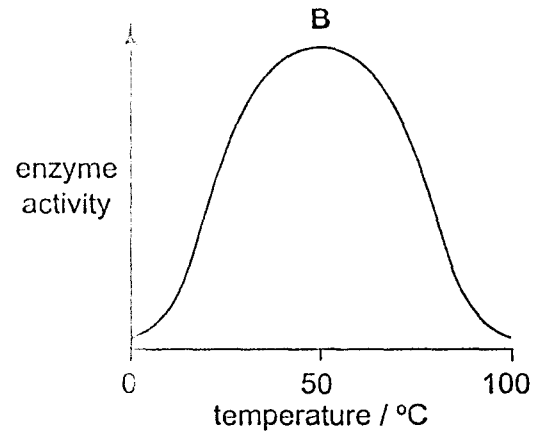
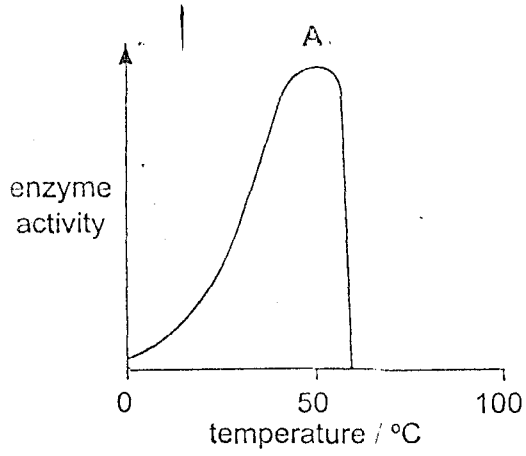


- 10 The table shows the conditions in four test-tubes containing equal quantities of starch and salivary amylase.

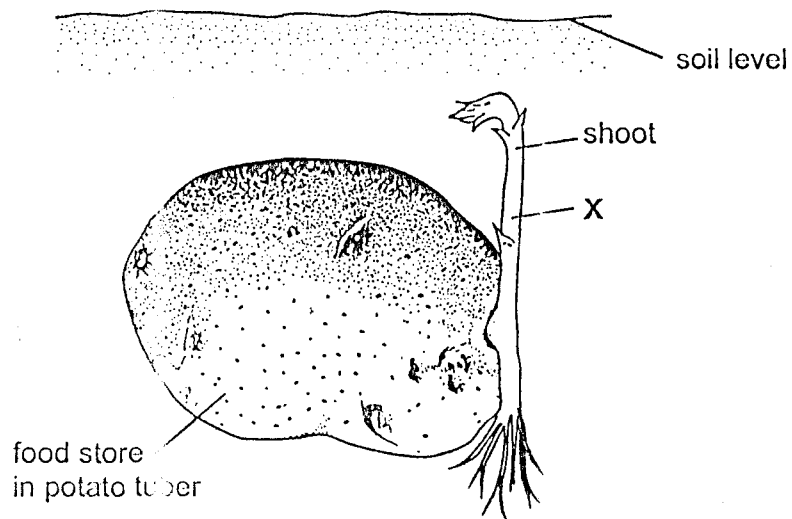
In which test-tube is the starch broken down fastest?

	pH	temperature
A	2	27
B	2	37
C	7	27
D	7	37

11 Which graph shows the effect of temperature on the activity of an enzyme?



12 The diagram shows a shoot growing from a potato tuber.



What is being transported in the phloem cells at X?

- A starch downwards
  - B starch upwards
  - C sugars downwards
  - D sugars upwards
- 13 Which substance contains nitrogen?
- A fat
  - B glucose
  - C protein
  - D starch
- 14 Why is sunlight necessary for photosynthesis?
- A It is a catalyst.
  - B It is a source of energy.
  - C It provides nutrients.
  - D It provides oxygen.

15 The table shows the percentage of protein, fat and carbohydrate in four samples of dried food.

Which sample has the highest energy content?

