BIOLOGY

BGCSE PAST PAPERS

PAPER 1

2009

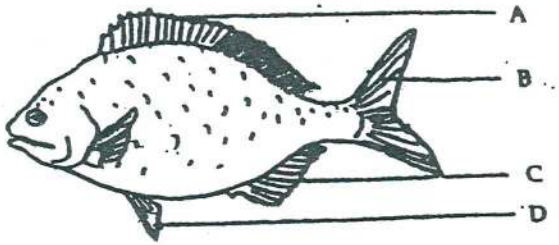
The scientific name for humans is *Homo sapiens*. What do the underlined words indicate?

A class and genus
B genus and species
C order and family
D phylum and genus

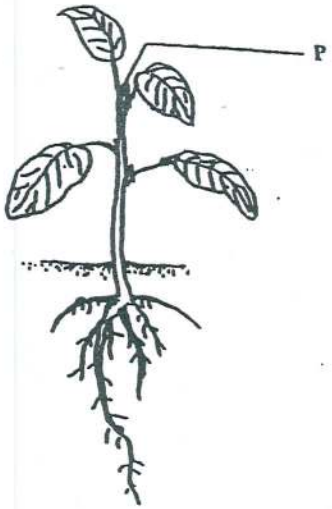
What is the characteristic of living things in which wastes produced as a result of chemical changes are released from the organism?

A excretion
B irritability
C reproduction
D respiration

The diagram shows a bony fish. Which labelled fin is paired?



4. The diagram shows a flowering plant. What is the purpose of P?



A absorbs water from soil
B causes growth sideways
C causes upwards growth
D protects the other parts of the plant

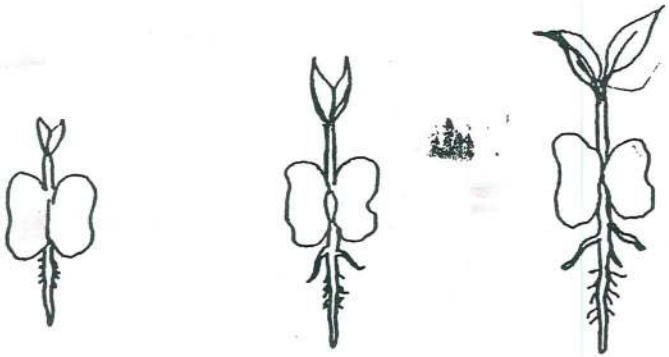
5. The diagram shows a food chain.

In which organism is there likely to be the highest build-up of pesticide?

A bird
B eagle
C plant
D snake

2001

The diagrams show a seedling after germination.



Day 2 Day 3 Day 4

Which characteristic of living organisms is shown?

A excretion

B growth

C nutrition

D reproduction

2. Which feature is a characteristic of dicotyledons?

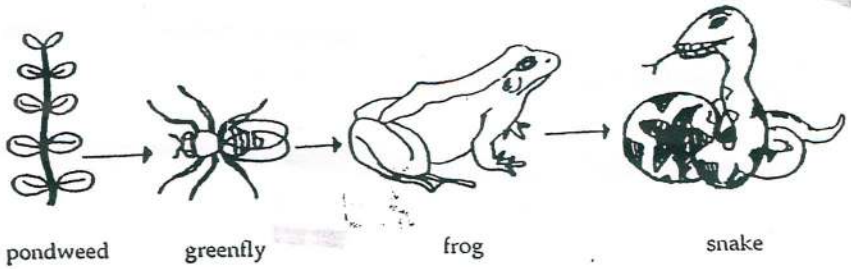
A leaves with parallel veins

B narrow leaves

C one cotyledon

D tap root system

3. The diagram represents a food chain.



pondweed greenfly frog snake

Which organism is the producer?

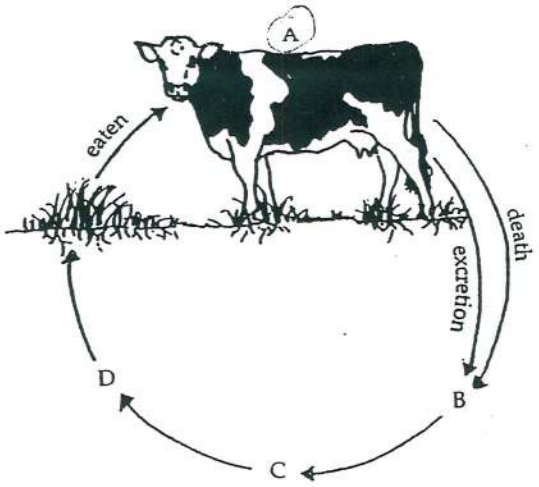
A frog

B greenfly

C pondweed

D snake

4. The diagram shows a portion of the Nitrogen Cycle. Each letter represents a chemical that contains nitrogen. Which letter represents proteins?



46. What is the order of events during sexual reproduction in a flowering plant?

A fertilization → pollen tube growth → pollination → fruit formation
B pollen tube growth → pollination → fruit formation → fertilization
C pollination → fruit formation → fertilization → pollen tube growth
D pollination → pollen tube growth → fertilization → fruit formation

47. Pollination involves the transfer of pollen from the anther to the

A petal.
B sepal.
C stigma.
D style.

48. The diagram represents a stage of pregnancy in humans.

Which stage of pregnancy is shown?

A 5 weeks
B 2 months
C 4 months
D 9 months

49. Which disease is caused by a bacterium?

A acquired immune deficiency syndrome (AIDS)
B genital herpes
C syphilis
D thrush (monilia)

50. In a cross between a tall pea plant and a short plant, 60 plants were produced, 28 of which were tall and 32 were short. What are the genotypes of the parent plants? T represents the allele for tallness and t the allele for shortness.

A TT, TT
B TT, Tt
C Tt, Tt
D Tt, tt

35. The table shows the relative proportion of substances in the blood entering and leaving an organ.

substances	blood entering organ	blood leaving organ
carbon dioxide	less	more
glucose	more	less
oxygen	more	less
urea	less	more

What is the name of the organ?

A kidney
B liver
C lung
D skin

36. Which process increases the amount of water in the blood?

A digestion
B respiration
C sweating
D urination

37. Which row in the table gives the correct information about the named hormones?

	hormone	parts of body affected	result
A	oestrogen	breast	decrease in size
B	oestrogen	hip girdle	decrease in size
C	testosterone	face	increase in hair growth
D	testosterone	penis	increase in sperm production

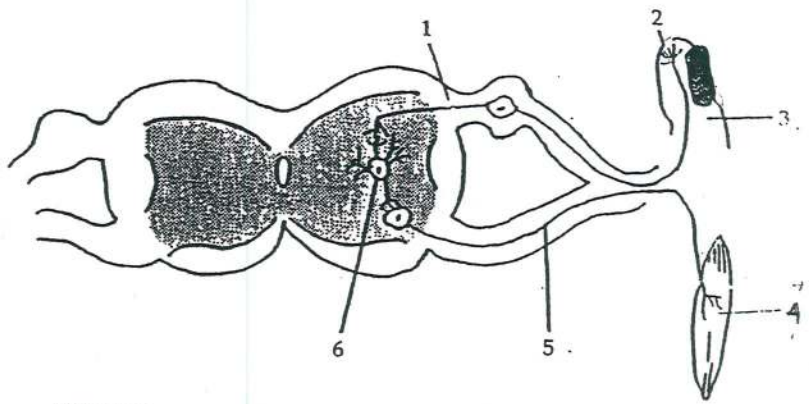
38. Which feature of the skin makes it well suited for temperature control?

A large surface area
B Malpighian layer
C sebaceous glands
D three layers

39. What is the name of the tiny gaps between the ends of two neurones?

A axons
B dendrites
C ganglia
D synapses

40. The diagram shows part of the spinal cord, a fingertip and a muscle of the arm.

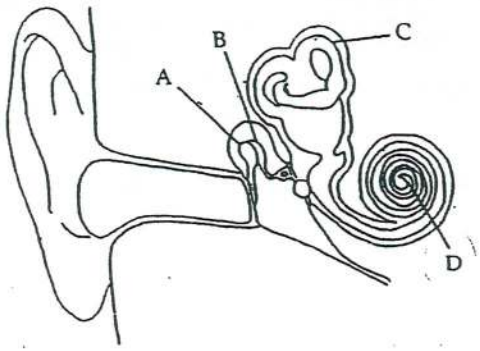


What is the route of a reflex arc impulse from the finger to the muscles of the arm?

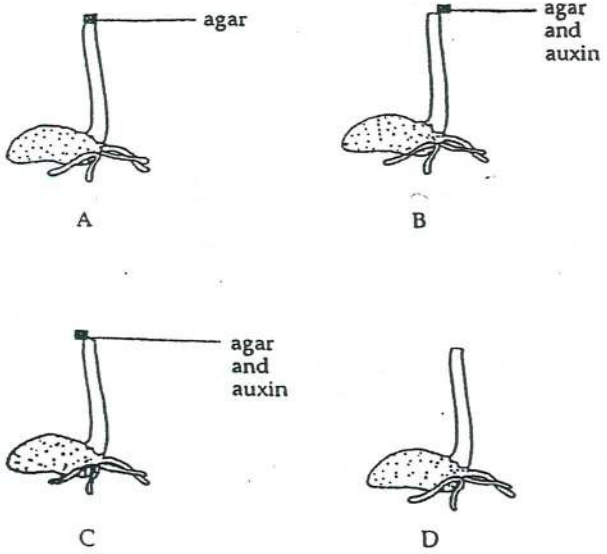
A $1 \rightarrow 6 \rightarrow 5 \rightarrow 4 \rightarrow 3$
B $2 \rightarrow 1 \rightarrow 6 \rightarrow 5 \rightarrow 4$
C $3 \rightarrow 4 \rightarrow 6 \rightarrow 2 \rightarrow 5$

A diagram of the ear in section is shown.

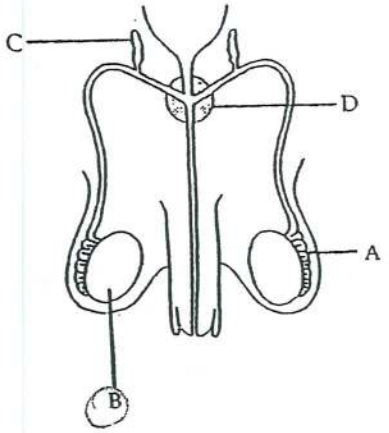
Which structure controls balance?



42. The diagrams show four seedlings with the apex removed. Which seedling will grow toward the left after three days?



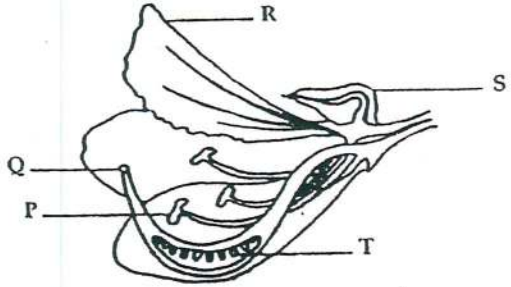
43. The diagram represents the human male reproductive system. Which part stores gametes?



44. Which structure serves as the excretory organ for the human foetus?

A kidney
B large intestine
C lung
D placenta

45. The diagram represents a *Bauhinia* flower.



In which TWO structures does meiosis occur?

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

5. Which list represents the correct sequence of events in the life cycle of *Zea mays*?

A pollination → germination → fertilization → fruit and seed formation

B pollination → fertilization → fruit and seed formation → germination

C germination → fertilization → fruit and seed formation → pollination

D germination → fruit and seed formation → fertilization → pollination

6. Which Bahamian Island is best known for the production of pineapple crops?

A Abaco

B Bimini

C Eleuthera

D Exuma

7. In the fishing industry of The Bahamas, which type of fishing gear is most commonly used to capture the spiny lobster?

