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0180/01

October/November 2017

1 hour

Marks: 40

Additional Materials: Scanner Sheet

READ THESE INSTRUCTIONS FIRST

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

DO **NOT** WRITE IN ANY BARCODES.

Choose the one you consider correct and record your choice in **soft pencil** on the separate Answer Sheet.

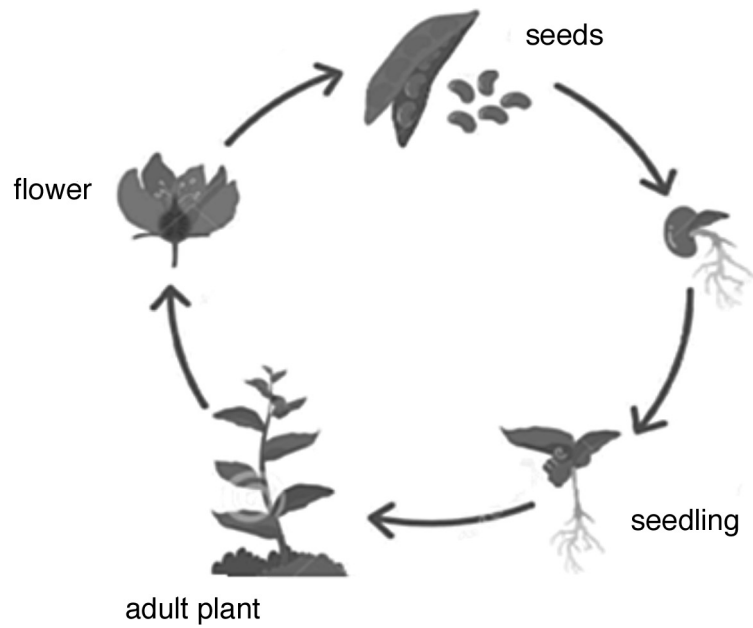
Read the instructions on the Answer Sheet very carefully.

Electronic calculators may be used

This document consists of **15** printed pages and **1** blank page.

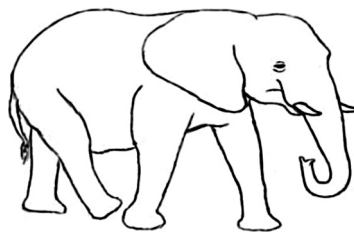


- 1 The diagram shows the life cycle of a bean plant.



Which characteristics are shown in the life cycle?

- A excretion and growth
 - B growth and reproduction
 - C reproduction and respiration
 - D respiration and excretion
- 2 The diagram shows an animal whose scientific name is *Loxodonta africana*.



To which species does the animal belong?

- A africana
- B elephant
- C loxodonta
- D mammal

3 Which class of vertebrates has rough, dry, scaly skin?

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

4 An organism has the following characteristics:

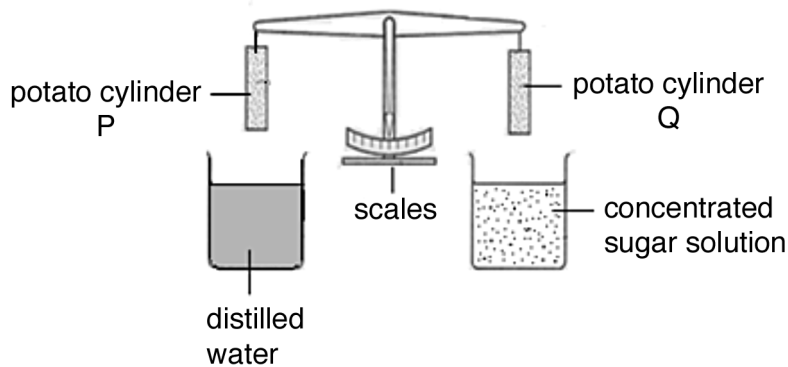
- reproduce by means of spores
- feeds on other organisms
- has a cell wall.

To which group of organisms does it belong?