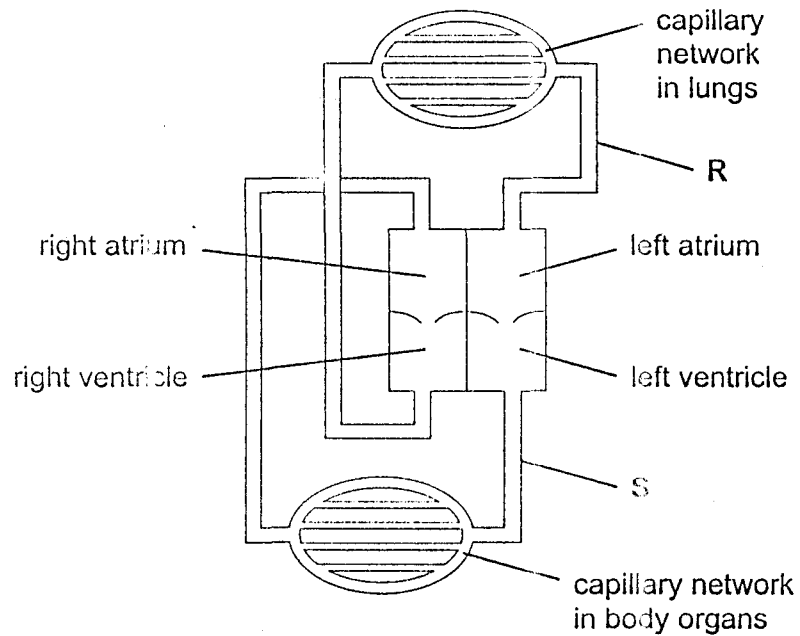
	protein %	fat %	carbohydrate %
A	76	9	15
B	17	0	83
C	33	32	35
D	15	85	0

16 The table shows some of the nutrients in four meals.

Which meal will be the most likely to stimulate peristalsis in the alimentary canal?

	g/100g			
	carbohydrate	fat	fibre (roughage)	protein
A	18	12	8	25
B	30	32	2	12
C	40	15	10	5
D	38	4	22	10

17 The diagram shows the circulatory system of a mammal.



What describes the blood in vessels R and S?

	R	S
A	deoxygenated	deoxygenated
B	deoxygenated	oxygenated
C	oxygenated	deoxygenated
D	oxygenated	oxygenated

18 From which organ is most carbon dioxide excreted?

- A kidney
- B liver
- C lung
- D skin

19 Which word equation represents anaerobic respiration in muscles?

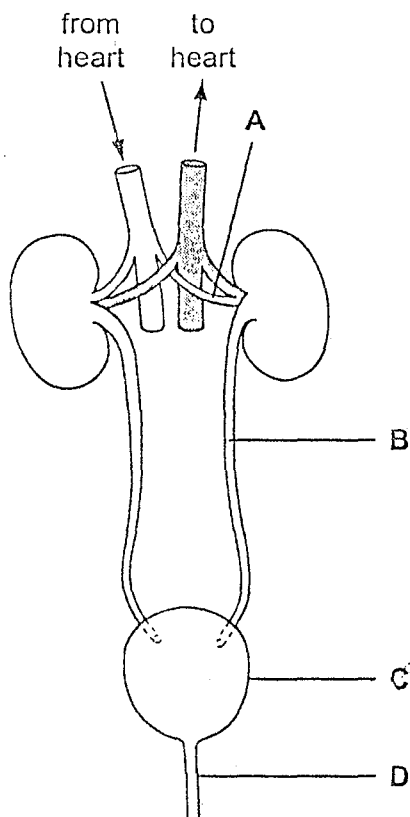
- A glucose  $\rightarrow$  lactic acid + energy
- B glucose  $\rightarrow$  ethanol + carbon dioxide + energy
- C glucose + oxygen  $\rightarrow$  carbon dioxide + water + energy
- D glucose + oxygen  $\rightarrow$  lactic acid + water + energy

20 Which process in green plants produces carbon dioxide?

- A photosynthesis
- B respiration
- C translocation
- D transpiration

21 The diagram shows structures associated with the human urinary system.

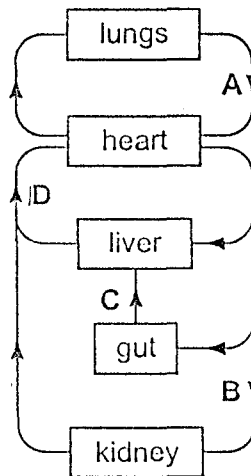
Which structure is the urethra?