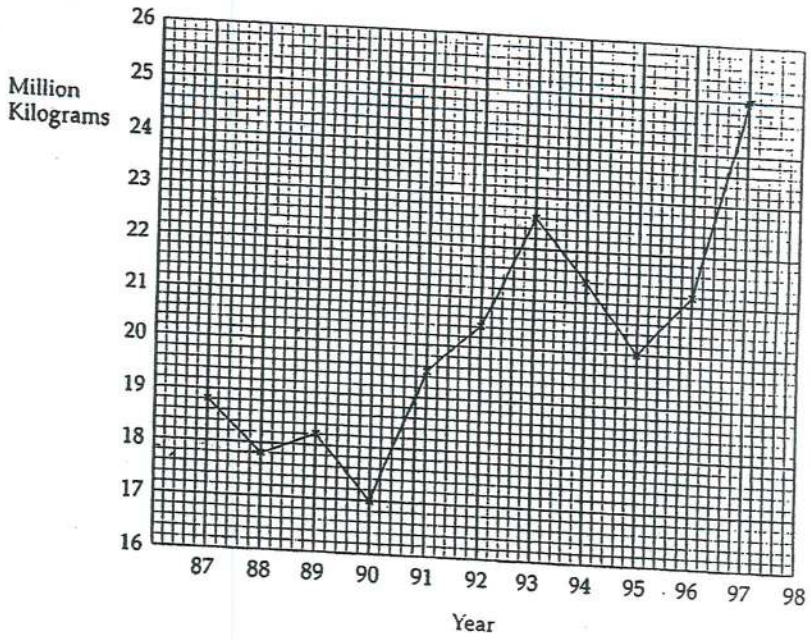
A Hawaiian sling

B spear gun

C wire trap

D wooden trap

8. The graph represents the annual total weight of fisheries product landed in The Bahamas over a ten year period.



What is the difference in the recorded fisheries product landing between the best and the worst years in the ten year period shown?

A 5.5 million kilograms

B 6.5 million kilograms

C 8.1 million kilograms

D 9.1 million kilograms

9. What is a common source of water pollution in The Bahamas?

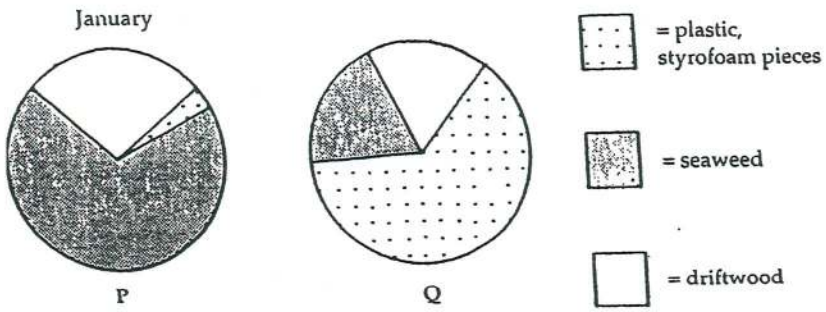
A dumping of sewage

B increased amount of algae

C increase in acid rain

D use of agricultural fertilizers

The pie graphs show the relative amounts of debris collected on a sandy beach of a populated Bahamian Island.



Which month would Q represent?

A February

B July

C March

D November

11. The diagram shows a sign promoting conservation. What is likely to be conserved?

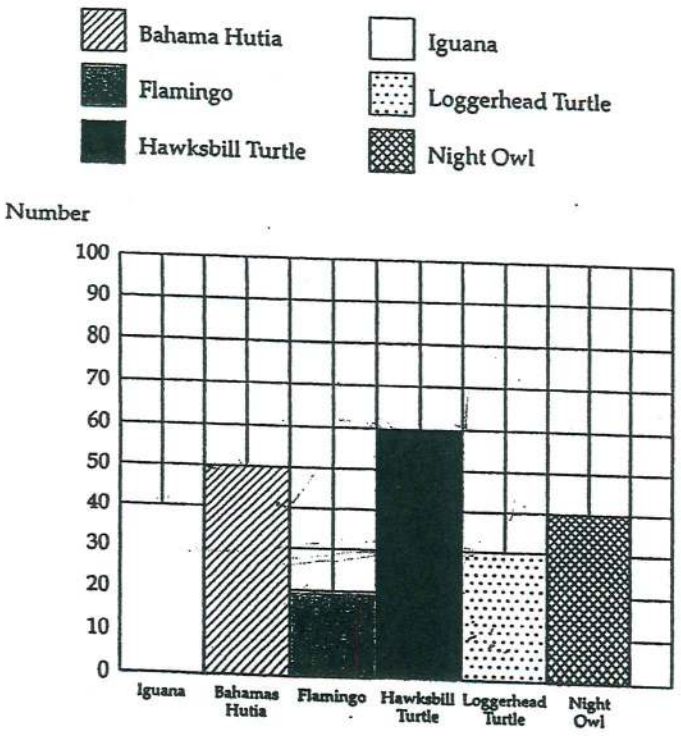
A beach

B coral reefs

C rocky shore

D sea walls

12. The graph illustrates organisms placed on and around a certain cay in efforts to conserve their species. Which vertebrate group represents 25% of the animals being conserved?



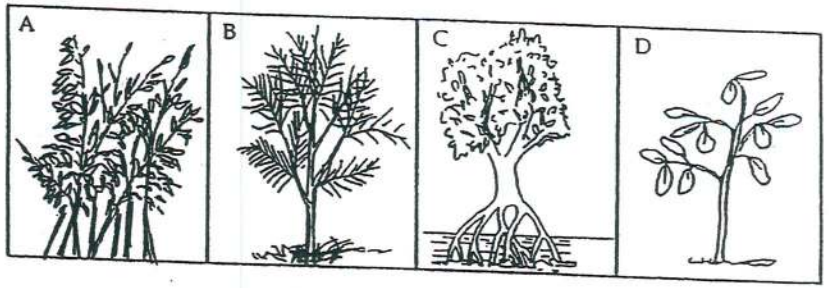
A birds

B fish

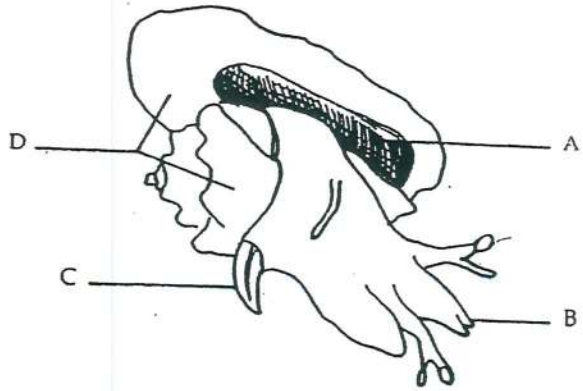
C mammals

D reptiles

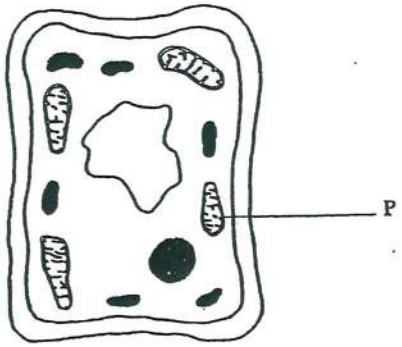
13. Which plant shown aids in the conservation of coastlines?



14. The diagram shows a Queen Conch. Which part is indirectly responsible for its protection?



5. The diagram shows a generalized plant cell.



What is the function of the labelled structure?

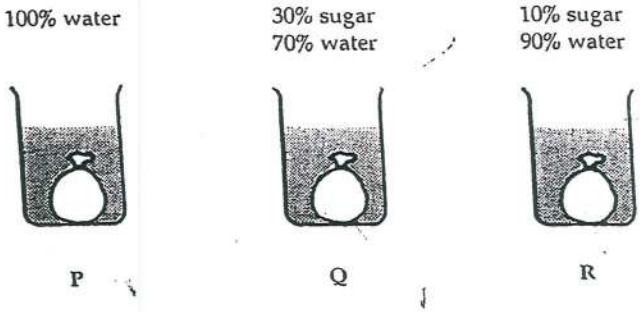
A contains the genetic material of the cell

B controls the substances that enter and leave the cell

C organelle where energy is released with the aid of oxygen

D organelle where the first stages of glucose manufacture occurs

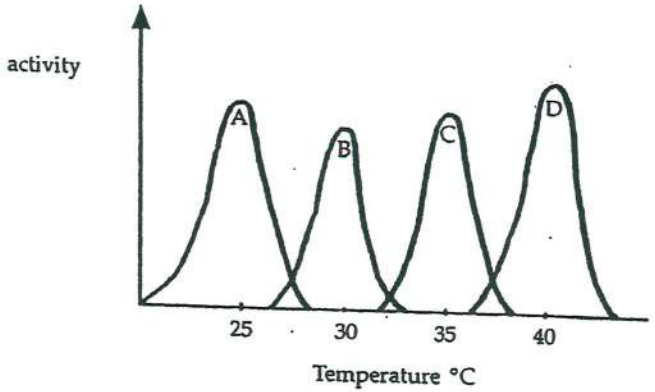
16. Three identical cellulose bags were filled with the same volume of a solution that was 10% sugar and 90% water. Each bag was then placed in one of three beakers, each containing solutions of different concentrations as shown.



What happens to the volume of the liquid in each bag after a few hours?

	P	Q	R
A	increases	decreases	decreases
B	increases	decreases	remains the same
C	decreases	increases	remains the same
D	remains the same	decreases	increases

17. The graphs show the rates of activity of four different enzymes. Which enzyme will work best in the human body?



18. Which nutrient is essential for the production of new cells and tissues for growth?

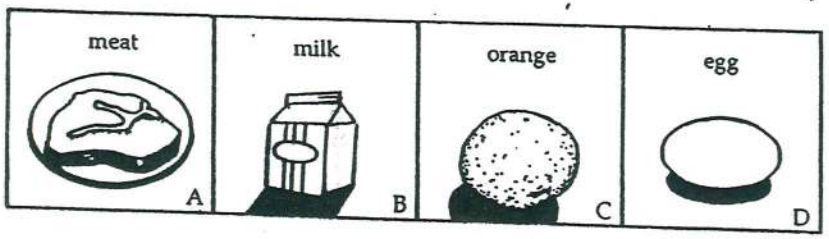
A carbohydrate

B fat

C protein

D water

19. Which food supplies most iron?



20. The approximate standardized energy values of the following food nutrients are:

1g of carbohydrate (as glucose) releases in the body about 16 kJ.

1g of protein releases in the body 17 kJ.

100g of maize (whole grain) contains: 70g carbohydrates, and 10g of protein.

How much energy is released from the carbohydrate and protein in the maize?

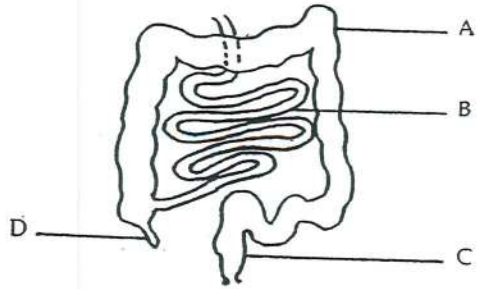
A 1,290 kJ

B 1,120 kJ

C 950 kJ

D 170 kJ

21. The diagram represents a part of the alimentary canal. In which part is most water absorbed?



22. Which process is represented by the equation shown?

$$\text{Carbon dioxide + water} \xrightarrow{\text{light}} \text{simple sugars + oxygen}$$

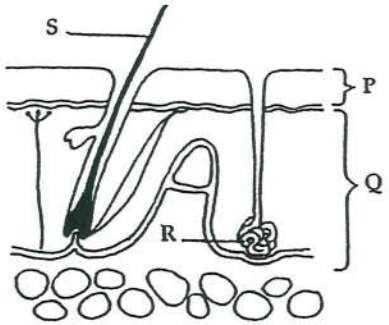
A decomposition

B photosynthesis

C respiration

D secretion

3. The diagram shows the structure of vertebrate skin.



Which two labelled structures are involved in adjusting internal temperature?