- A** bacteria
- B** fungi
- C** molluscs
- D** virus

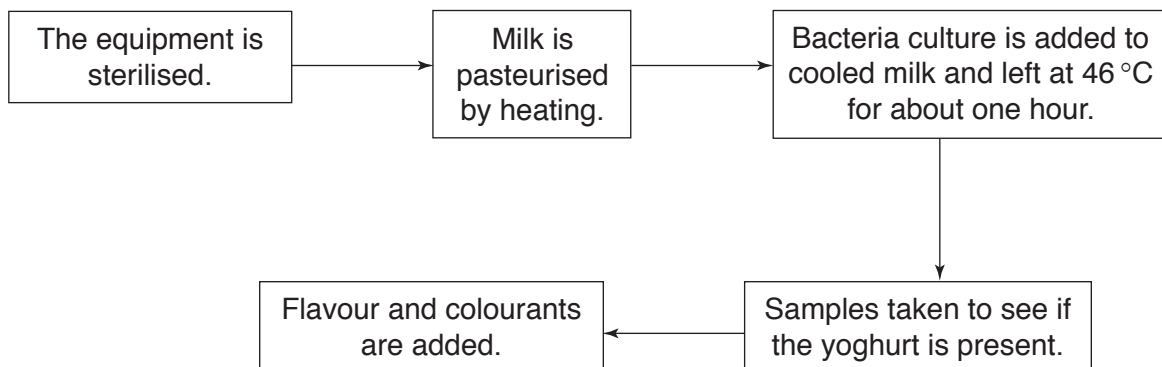
- 5 A student set up the experiment as shown. At the beginning of the experiment, potato cylinders (P and Q) were exactly balanced. Cylinder P was immersed in distilled water. Cylinder Q was immersed in concentrated sugar solution. Both cylinders were left for four hours.

When taken out, they were no longer balancing each other.



Which statement explains what happened?

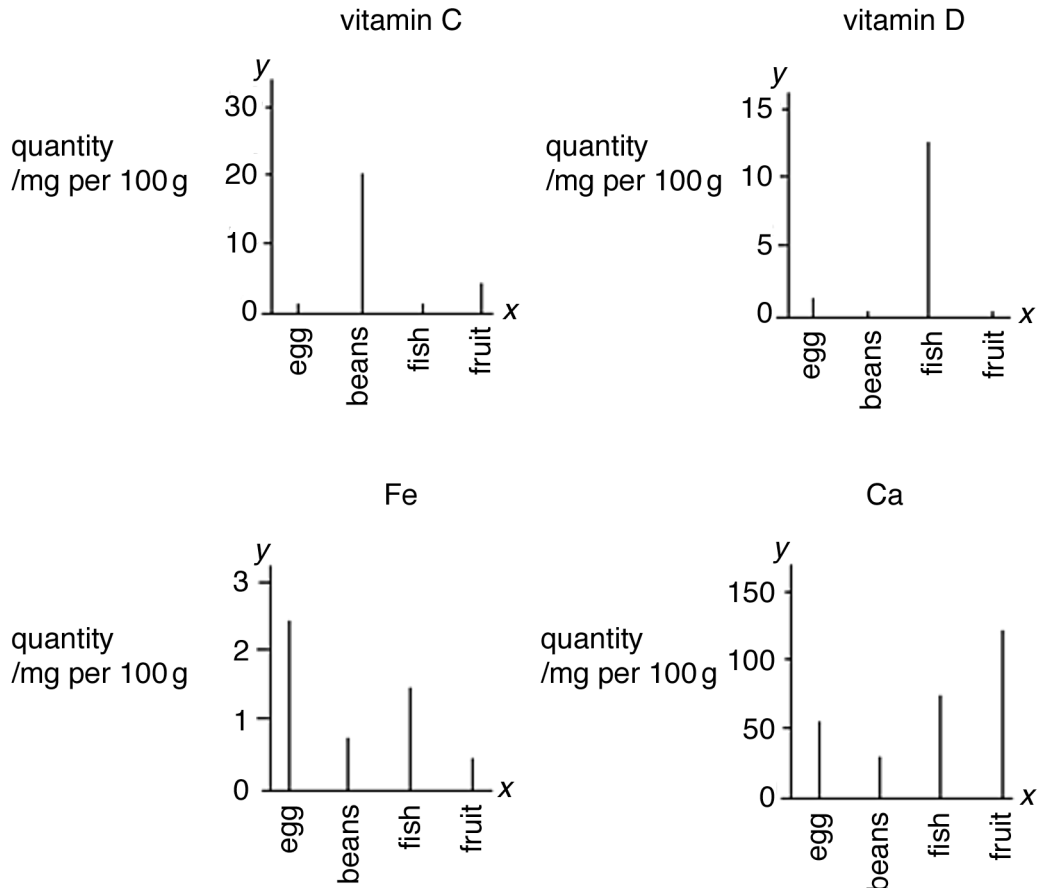
- A water moved into both P and Q
 - B water moved into P from distilled water and out of Q into the sugar solution
 - C water moved out of both P and Q
 - D water moved out of P into distilled water and into Q from sugar solution
- 6 The diagram shows the production of yoghurt.