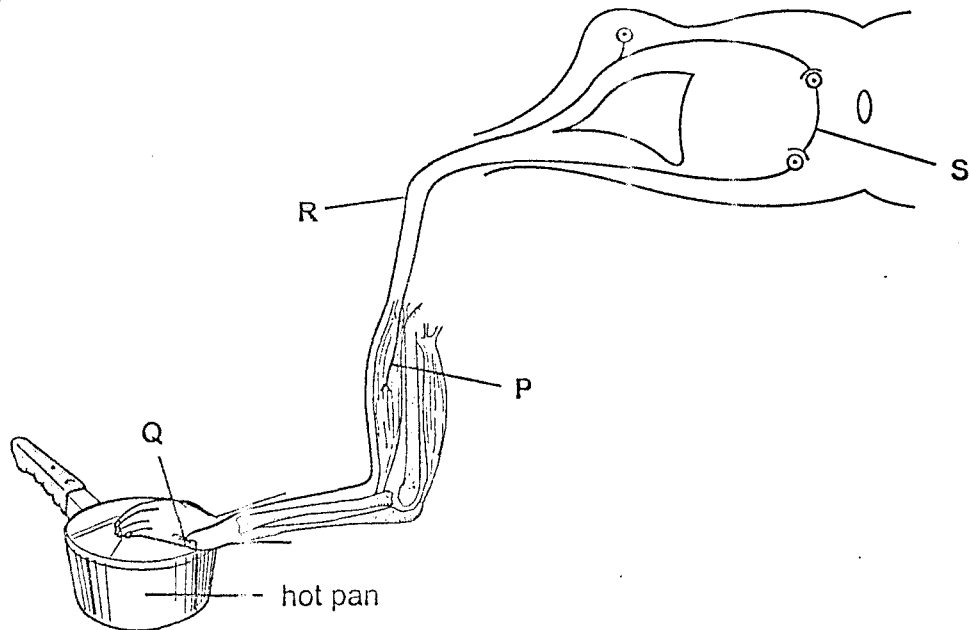


22 The diagram shows part of the human circulatory system.

in which vessel will absorbed alcohol first be found?



23 The diagram shows the structures involved in a reflex action.



What shows the sequence in which these structures become involved?

- A P → Q → R → S
- B P → S → R → Q
- C Q → R → S → P
- D Q → S → P → R

24 A person moves from sunlight into a dark room.

How do their eyes respond?

- A The blind spots become larger.
- B The blind spots become smaller.
- C The pupils become larger.
- D The pupils become smaller.

25 Which features are characteristic of insect-pollinated flowers?

- A bright petals, large feathery stigmas
- B bright petals, rough sticky pollen
- C large feathery stigmas, nectaries
- D small light pollen, nectaries