A P, R

B Q, S

C R, S

D S, P

34. What is released by the pancreas in response to high blood glucose?

A adrenaline

B insulin

C progesterone

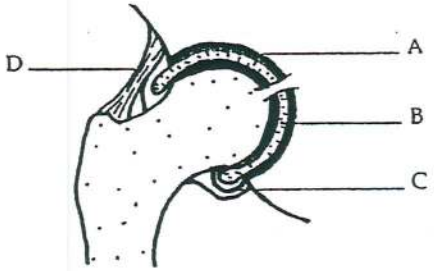
D thyroxine

35. The diagram shows an eye responding to a stimulus.

Which letter describes the response?

	stimulus	pupil	circular muscle
A	bright light	constricted	contracted
B	dim light	constricted	relaxed
C	fear	dilated	contracted
D	drug overdose	dilated	relaxed

36. The diagram represents a hip joint. Which label indicates a ligament?



37. Prolonged abuse of which drug may cause obesity?

A alcohol

B cocaine

C marijuana

D nicotine

38. The edible parts of an Irish potato plant are modified

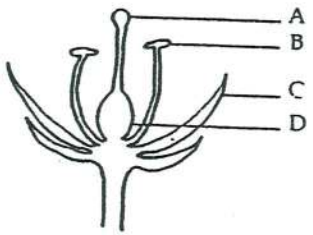
A fruits.

B leaves.

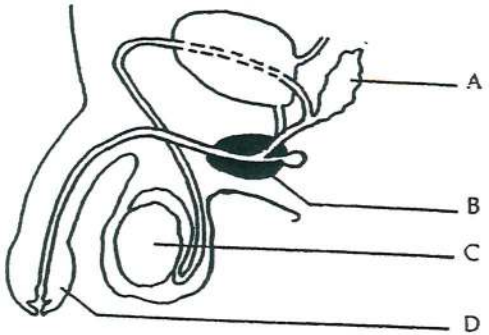
C roots.

D stems.

39. The diagram represents a section through a flower. Which letter indicates the area where the embryo is formed?



40. Which labelled structure produces the male gametes?



41. What is produced by the fusion of the nuclei of the male and female sex cells?

A embryo

B foetus

C gamete

D zygote

42. Which hormone aids in the growth and maintenance of the uterine lining?

A insulin

B oestrogen

C progesterone

D testosterone

43. The diagram represents a birth control device.

What is the function of this device?

A prevents fertilization of the egg

B prevents implantation of the egg

C prevents ovulation

D provides a tough coating for the egg

44. Which statement is true for syphilis?

A It causes a burning sensation during urination.

B It causes boils to form over the body.

C It is caused by bacteria.

D It is caused by viruses.

45. The availability of which factor causes germination in tropical, land habitats to be seasonal?

A light

B oxygen

C temperature

D water

46. Which term describes a body cell which has two of each type of chromosome?

A diploid

B haploid

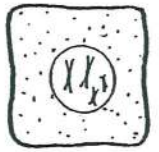
C polyploid

D triploid

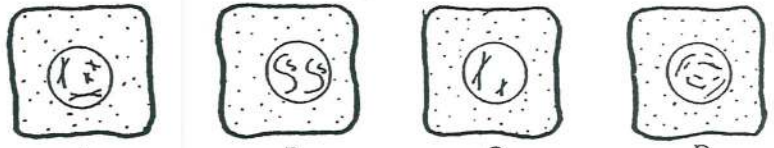
D 14

47. The diagrams show a parent cell and possible daughter cells. Which diagram represents a daughter cell produced by meiosis?

Parent Cell



Daughter Cells



A B C D

48. A plant that is homozygous dominant for red flowers is crossed with another that is heterozygous for red flowers. What percentage of the offspring would produce red flowers?

A 25

B 50

C 75

D 100

49. Bean seeds were planted in each of four sets of conditions as shown in the table. In which set of conditions will the growth rate of the germinating seeds be greatest?

	Temp °C	Moisture present	Air present
A	50	✗	✓
B	30	✓	✓
C	15	✓	✗
D	5	✓	✓

2002

1. Bats are nocturnal mammals that locate their prey by echo-location. They give off high frequency sounds that are reflected back to the bat's ears by surrounding objects.

What life characteristic enables bats to identify the position of their prey?

A. excretion

B. movement

C. nutrition

D. irritability

2. The table shows characteristics of four different vertebrates.

	R	S	T	U
Have scales	✓		✓	✓
Have hair		✓		
Aquatic		✓	✓	✓
Legs	✓			✓
Fins			✓	

Which TWO animals are most likely to be reptiles?

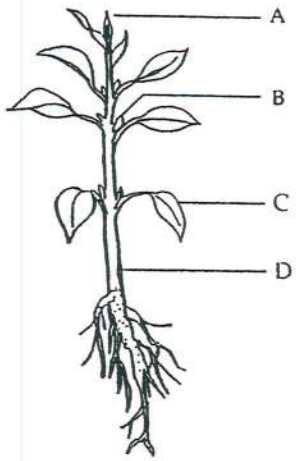
A. R and T

B. R and U

C. S and U

D. T and U

3. The diagram shows a typical flowering plant. Which structure would be responsible for its lateral growth?



4. On what do omnivores feed?

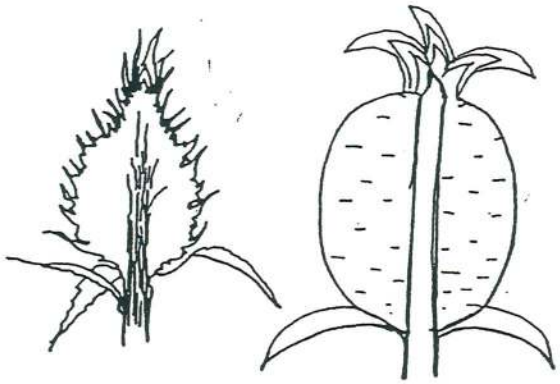
A. consumers only

B. its manufactured food

C. other consumers and producers

D. producers only

The diagrams show two varieties of pineapples.



P Q

By what process could variety Q have been produced from variety P?

A adding more fertilizer

B artificial selection

C natural selection

D providing adequate soil drainage

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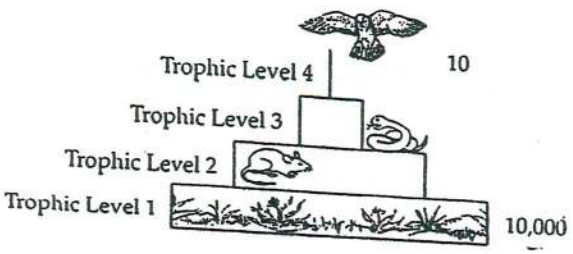
End

The amount of energy at trophic levels one and four in an ecosystem is indicated by the numbers. Only 10% of the energy is passed on to the next trophic level.



What is the total amount of energy in levels two and three?

A. 100

B. 110

C. 1,100

D. 10,010

Which process returns nitrogen gas to the atmosphere?

A. decomposition

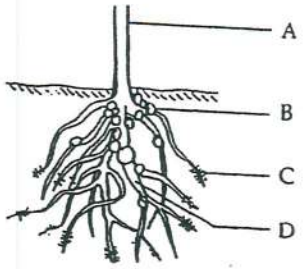
B. denitrification

C. nitrification

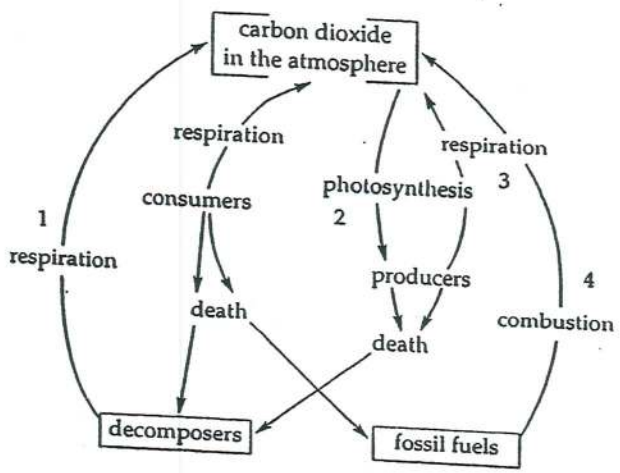
D. nitrogen fixation

7. The diagram shows the root system of the pigeon pea plant.

What structure contains microorganisms responsible for making nitrogen available to the plant?



8. The diagram shows the Carbon Cycle. What three processes all release a substance used by green plants to make food?



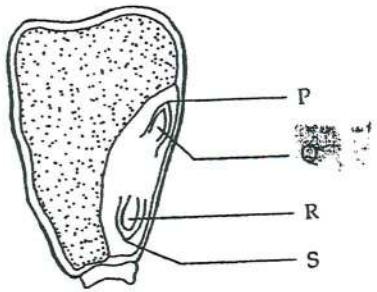
A. 1, 2, 4

B. 2, 3, 4

C. 3, 4, 1

D. 4, 3, 2

The diagram shows a longitudinal section through a maize grain.



In what order do the labelled structures emerge from the seed?

A. P, Q, R, S

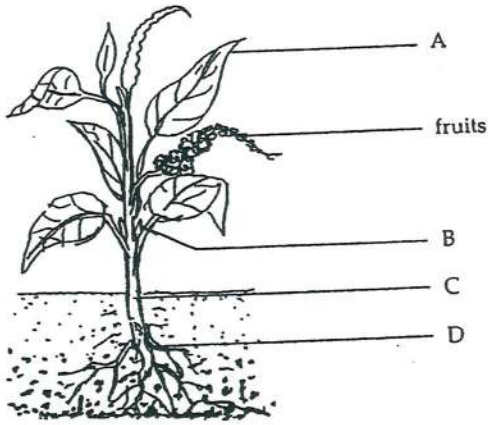
B. P, S, Q, R

C. S, R, P, Q

D. S, R, Q, P

10. The diagram shows a growing plant.

From which of the labelled structures do the fruits receive manufactured food for growth?



11. The table shows the relationship between number of animals and meat produced by cattle on four different farms. Which farm is the most productive?

	Animals kept on a farm	Number of acres	Meat produced in kg
A.	cows	14,960	3,864,000
B.	goats	200	72,727
C.	pigs	7,600	2,272,727
D.	sheep	2,600	682,000

12. How does the law preventing the harvesting of conchs without a well formed lip help to preserve the conch fishery?

A. The conchs which are harvested are the juvenile conchs.

B. Egg bearing female conchs can be identified and not captured.

C. Harvested conchs would have had the opportunity to reproduce.

D. This method would permit more male conchs than female conchs to be captured.

13. Which of the statements is true about solid waste in New Providence? It is mostly

A. collected by Government Agencies.

B. collected by private agencies.

C. containerized.

D. uncontainerized.

Which structure identifies the black mangrove plant?

A. breathing roots

B. prop roots

C. salt glands

D. shiny leaves

Which structure of the conch is used to identify the female?

A. claw

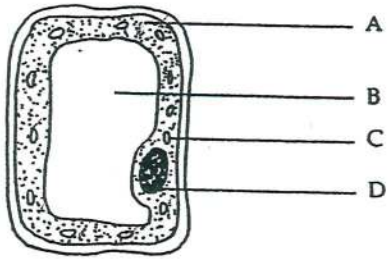
B. groove

C. mantle

D. mouth

5. The diagram shows a typical plant cell.

Which part of the cell is the place where photosynthesis occurs?



7. Which cell structure changes chemical energy to heat energy?

A. cytoplasm

B. mitochondrion

C. nucleus

D. vacuole

18. The diagrams show 4 body cells.

Which cell is able to shorten?

19. What materials are transported in xylem cells?

A. amino acids

B. carbon dioxide

C. fatty acids

D. mineral salts

20. The diagrams represent molecular structures of named substances.

Which characteristic of enzymes is shown?