Which statement explains why the culture was left at 46 °C for an hour?

- A to increase the amount of milk
- B to increase the amount of bacteria
- C to kill the bacteria in the yoghurt
- D to make the yoghurt less sour

- 7 The graph shows quantities in mg per 100 g of vitamins and mineral salts in four types of food.



Which food is the richest source of the vitamin and mineral needed in the formation of enamel?

- A beans and egg
- B beans and fruit
- C fish and egg
- D fish and fruit

- 8 Thabo eats more protein than his body needs.

Which substance will his body produce in large amounts?

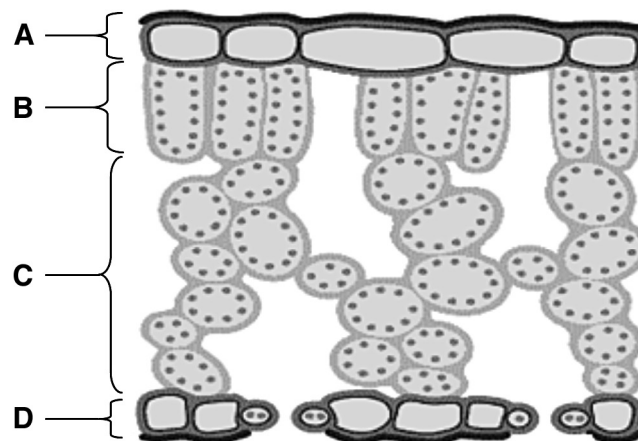
- A carbon dioxide
- B hormones
- C sweat
- D urea

9 Which mineral may be deficient in a diet of a bow legged child?

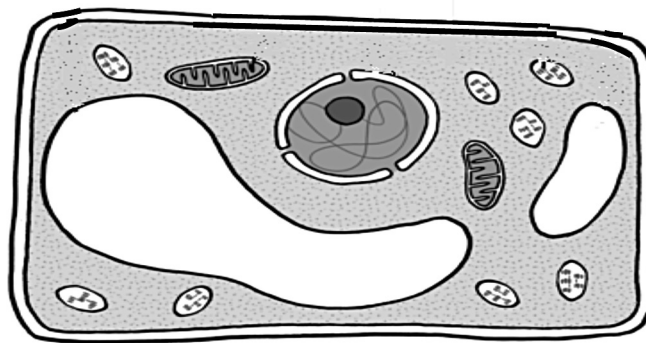
- A calcium
- B carbon
- C iron
- D oxygen

10 The diagram shows a section through a leaf.

In which region does most photosynthesis take place?



11 The diagram shows a plant cell.



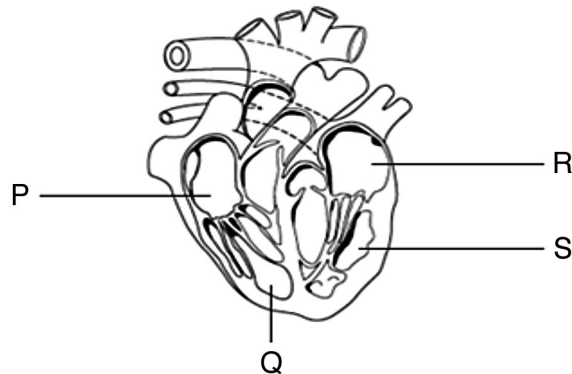
In which tissue is the cell found?