26 Which substance normally passes from a fetus to its mother through the placenta?

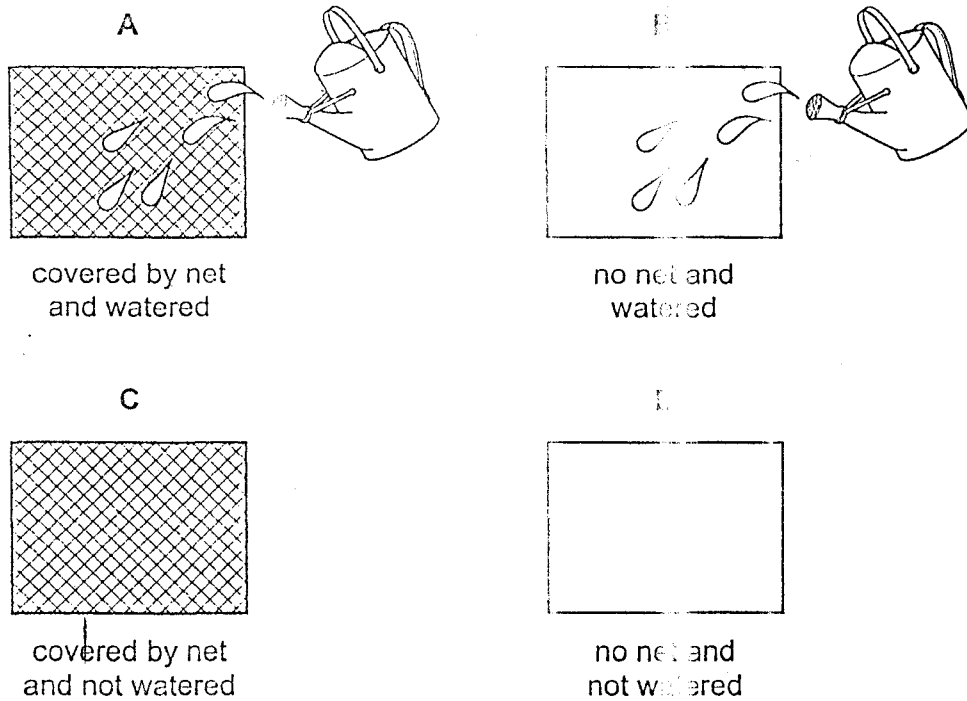
- A alcohol
- B glucose
- C oxygen
- D urea

27 What is the best measurement to determine the growth of seedlings?

- A the dry mass of the whole seedling
- B the height and width of the parts above ground
- C the length from the root-tip to the stem-tip
- D the total number of leaves

- 28 A plot of land was divided into four. Each part was sown with 100 seeds in the dry season. Two parts were covered with a net to stop small birds and mammals entering and two were watered, as shown in the diagram.

In which plot would most seeds germinate?



- 29 Which shows the sex chromosomes in the body cells and in the sex cells in a man?

	body cells	sex cells
A	XX	all X
B	XX	all XX
C	XY	X or Y
D	XY	all XY

- 30 In humans, which types of variation are shown by blood group and height?

	blood group	height
A	continuous	continuous
B	continuous	discontinuous
C	discontinuous	continuous
D	discontinuous	discontinuous

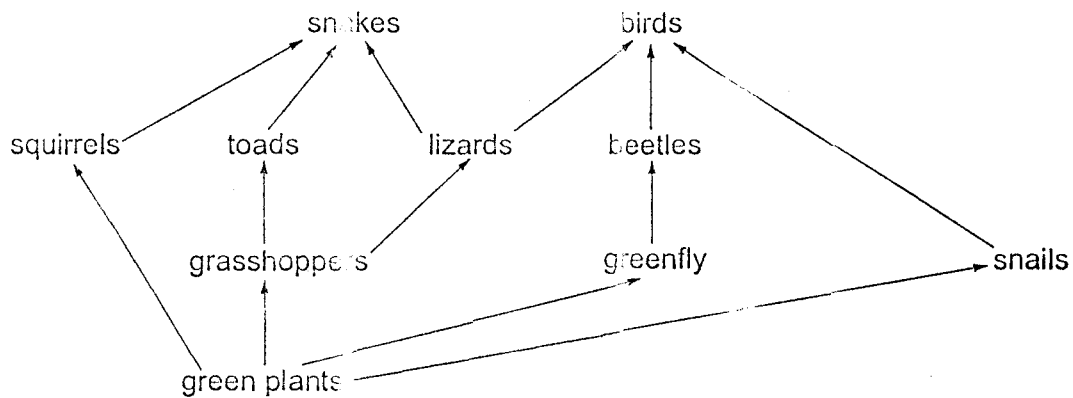
31 In a certain plant, the allele for white fruit,  $W$ , is dominant over the allele for yellow fruit,  $w$ .