A. Enzymes are not used up in a reaction.

B. Enzymes are pH specific.

C. Enzymes are substrate specific.

D. Enzymes are temperature specific.

21. What carbohydrate in the leaf cannot be broken down by human digestive enzymes?

A. cellulose

B. glucose

C. starch

D. sucrose

22. A nutrient analysis of a potato produced the following results:

Substance	Percentage composition by mass
starch and sugars	11.0
water	82.0
vitamins	0.3
other substances	6.7

What percentage of the total is made up of carbohydrates and vitamins?

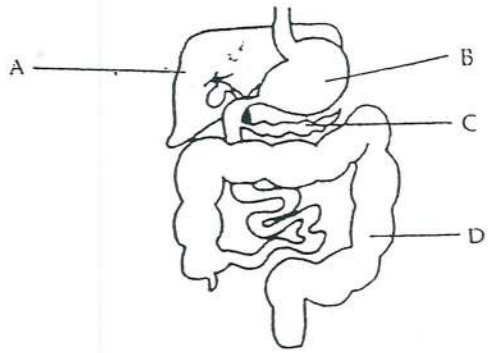
A. 11.0%

B. 11.3%

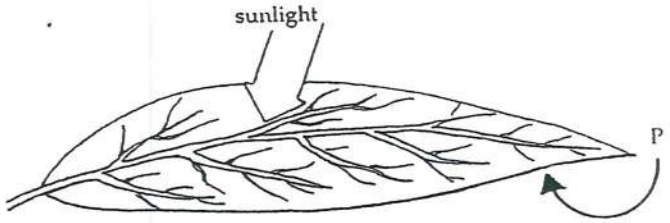
C. 82.0%

D. 82.3%

23. The diagram shows a part of the digestive system. Which structure produces a substance that lowers blood glucose after a meal?



24. The diagram shows a leaf in sunlight.



What gas is represented by arrow P?

A. carbon dioxide

B. nitrogen

C. oxygen

D. water vapour

25. The main reason for chewing is to make pieces of food

A. smaller.

B. softer.

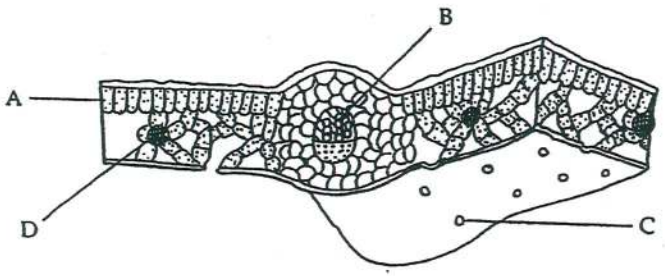
C. soluble.

D. tastier.

26. Which row correctly shows the events occurring in roots, stems and leaves as water moves through a plant?

	Roots	Stems	Leaves
A	absorb water and minerals	transport of water and minerals	loss of water vapour
B	diffusion of minerals	absorption of water	loss of water vapour
C	transport of water and minerals	absorption of water and minerals	loss of water vapour
D	transport of water and minerals	loss of water	diffusion of minerals

27. The diagram shows the internal structure of a leaf. Which structure allows transpiration to occur?



28. In which structure is sucrose transported in plants?

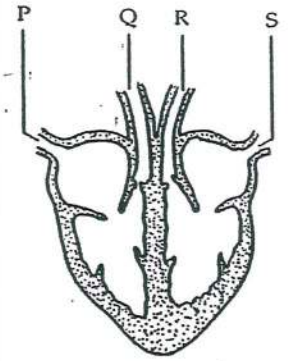
A. petioles

B. phloem

C. veins

D. xylem

29. The diagram shows the structure of the heart. Which structures transport deoxygenated blood?



A. P and Q

B. P and R

C. P and S

D. R and S

30. Which component of blood helps begin the formation of clots?

A. plasma

B. platelets

C. red blood cells

D. white blood cells

31. Which cells destroy invading bacteria in the body?

A. platelets

B. red blood cells

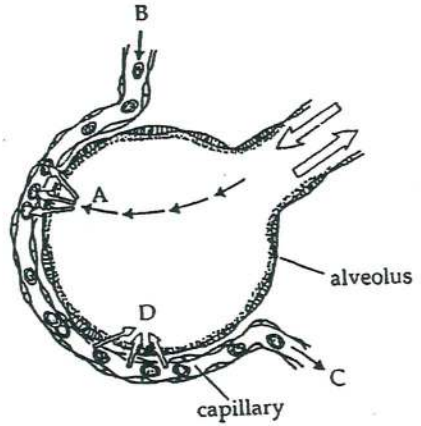
C. skin cells

D. white blood cells

32. Which row shows the composition of expired air?

	Oxygen %	Nitrogen %	Carbon Dioxide %	Water Vapour
A	10	79	4	saturated
B	16	79	4	saturated
C	20	79	1	none
D	21	79	0.04	varies

33. The diagram shows gaseous exchange in an alveolus. At which point is diffusion of most carbon dioxide likely to occur?



34. Which waste product is carried in the blood?

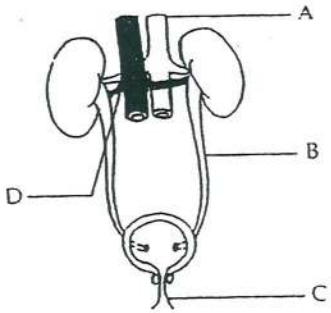
A. fibrin

B. sweat

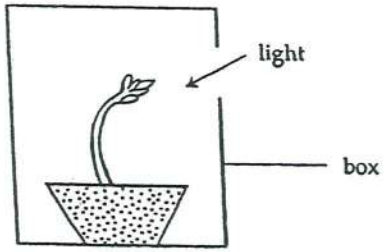
C. urea

D. urine

35. The diagram shows the urinary system. Which structure is responsible for the removal of deoxygenated blood from a kidney?



36. The diagram shows a seedling shoot growing towards the stimulus of light.



Why does the shoot grow towards the light?

A. Auxins decrease the growth of the cells in the darkness.

B. Auxins decrease the growth of the cells in the light.

C. Auxins increase the growth of the cells in the darkness.

D. Auxins increase the growth of the cells in the light.

37. Which is a characteristic of hormones?

A. They are biological catalysts.

B. They are chemical in nature.

C. They are electrical in nature.

D. They have a direct effect on organs.

38. Which part of the brain functions in maintaining balance and coordination of movement?

A. cerebellum

B. cerebrum

C. hypothalamus

D. medulla oblongata

39. Which sequence represents the pathway sound travels during hearing?

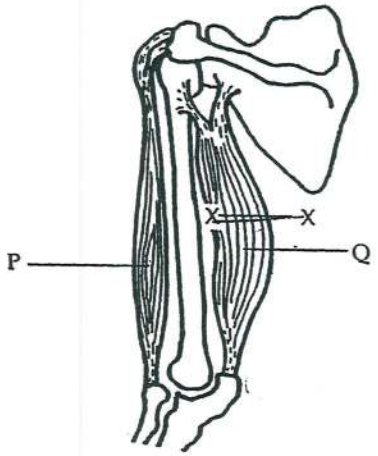
A. sound waves → outer ear → tympanic membrane → middle ear → round window → inner ear → brain

B. sound waves → oval window → inner ear → tympanic membrane → middle ear → brain

C. sound waves → oval window → inner ear → tympanic membrane → outer ear → brain

D. sound waves → tympanic membrane → middle ear → oval window → inner ear → brain

40. The diagram shows the joints in a human arm with two muscles P and Q.



What would be the effect of severing the muscle at X?

A. The elbow cannot be flexed.

B. The elbow cannot be extended.

C. The muscle P cannot contract.

D. The muscle P cannot relax.

41. Which natural method of asexual reproduction occurs in the Irish potato?

A. budding

B. marcotting

C. formation of spores

D. formation of tubers

42. Which agent is responsible for pollinating maize flowers?

A. birds

B. honey bees

C. water

D. wind

43. The diagram shows a flowering plant. The arrow represents the movement of pollen during pollination.

Which type of pollination is shown?

A. cross

B. individual

C. self

D. wind

44. The diagram shows an inflorescence.

What would be produced as a result of all the flowers being pollinated and fertilized?

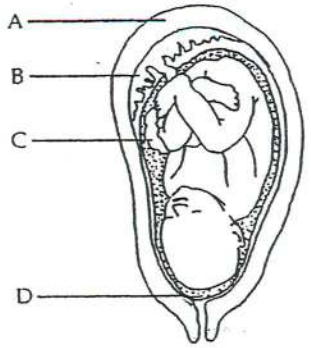
A. one fruit with six seeds

B. three fruits each with one seed

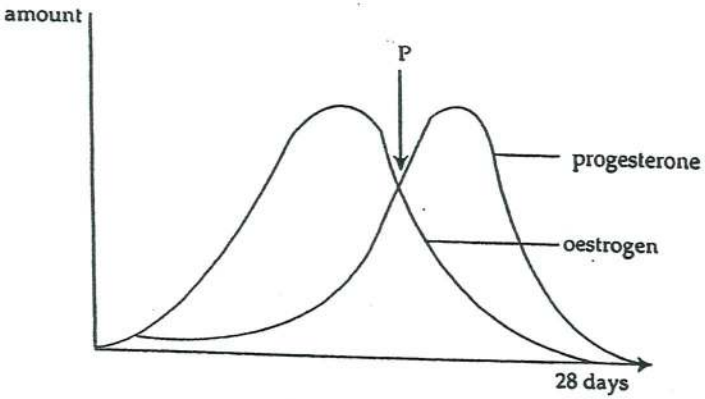
C. three fruits each with two seeds

D. three seeds and six fruits

45. The diagram shows a foetus in the uterus. Which structure is responsible for implantation?



46. The diagram shows the relative amount of oestrogen and progesterone present during the menstrual cycle.



Which statement is true when the hormone levels are as shown at P?

A. Ovulation has occurred.

B. The corpus luteum has disappeared.

C. The graafian follicle is forming.

D. The ovum is maturing.

47. The table shows the number of persons, on an island, who used each method of contraception over five years.

	1984	1985	1986	1987	1988
diaphragm	10	8	8	10	9
condom	10	80	130	140	150
spermicide	6	2	0	4	4
birth control pills	60	70	75	80	90

Which factor explains the figures for condoms?

A. decrease in availability of the pill

B. decrease in sexual activity

C. increase in cost of contraceptive devices

D. increase in AIDS awareness

48. Which sexually transmitted disease is treated with the use of penicillin?

A. AIDS

B. gonorrhea

C. herpes

D. syphilis

49. Which term describes two forms of a gene that codes for a particular trait?

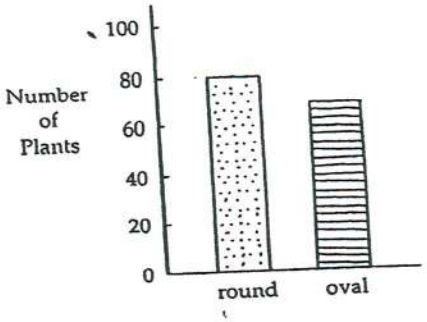
A. alleles

B. heterozygous

C. homozygous dominant

D. homozygous recessive

50. In key limes, the gene for round shape is completely dominant to the gene for oval shape. The seeds produced from cross pollination and fertilization of two plants, were planted. The number of plants in the second generation which produced each type of fruit is shown on the graph.



What were the genotypes of the parental plants?

A. both homozygous dominant

B. both homozygous recessive

C. heterozygous and homozygous dominant

D. heterozygous and homozygous recessive

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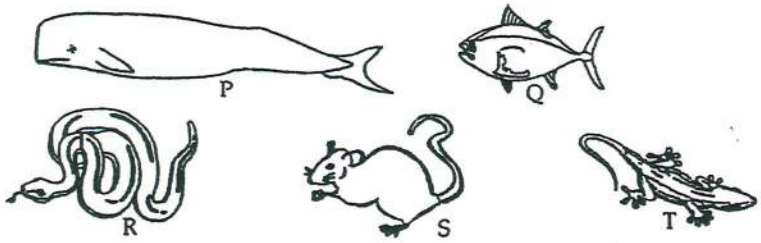
The diagram shows five animals.