- A leaf epidermis
- B palisade mesophyll
- C phloem
- D root epidermis

12 Which substance is translocated from leaves to the growing parts of a plant?

- A amino acids
- B carbon dioxide
- C glucose
- D starch

13 The diagram shows the cross-section of the heart.



Which chambers of the heart contain oxygenated blood?

- A P and Q
 - B Q and R
 - C R and S
 - D S and P
- 14 What are the characteristics of the mammalian gas exchange surfaces?
- A thick-walled; dry; large surface area
 - B thick-walled; moist; small surface area
 - C thin-walled; dry; small surface area
 - D thin-walled; moist; large surface area

15 Which are released by all living things?

	energy	oxygen	carbon dioxide
A	✓	✗	✓
B	✓	✗	✗
C	✗	✓	✓
D	✗	✓	✗

Key:

✓ – released

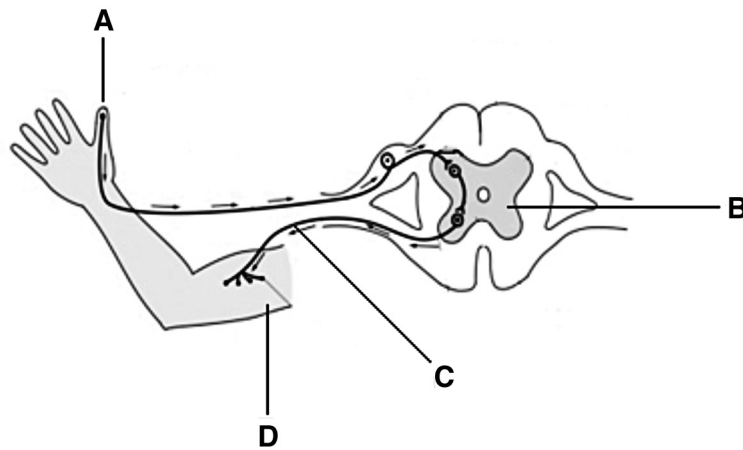
✗ – not released

16 Which products of anaerobic respiration are important for making bread and yoghurt?

	bread	yoghurt
A	alcohol	lactose
B	alcohol	lactic acid
C	carbon dioxide	lactic acid
D	carbon dioxide	lactose

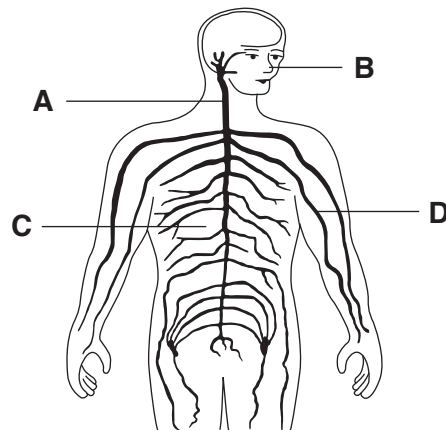
17 The diagram shows a reflex arc. A man is stung by a bee but he does not feel pain.

Which part of the reflex arc may not be working properly?



18 The diagram shows the human nervous system.

Which letter shows part of the central nervous system?



19 Which activity may result in a decrease of the respiratory surface?

- A drinking beer
- B injecting heroin
- C smoking tobacco
- D taking antibiotics

20 Where is insulin produced and used in the body?

	site of production	site of action
A	adrenal gland	ileum
B	adrenal gland	liver
C	pancreas	ileum
D	pancreas	liver

21 Which hormone prepares a person for immediate danger?

- A adrenalin
- B insulin
- C glycogen
- D thyroxin

22 The diagram shows a growing maize plant.



Which **two** responses are shown by this plant?

- A negative phototropism and negative geotropism
 - B negative phototropism and positive geotropism
 - C positive phototropism and positive geotropism
 - D positive phototropism and negative geotropism
- 23 Blood vessels near the surface of the skin become wider after drinking alcohol. This leads to a drop in body temperature.