A white-fruited plant was crossed with a yellow-fruited plant. About half of the offspring were white-fruited and the other half were yellow-fruited.

Which genotypes did the parent plants have?

- A  $ww$  and  $ww$
- B  $Ww$  and  $ww$
- C  $WW$  and  $ww$
- D  $WW$  and  $Ww$

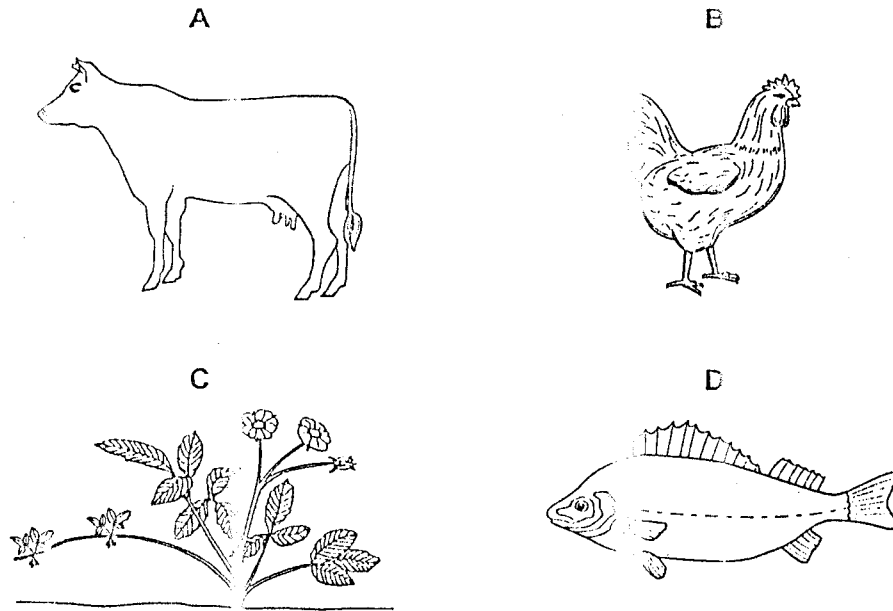
32 The diagram shows a food web.



Which organisms will increase in number, if the number of snakes increases?

- A birds
- B grasshoppers
- C lizards
- D squirrels

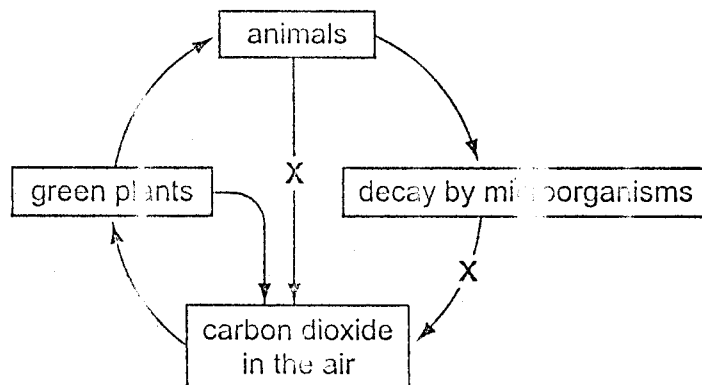
33 Which organism would be a producer in a food chain?