Which organisms belong to the same class?

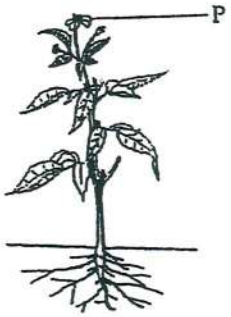
A. P and R

B. P and Q

C. R and S

D. R and T

2. The diagram shows a flowering plant.



For which characteristic of organisms is P mainly responsible?

A. excretion

B. irritability

C. nutrition

D. reproduction

3. The diagram shows a food chain.

decaying plant → termite → P → snake

Which organism would be represented by P?

A. frog

B. rabbit

C. racoon

D. snail

4. The diagram shows a food chain in which the plant plankton absorbed a poisonous substance.

plant plankton → juvenile fish → snapper → barracuda → shark

In which consumer would the greatest concentration of the poison be found?

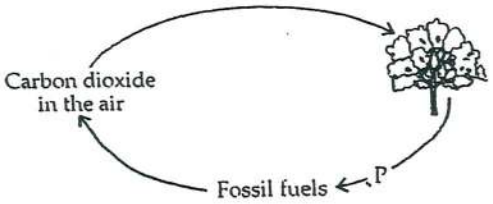
A. barracuda

B. juvenile fish

C. shark

D. snapper

5. The diagram shows a part of the carbon cycle.



Which process occurs at P?

A. combustion

B. fossilization

C. photosynthesis

D. respiration

6. Where is food stored in a leguminous seed?

A. cotyledon

B. plumule

C. radicle

D. testa

7. Which crop should a farmer plant in a nitrogen-poor soil?

A. carrots

B. cassava

C. pigeon peas

D. tomatoes

8. Which market is NOT used by subsistence farmers in The Bahamas ?

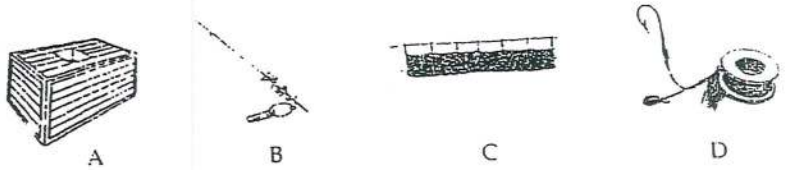
A. large hotels

B. mailboats

C. packing houses

D. roadside vendors

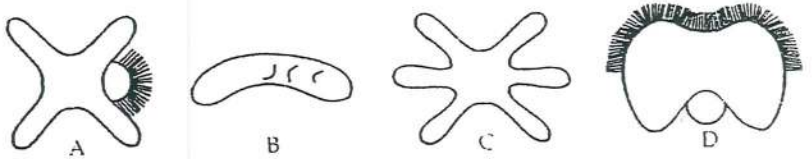
9. Which fishing gear is most commonly used in The Bahamas for capturing lobsters?



10. How would an oil spillage affect the light and oxygen available to corals and fish living on a coral reef?

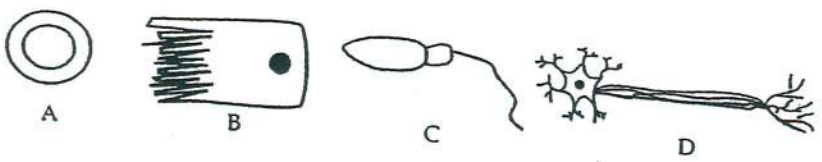
	available light	available oxygen
A.	increased	decreased
B.	decreased	decreased
C.	increased	increased
D.	decreased	increased

11. Which diagram shows the oldest larval stage of the conch?

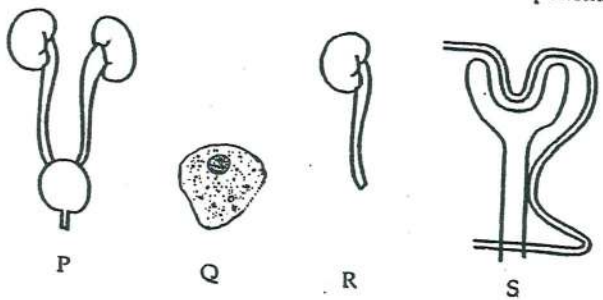


12. The diagram shows FOUR different cells .

Which cell is a gamete?



13. The diagram shows the urinary system and some of its components.



Which is the correct order of complexity?

A. P, Q, R, S

B. P, S, Q, R

C. Q, S, R, P

D. S, R, P, Q

14. Which structure limits the amount of water a plant cell can take in by osmosis?

A. cell membrane

B. cell wall

C. nucleus

D. vacuole

15. Most of the nitrogen in the human body is contained in

A. carbohydrates.

B. fats.

C. proteins.

D. water.

16. The table shows some of the constituents present in EQUAL quantities of FOUR foods.

Food	Sugar in g	Protein in g	Fat in g	Calcium in mg
Kidney	0	4.8	0.9	4
Jam	19.6	0.2	0	5
Milk	1.2	0.9	1.0	34
Peanuts	2.4	8.0	13.0	17

Which TWO foods provide the greatest amount of energy?

A. kidney and milk

B. jam and kidney

C. milk and peanuts

D. peanuts and jam

17. Why might cancer of the small intestine affect growth in a person? It might prevent

A. absorption.

B. assimilation.

C. egestion.

D. ingestion.

18. The diagram shows a potted plant.

Which compound is missing from the area labelled 'white'?

A. amino acid

B. carbohydrate

C. chlorophyll

D. fat

19. What effect does the loss of human incisor teeth have on feeding? It makes it difficult to

A. bite food.

B. crush food.

C. swallow food.

D. tear food.

20. Which is likely to increase both tooth decay and gum disease?

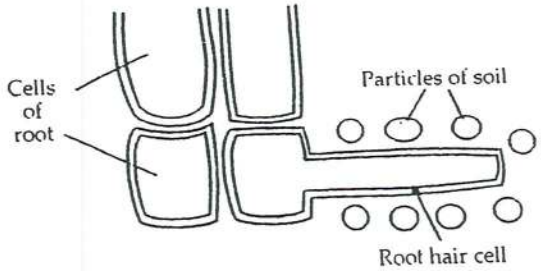
A. eating crisp vegetables after meals

B. eating food containing refined sugar

C. eating food with low sugar content

D. regular brushing of teeth

21. The drawing shows some root cells in soil.



Which feature of the root hair cell helps it to take in water faster?

A. dilute cell sap

B. increased surface area

C. smaller chloroplasts

D. thickened cell wall

22. Which of the leaf structures reduces water loss from the top of the leaf?

A. cuticle

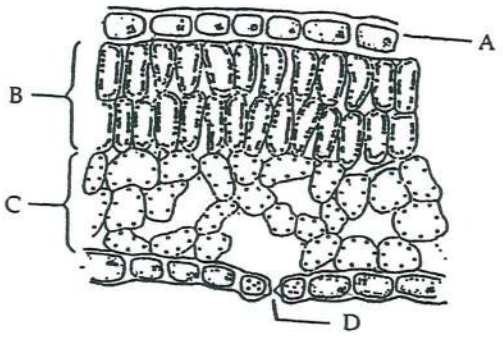
B. epidermis

C. guard cell

D. mesophyll

23. The diagram represents a cross section of a leaf.

Through which labelled part does carbon dioxide enter the leaf?



24. The diagram from a camping book suggests a simple way to collect drinking water.

Which process causes water to collect in a bag?

A. absorption

B. evaporation

C. sublimation

D. transpiration

25. Why would the stomata close during the day in a desert plant?

A. to increase water loss

B. to maintain temperature

C. to reduce light intensity

D. to reduce water loss

26. Which compound is moved by translocation in a plant?

A. cellulose

B. glucose

C. starch

D. sucrose

27. Why does the heart beat faster when you exercise?

A. Blood is diverted to inactive organs.

B. Food materials are changed and stored.

C. More urea needs to be removed by the kidneys

D. Muscle cells must release energy rapidly.

28. The table shows the pulse rate of a student in beats per minute taken while sitting.

Attempts	Pulse rate (beats/minute)
1	72
2	74
3	78
4	82
5	69

What is the average resting pulse rate of the student in beats per minute?

A. 71

B. 73

C. 75

D. 80

29. Which blood vessel allows food materials and gases to pass across its walls?

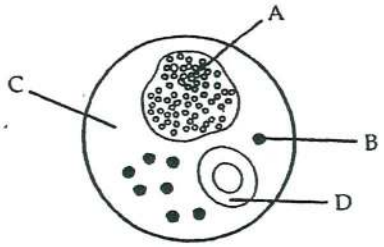
A. artery

B. capillary

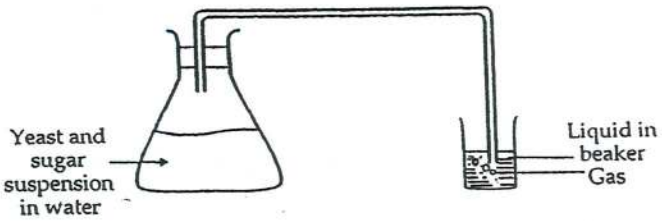
C. lacteal

D. vein

30. The diagram shows blood as it appears under the microscope. In which part is glucose transported ?



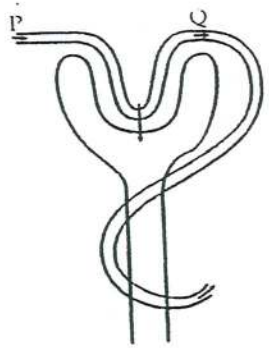
31. The diagram shows an experiment to identify the gas given off by respiring yeast in suspension.



Which best shows the liquid in the beaker and the gas bubbling through it?

	Gas	Liquid
A.	carbon dioxide	alcohol
B.	oxygen	alcohol
C.	carbon dioxide	lime water
D.	oxygen	lime water

32. The diagram is a simplified illustration of a portion of a nephron.



Which blood component is present in the same mass at points P and Q?

A. glucose

B. protein

C. urea

D. water

33. The maintenance of a constant internal environment is

A. absorption.

B. excretion.

C. homeostasis.

D. osmosis.

34. Which term describes the movement of an organism towards a stimulus?

A. meiosis

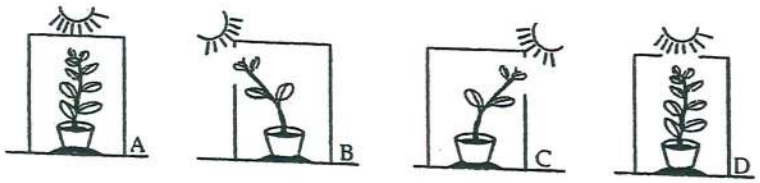
B. osmosis

C. plasmolysis

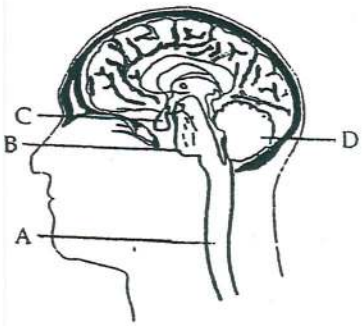
D. taxis

35. The diagrams show an investigation into the effect of the direction of light on the growth response of a plant.

Which plant is being used as a control?