Which statement explains why the increase in the diameter of blood vessels leads to a drop in body temperature?

- A It causes heat loss through evaporation.
- B It causes heat loss through radiation.
- C It stops heat loss through evaporation.
- D It stops heat loss through radiation.

- 24 The average amount of water in human urine is 96%.
This value changes depending on environmental conditions.

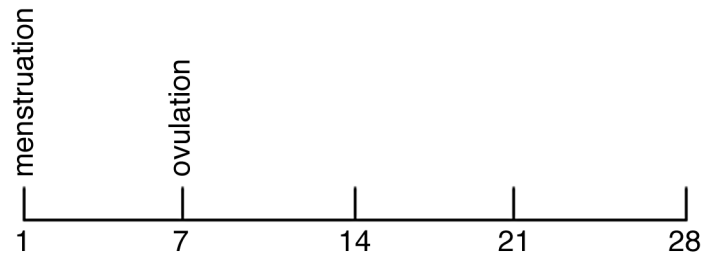
Which set of conditions will result in a decrease in the percentage of water in urine?

	environmental conditions		
	temperature	amount of activity	volume of water drunk
A	low	low	high
B	low	high	low
C	high	low	high
D	high	high	low

- 25 In which part of a flower does meiosis occur?

- A** anther
- B** petal
- C** sepal
- D** style

- 26 The diagram shows 28 days of the menstrual cycle.



On which day would a woman with the type of cycle shown be most fertile?

- A** 7
- B** 14
- C** 21
- D** 28

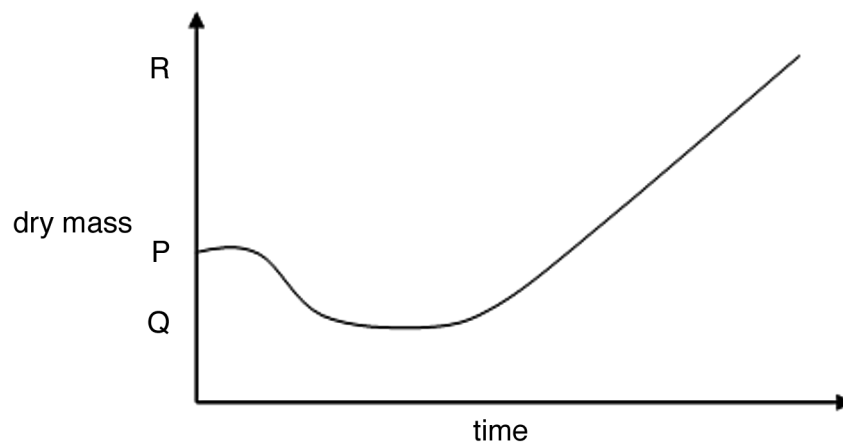
27 Which process will not occur if both oviducts are cut?

- A fertilisation
- B meiosis
- C menstruation
- D ovulation

28 Which factor is necessary for the germination of seeds?

- A carbon dioxide
- B light
- C mineral salts
- D water

29 The graph shows how the dry mass of a plant changes with time.

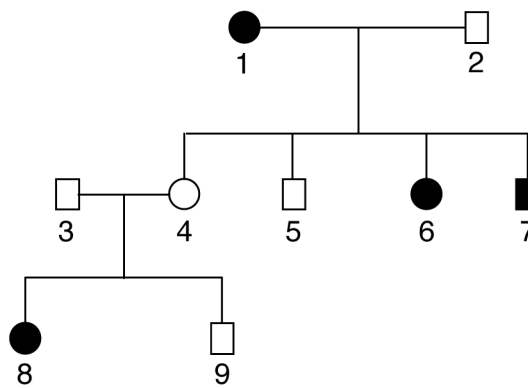


The letters represent stages in a life cycle of a plant.

Which stages are represented by letters P, Q and R?

	green leaves developing	seed	seed germinating
A	P	Q	R
B	Q	R	P
C	R	P	Q
D	Q	P	R

- 30 The diagram shows the pedigree of a family that has a genetic skin disease.