34 From which food chain is least energy lost?

- A green plant → human
- B green plant → sheep → human
- C green plant → cow (milk) → human
- D green plant → small fish → large fish → human

35 The diagram shows part of the carbon cycle.

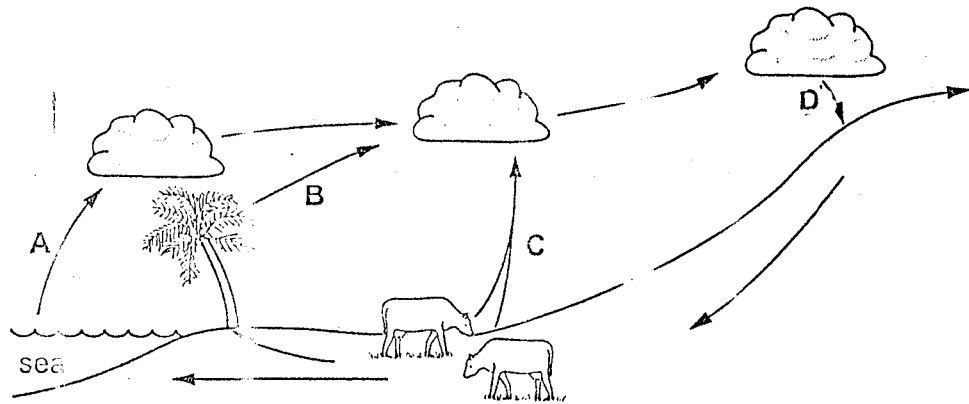


What does X represent?

- A death
- B digestion
- C photosynthesis
- D respiration

36 The diagram represents stages in the water cycle.

At which stage is the water in liquid form?

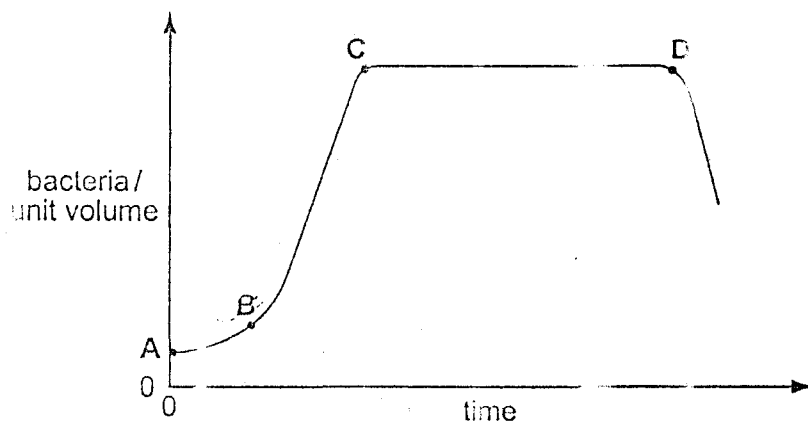


37 In which process is oxygen a waste product?

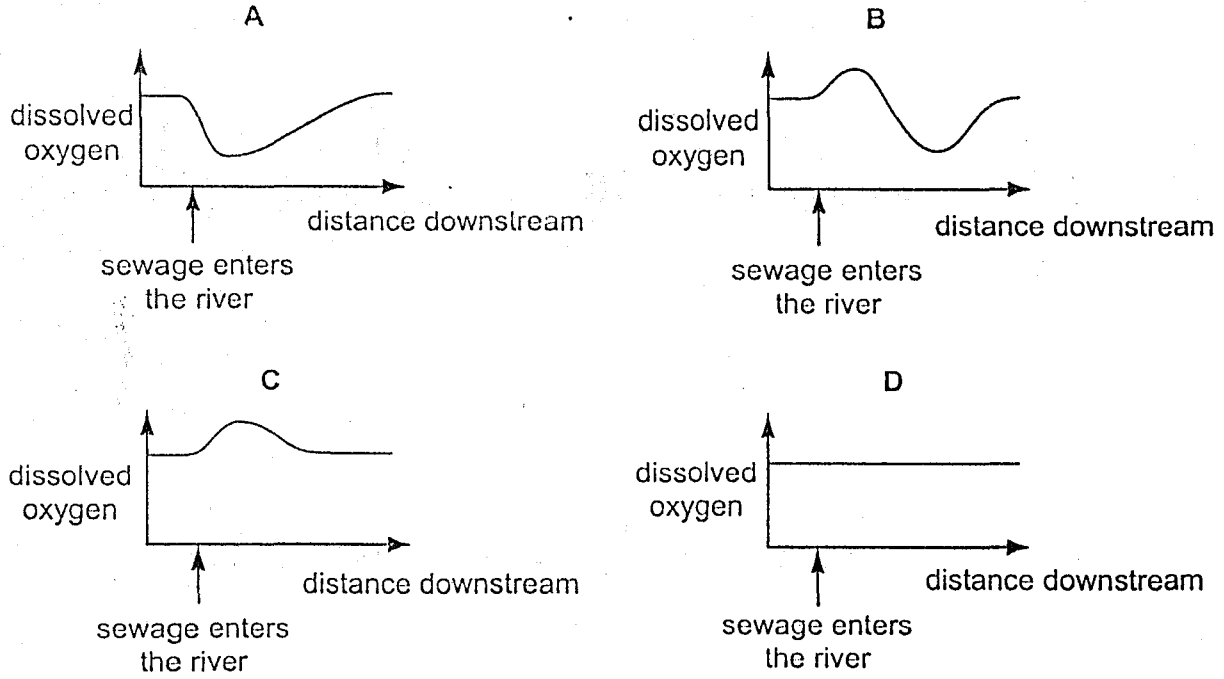
- A active transport
- B aerobic respiration
- C anaerobic respiration
- D photosynthesis