36. Which label on the diagram of the brain shows the cerebellum?



37. Which substance controls plant growth?

A. adrenaline

B. auxin

C. fertilizer

D. insulin

38. Which term describes the integration of all activities in the human body?

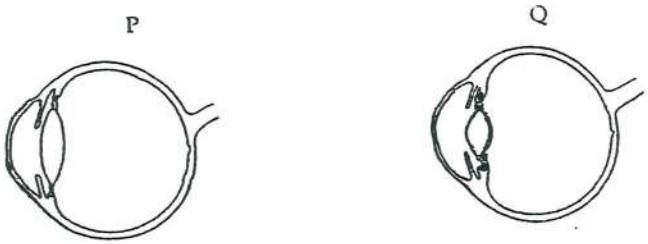
A. coordination

B. growth

C. metabolism

D. sensitivity

39. The diagrams show a section of part of the human eye when looking at an object in TWO different positions.



What has happened to cause the change from P to Q? The object has moved from

A. dark to light.

B. far to near.

C. light to near.

D. near to far.

40. Which drug is most quickly addictive?

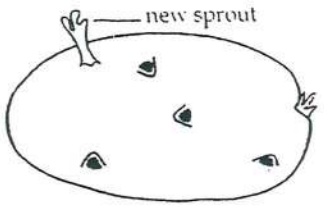
A. alcohol

B. cocaine

C. marijuana

D. nicotine

41. The drawing shows an Irish potato stem tuber.



Which type of reproduction is shown?

A. binary fission

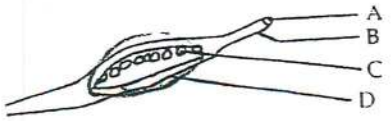
B. marcotting

C. sexual reproduction

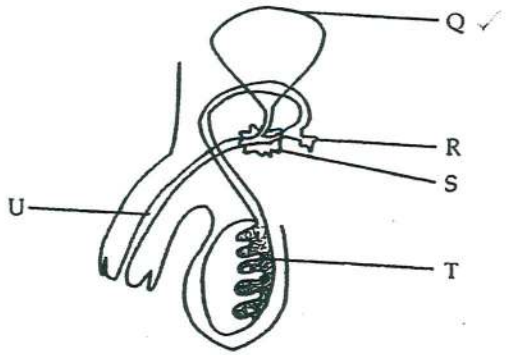
D. vegetative reproduction

42. The drawing shows a cross section of the pistil (carpel) of a poor man's orchid, *Bauhinia*.

Which labelled part will develop into the fruit?



43. The diagram shows the human male reproductive system.



Which of the structures contribute to the composition of semen?

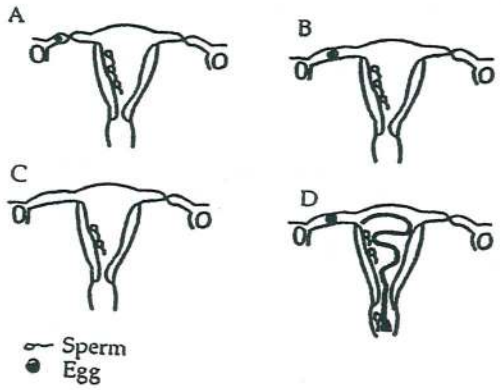
A. Q, R, T

B. Q, R, U

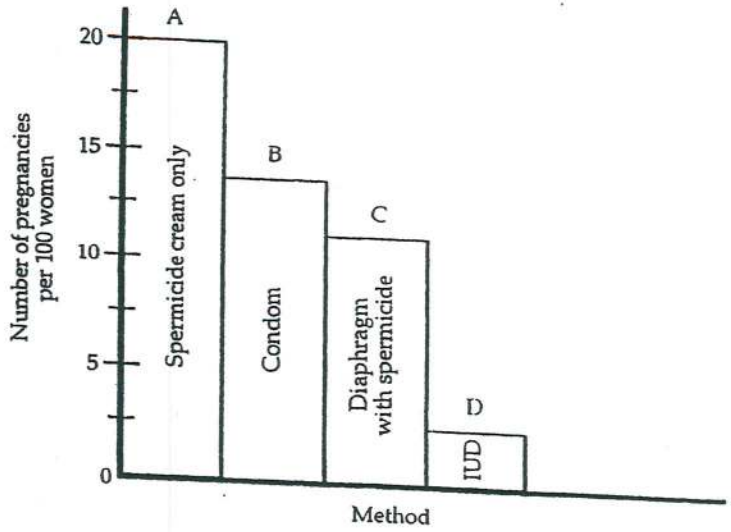
C. R, S, T

D. S, T, U

44. In which situation is fertilisation most likely to occur in a woman's body?



45. The graph shows the effectiveness of FOUR methods of contraception. Which method of contraception that includes a barrier method is the most effective?



46. Which of these is a sign or symptom of syphilis?

A. a particular kind of skin cancer

B. a burning sensation when urinating

C. a sore on or near the genital organs

D. a yellowish discharge from reproductive organs

47. Which environmental condition is NOT a requirement for germination of seeds?

A. oxygen

B. soil

C. warmth

D. water

48. Which type of cell division results in daughter cells with the haploid number of chromosomes?

A. budding

B. fission

C. meiosis

D. mitosis

49. The ability to roll the tongue is due to a dominant allele which can be represented by the letter T.

The Punnett square shows what happens when a non-roller is crossed with a roller.

	T	t
t	Tt	tt
t	Tt	

What is the genotype and phenotype of the offspring in the empty box?

	Genotype	Phenotype
A.	tt	roller
B.	Tt	roller
C.	Tt	non-roller
D.	tt	non-roller

50. Persons who have sickle cell trait have been shown to be much less likely to suffer from

A. AIDS.

B. anaemia.

C. cancer.

D. malaria.

2004

1. What is the characteristic of living organisms that involves an increase in size?

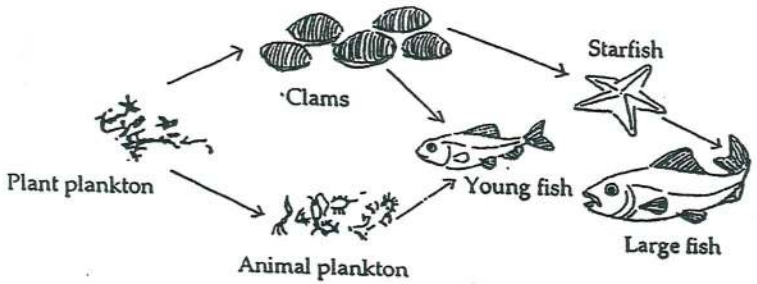
A excretion

B growth

C metabolism

D sessile

2. The diagram shows a food web.



What are the clams?

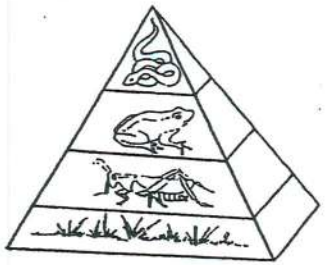
A decomposers

B primary consumers

C primary producers

D secondary consumers

3. The diagram shows a pyramid of energy in a field of grass. One thousand (1,000) joules of energy are absorbed by the grass.



Approximately how many joules of energy are available to the snakes?

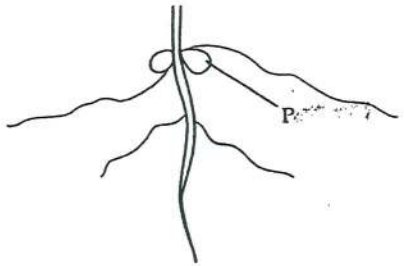
A 0.1 J

B 1 J

C 10 J

D 100 J

4. The diagram shows the roots of a leguminous plant.



What are the bacteria found in root nodules labelled P?

A decomposers

B denitrifying

C nitrifying

D nitrogen fixing

5. Decreased crop production could result from the over-use of

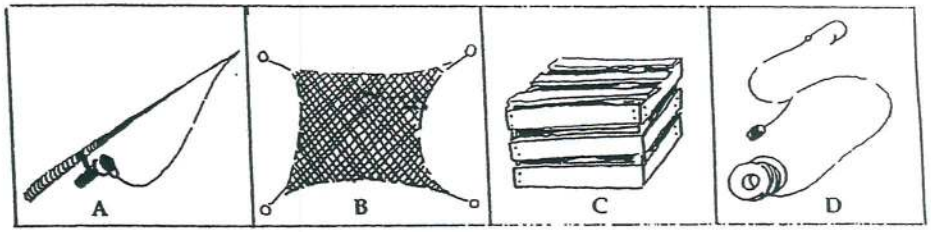
A fertilizers.

B fungicides.

C herbicides.

D insecticides.

6. Which fishing gear is most appropriate for capturing lobsters?



7. What term is used to describe materials that are broken down by natural means?

A biodegradable

B decomposers

C non-biodegradable

D renewable

8. What is the main source of pollution of the sea in The Bahamas?

A herbicides

B inorganic waste

C pesticides

D sewage

9. What is an adaptation of the black mangrove living in the mud?

A breathing roots

B germination on the plant

C prop roots

D salt glands

10. Limiting the amount of organisms that could be caught at a specific time of the year is

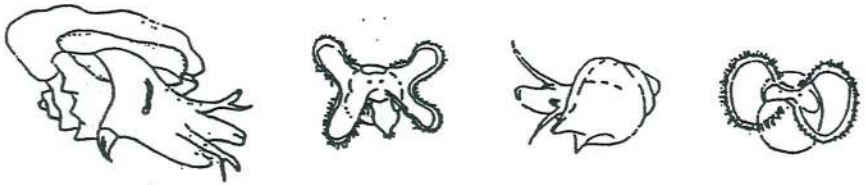
A conservation.

B diversification.

C homeostasis.

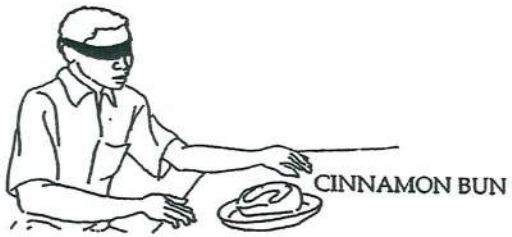
D variation.

11. Which is the youngest stage of development in the conch's life cycle?



A B C D

12. The diagram shows a blind-folded person with a stimulus placed before him.



Which of the following makes him aware of the cinnamon bun?

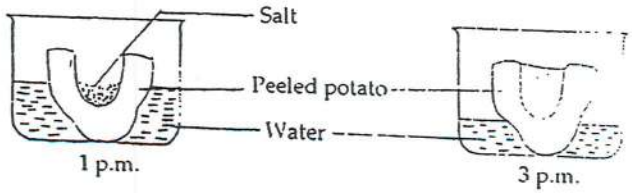
A diffusion

B osmosis

C pollution

D translocation

13. The diagrams show an experiment and its results.



Which process is demonstrated by the experiment?

A active uptake

B diffusion

C osmosis

D wilting

14. Pepsin causes the breakdown of proteins. On which food does pepsin have the highest level of activity?

A bread

B cake

C fish

D grits

15. At which pH would pepsin break down proteins in the stomach?

A 13

B 9

C 8

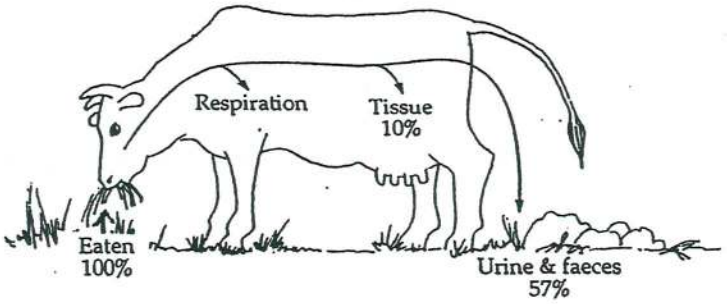
D 2

16. The table below shows **FOUR** chemicals with the foods they are used to test along with their results.

	Chemical	Food	Results
A	Benedict's solution	onion	brown
B	Iodine	milk	brown
C	Biuret solution (sodium hydroxide and copper sulphate solution)	egg white	purple
D	Ethanol	cooking oil	green

Which of the above indicates a positive test?

17. The diagram represents the amount of energy taken in as food by a cow and the percentage of the energy stored in tissues and lost as urine and faeces.



What percentage is used for respiration?