Key:

- male without skin disease
- female without skin disease
- male with skin disease
- female with skin disease

What are the chances that the next child of parents 3 and 4 will have a skin disease?

- A 25%
 - B 50%
 - C 75%
 - D 100%
- 31 In rabbits, an allele for dark fur is dominant (R) over an allele for light fur (r).
When a dark fur rabbit is crossed with a light fur rabbit, 50% of the offspring have light fur.

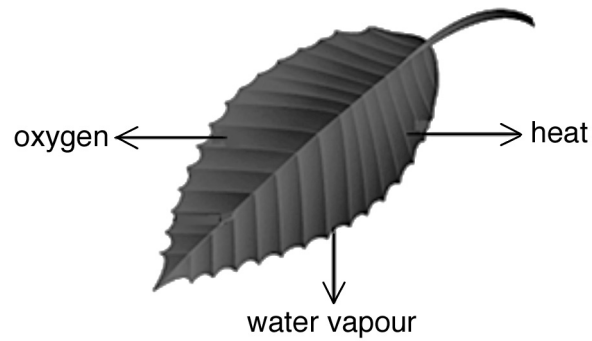
What are the genotypes of the offspring?

- A all Rr
 - B RR and rr
 - C RR and Rr
 - D Rr and rr
- 32 A family has four girls.

What is the chance that a fifth child is a girl?

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

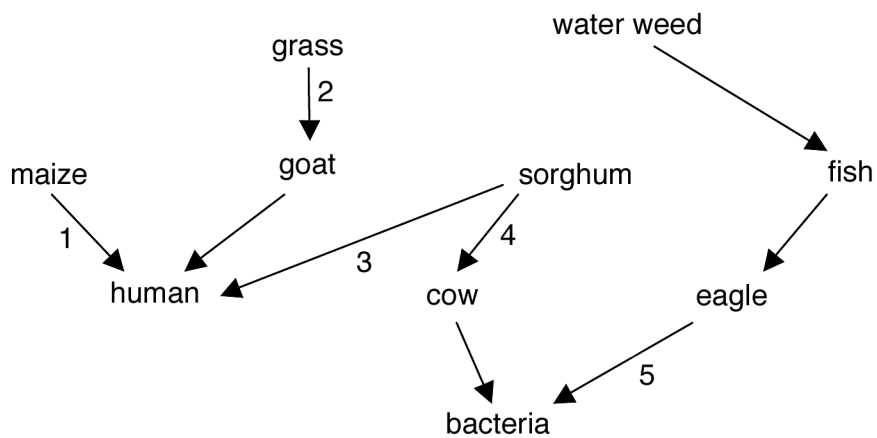
33 The diagram shows substances lost from the leaf to the environment.



Which substance will not be returned to the ecosystem and recycled?

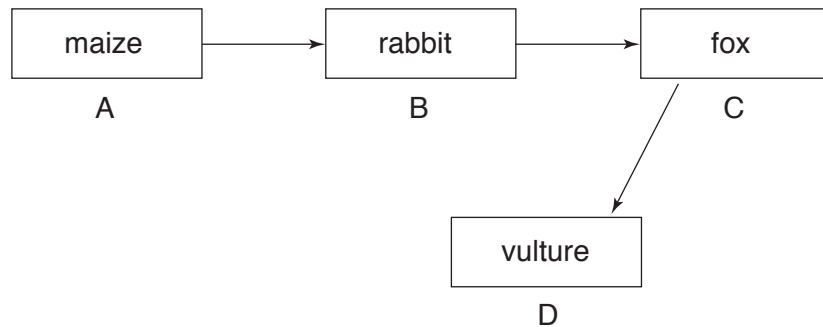
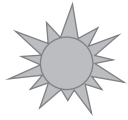
- A heat only
- B heat and oxygen
- C water vapour only
- D water vapour and oxygen