38 The graph shows the growth of a population of bacteria in a closed jar of nutrient solution.

At which point do limiting factors begin to control the growth of the population?

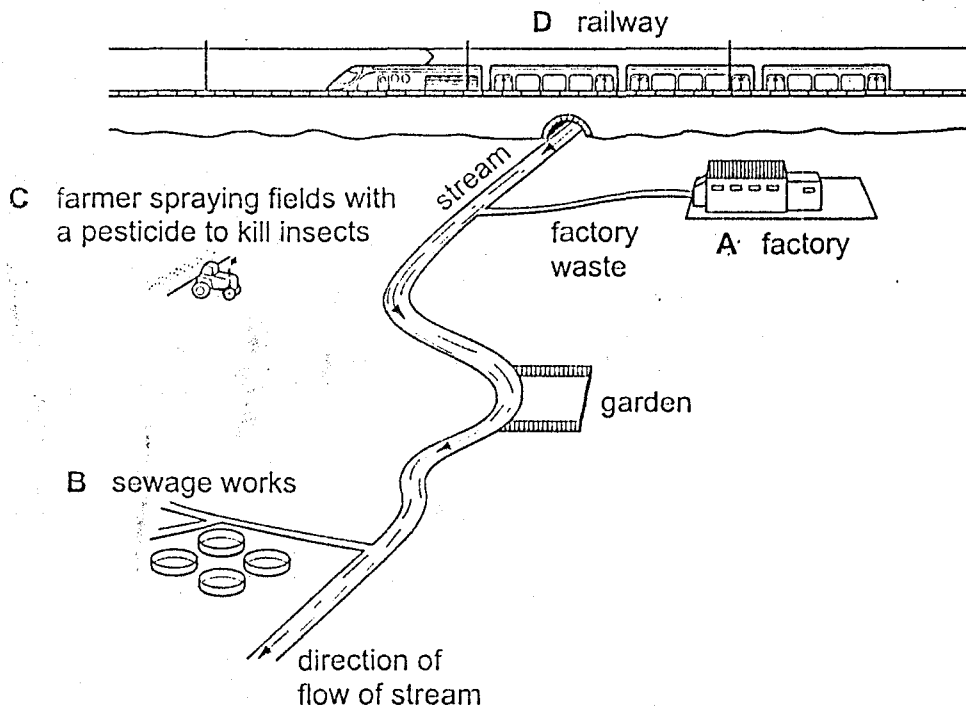


39 Which graph shows the effect of pollution by sewage on the amount of oxygen dissolved in a river?



40 A gardener planted some water plants in the stream at the bottom of the garden shown on the diagram. At first the plants grew well but after a while they died.

Which source of pollution is most likely to have caused the death of the plants?



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