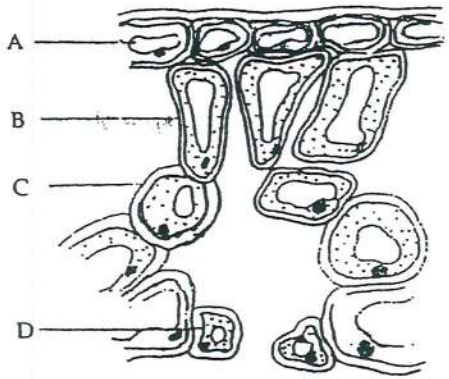
A 10%

B 33%

C 43%

D 67%

18. The diagram shows a part of a section of a leaf.
Where is the least amount of carbohydrates made during photosynthesis?



19. What is the process by which food is converted to living tissue?

A assimilation

B diffusion

C digestion

D emulsification

20. The mouth of an adult human contains twelve of which type of teeth?

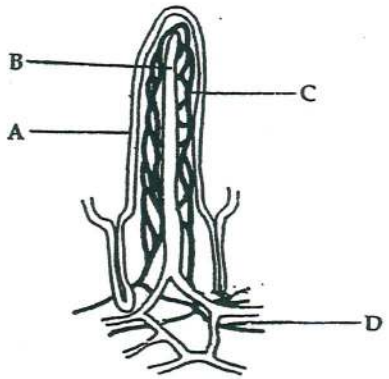
A canines

B incisors

C molars

D premolars

21. The diagram of a villus is shown below.
In which structure are fatty acids absorbed?



22. What is the process by which a plant gives off water vapour?

A absorption

B photosynthesis

C respiration

D transpiration

23. Blood rich in oxygen leaves the heart from the

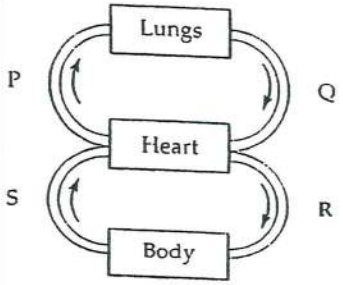
A left atrium.

B left ventricle.

C right atrium.

D right ventricle.

24. The diagram represents the human circulatory system



Which conditions describe the blood in R?

A	High pressure	high oxygen content	low carbon dioxide content
B	High pressure	low oxygen content	high carbon dioxide content
C	Low pressure	high oxygen content	low carbon dioxide content
D	Low pressure	low oxygen content	high carbon dioxide content

25. Which of the cells shown transports oxygen around the body?

A B C D

26. Which changes have taken place in the composition of the blood returning to the heart from the liver?

	Carbon dioxide	Urea
A	decreased	decreased
B	decreased	increased
C	increased	increased
D	increased	decreased

27. The table shows the random heartbeat rates of a person when excited and also at rest.

readings	1	2	3	4	5	6
heartbeats per minute	71	103	102	72	104	70

What is the average heartbeat rate while the person was resting?

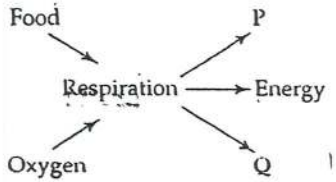
A 103

B 92

C 81

D 71

28. The diagram gives an outline of respiration.



What do the arrows P and Q represent?

A carbon dioxide and alcohol

B carbon dioxide and water

C glucose and carbon dioxide

D water and oxygen

29. What are the tubes that connect the kidneys with the urinary bladder?

A renal veins

B ureters

C urethras

D urinary tubules

30. The lactic acid concentration in the blood of an athlete was 20 mg/100 cm^3 blood before exercise. After a ten minutes exercise period the lactic acid concentration increased to 70 mg/100 cm^3 blood.
What is the most likely effect on the athlete of increasing lactic acid concentration? It causes him to

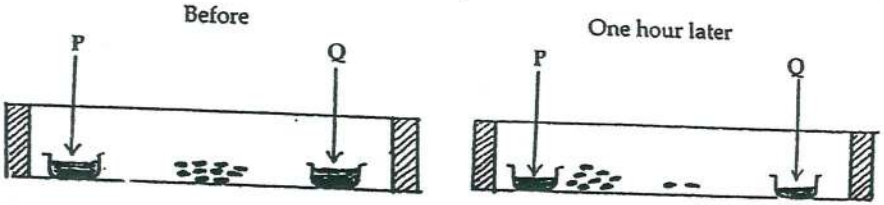
A grow tired quickly

B grow tired slowly

C run faster

D run longer

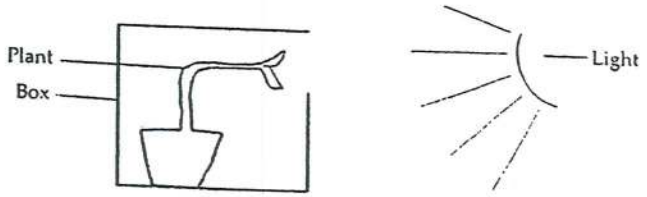
31. Ten woodlice were placed in a choice chamber as shown in the first diagram. The second diagram shows the experiment one hour later.



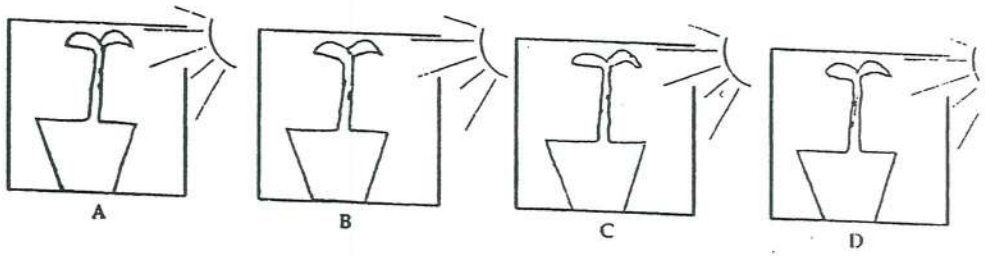
What may be the contents of P and Q?

	P	Q
A	calcium chloride	calcium chloride
B	calcium chloride	water
C	water	calcium chloride
D	water	water

32. The diagram shows a seedling exposed to light from one side.



Where would the growth hormone (shown as spots) have been concentrated in an earlier stage?



33. Which combination of responses results from stimulation of the adrenal medulla?

A decreased breathing rate / hollowness in the stomach

B persons moves slowly / need to urinate

C pupil dilates / increased heart beat

D skin becomes flushed / weakness in the muscles

34. An insulin taking diabetic was asked by his doctor to travel with candy or chocolate. The reason for this is:

A A diabetic does not have sufficient glucose in his blood.

B A diabetic has too much glucose in his blood.

C A diabetic might give himself an overdose of insulin.

D A diabetic might give himself an underdose of insulin.

35. A hormone

A forms thread-like structures.

B is a chemical messenger.

C is an electrical messenger.

D is released directly to the target organ.

36. Which feature of the human brain makes it suitable for coordination (integration)?

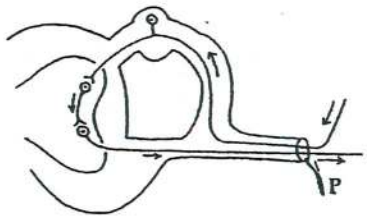
A It has few neurons.

B It has grey matter.

C It has many capillaries.

D It has many synapses.

37. The diagram shows a part of the spinal cord.



What type of nerve is shown at P?

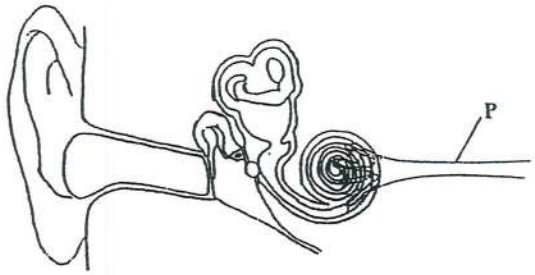
A cranial

B mixed

C motor

D sensory

38. The diagram shows a portion of the human ear.



What is the structure labelled P?

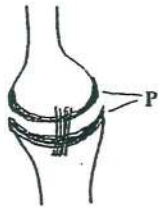
A auditory nerve

B optic nerve

C sciatic nerve

D spinal nerve

39. The diagram shows a synovial joint.



What is the function of P?

A connects a muscle to a bone

B connects one bone to another

C reduces friction between the bones

D provides nutrients

3. Plants usually take in water from the soil by

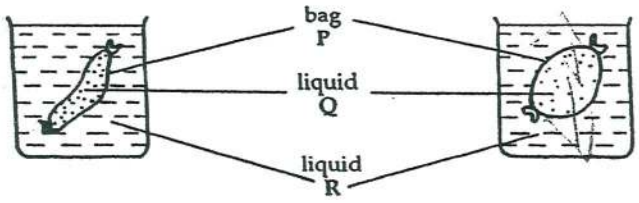
A active transport.

B capillary action.

C osmosis.

D transpiration.

14. The diagram represent an experiment set up to show osmosis.



start of experiment end of experiment

Which statements about Q and R are correct?

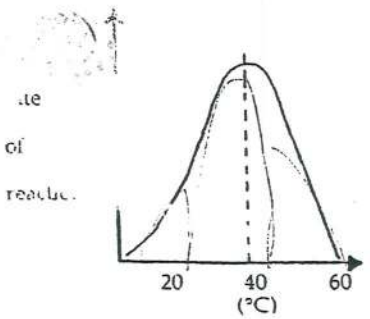
A Q and R are both distilled water

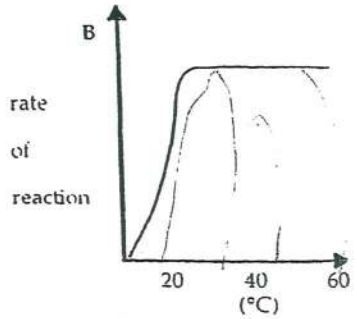
B Q and R are both concentrated sucrose solution.

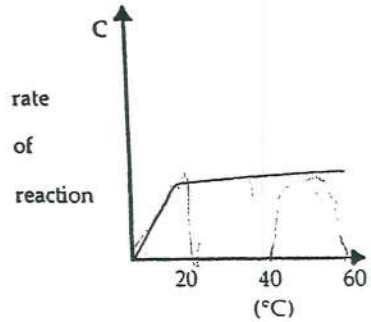
C Q is concentrated sucrose solution and R is distilled water.

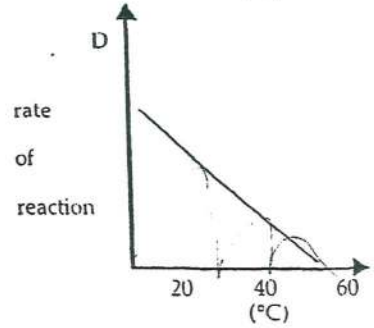
D Q is dilute sucrose and R is concentrated sucrose solution.

15. Which of the graphs shows the correct relationship between an enzyme controlled reaction and temperature?









16. The table of results shows the final colour observed at the end of a food test investigation of four different foods.

	Food A	Food B	Food C	Food D
Benedict's Test	orange	blue	blue	orange
Iodine Test	black	black	yellow/brown	black
Biuret Test	blue	blue	purple	purple

Which food contains proteins only?

A food A

B food B

C food C

D food D

17. The table lists the daily value of various nutrients (daily value expresses what percentage of calories should come from certain nutrients).

Nutrient	Daily Value
Carbohydrates	60%
Fat	30%
Protein	10%

Which percentage of the calories comes from food that contains carbon, hydrogen and oxygen only?

A 10

B 30

C 70

D 90

18. Which nutrient is needed for the growth and repair of worn-out body cells?

A carbohydrates

B fats

C minerals

D proteins

19. The table shows the nutrients present in equal quantities of four foods.

Food	Starch (g)	Proteins (g)	Fats (g)	Water (g)
Potato	15	3.8	0	25
Potato chips	15	4.0	5	15
Milk	1.3	0.9	1	95
Peanuts	2.4	8.0	13	25

Which TWO foods provide the greatest amount of energy?