34 Which food chains in the food web make the most efficient use of solar energy?



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

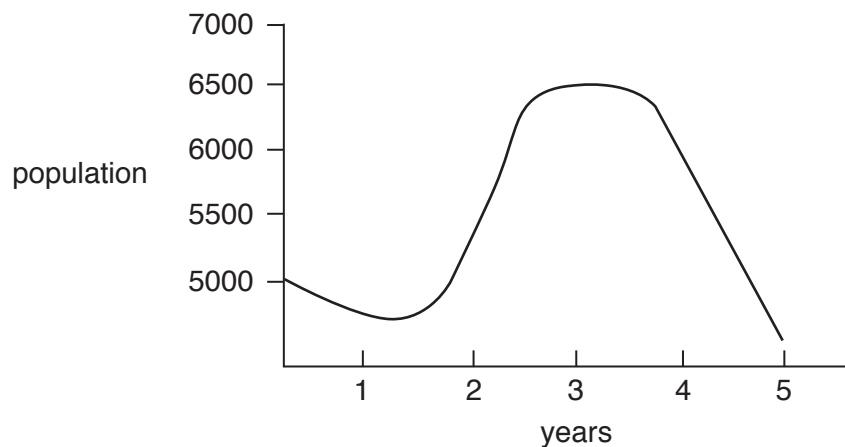
35 Which organism receives the least amount of energy in the food chain?



36 Which structure enables leguminous plants to manufacture proteins in a soil deficient in nitrates?

- A climbing stem
- B colourful flowers
- C green leaves
- D root nodules

37 The graph shows the population of caterpillars in an island over 5 years.



What could have caused a change in the size of the population between year 4 and 5?

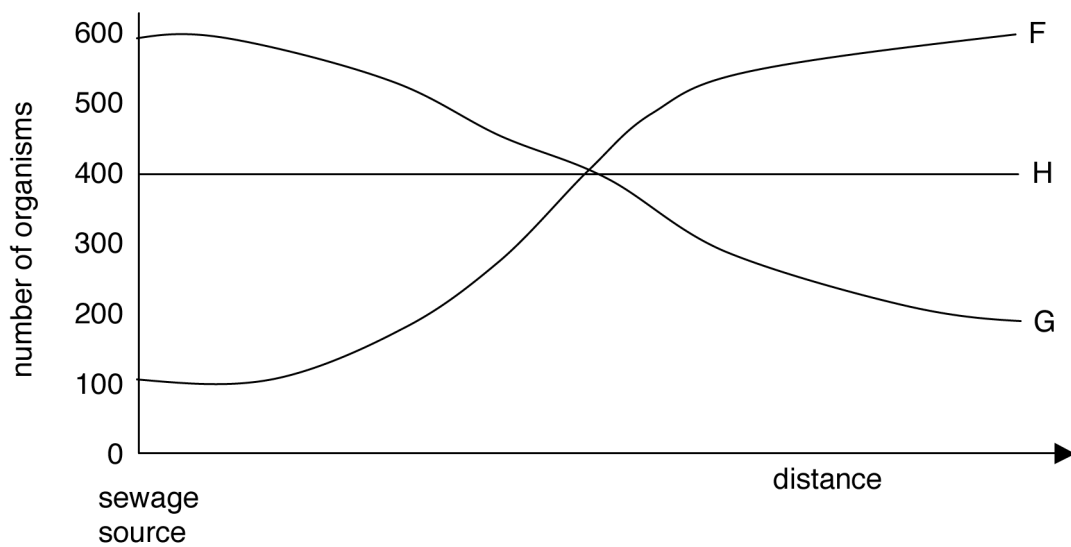
- A a lot of food
- B high mating rate
- C immunity to disease
- D large number of predators

38 What could be a long term effect of cutting down large areas of rain forest?

- A decreased carbon dioxide content in the air
- B decreased flooding of low-lying land
- C increased rainfall in these areas
- D increased rate of soil erosion

39 The graph shows the effect of untreated sewage in a lake.

Which letter represents the likely change in the number of bacteria and fish as distance from the sewage source increase?



	bacteria	fish
A	F	G
B	F	H
C	G	F
D	G	H

40. Which group of characteristics are all examples of discontinuous variation?

- A complexion and tongue rolling
- B complexion, height and mass
- C gender and mass
- D gender and tongue rolling