A milk and peanuts

B potato and milk

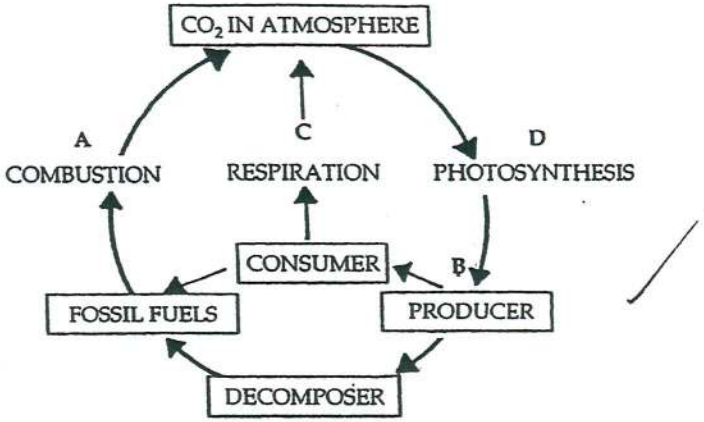
C potato and peanuts

D potato chips and peanuts

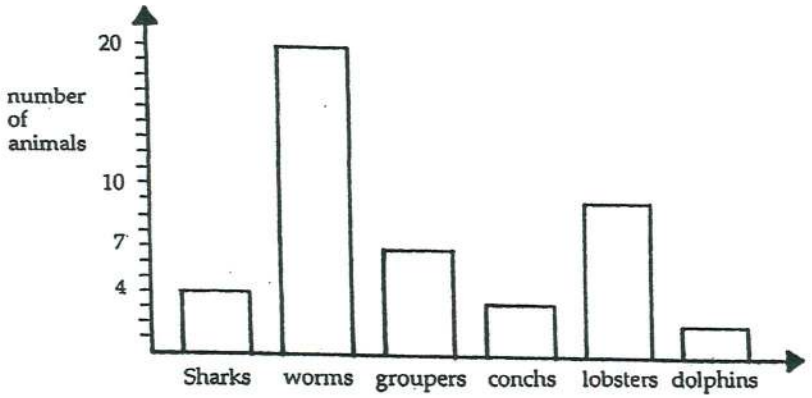
[Turn over

4. The diagram shows the carbon cycle.

In which process is carbon dioxide converted into organic compounds?



5. The bar chart shows the number of different types of organisms on a small coral reef.



How many vertebrates are on the reef?

A 4

B 7

C 13

D 20

6. The chart shows the potential yield and actual yield of Jew fish in two fishing areas.

Area	Potential yield (tons)	Actual yield (tons)
Little Bahama Bank	43	5.6
Great Bahama Bank	14	10.0

What is the highest percentage catch of either of the two fishing areas?

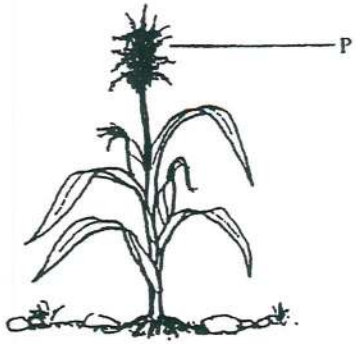
A 13.02

B 32.56

C 71.43

D 178.57

7. The diagram shows a maize plant.



What is the effect of removing the part labelled P?

A decreases the chance of insect-aided cross-pollination

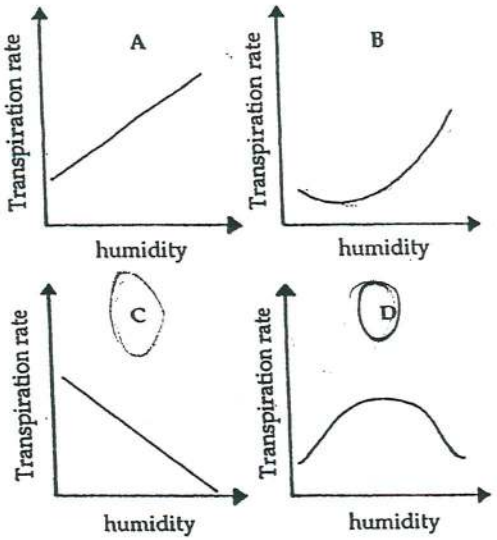
B increases the chance of insect-aided self-pollination

C decreases the chance of wind-aided self-pollination

D increases the chance of wind-aided cross-pollination

[Turn over

20. Which graph shows the effect of humidity on the transpiration rate of a plant?



21. Why would a farmer transplant his seedlings in the evening rather than at midday?

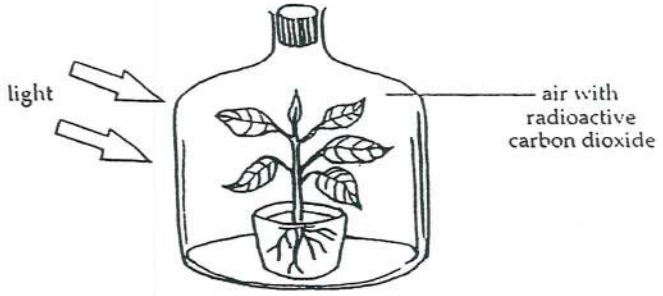
A Plant systems stop working in the evening.

B The plant absorbs less water in the evening.

C The soil holds more water in the evening.

D Transpiration is less in the evening.

22. Radioactive carbon dioxide was pumped into the bell jar shown.



After one hour, thin slices were cut from the plant's stem and placed on photographic film. Some parts became black due to radioactivity.

Which structures became black?

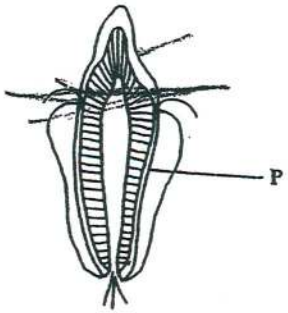
A intercellular spaces

B phloem tubes

C stomata

D xylem vessels

23. The diagram shows a section through a canine tooth.



What is the structure labelled P?

A cementum

B enamel

C nerve

D root

24. Food moves through the alimentary canal as a result of the contraction of its muscles.

Which process is shown in the tube?

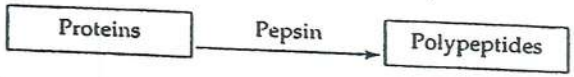
A absorption

B assimilation

C digestion

D peristalsis

25. The diagram represents one stage in the digestion of protein.



Which conditions must be present for the reaction to proceed efficiently?

A Amino acids must be present.

B Bile must be present.

C Pancreatic juice must be secreted.

D The pH must be between 1 and 2.

26. The milky-white appearance of lacteals (lymph vessels in villi) after a meal is mostly due to

A absorption.

B accumulation of enzymes.

C large amounts of digested fats.

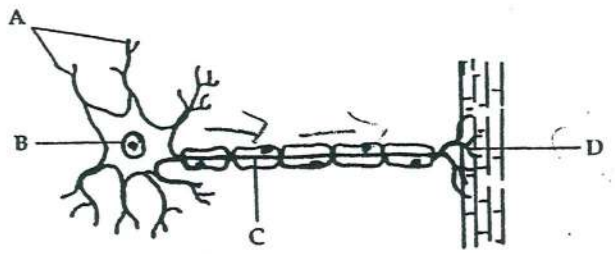
D storage of white blood cells.

[Turn over

27. The diagram shows a part of the human digestive system.

1

37. This drawing represents an efferent (motor) neuron.



Which part releases a chemical that transmits impulses to the muscle fibres?

38. Which organ has a group of receptor cells that respond to light?

A ear

B eye

C nose

D tongue

39. What are bands of tissue that connect the bones to each other at a moveable joint?

A cartilage

B ligaments

C muscles

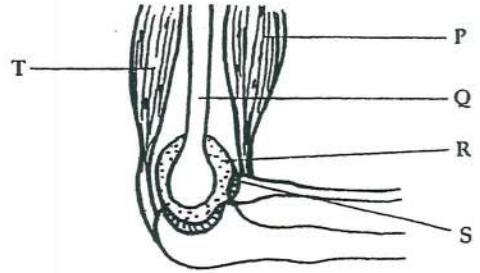
D tendons

P.50

29. The diagram shows the components of human blood.

Which structure is most important in blood clotting?

40. The diagram shows a section through an elbow joint.



Which TWO structures work antagonistically?

A P and O

B R and P

C P and T

D S and T

41. Which organ breaks down alcohol in the body?

A brain

B kidney

C liver

D stomach

42. Which drug is a sedative?

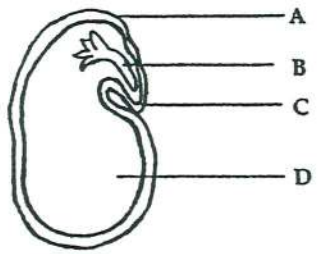
A alcohol

B cocaine

C marijuana

D nicotine

3. The diagram shows the seed structure of a dicotyledon.



Which structure stores most of the food used in germination?

44. Marcotting is a form of

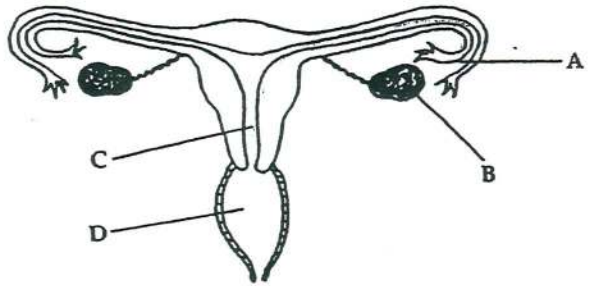
A asexual reproduction.

B cross-pollination.

C self-pollination.

D sexual reproduction.

45. The diagram shows the female reproductive system.



Where is the probable location of the egg 2 days after ovulation?

46. What is the function of progesterone in the body?

A development of the ovum

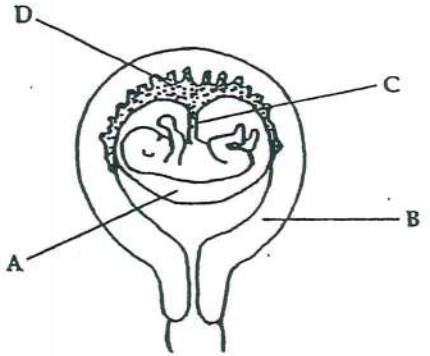
B development of sexual characteristics

C stimulation of uterine contractions

D thickening of the uterine lining

47. The diagram shows a foetus 14 weeks after the beginning of pregnancy.

Which labelled part acts as a shock absorber and protects the foetus from external injury?



48. Sickle cell anaemia is an advantage in an area with a high incidence of malaria because:

A abnormal red blood cells are not attacked by the malarial parasite.

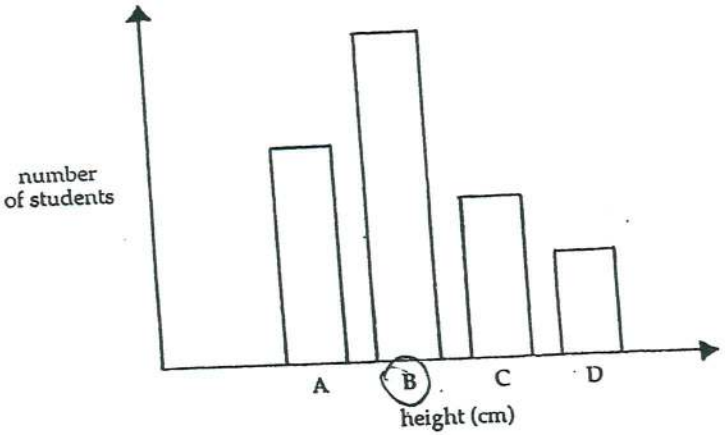
B abnormal red blood cells contain more iron to make haemoglobin.

C normal red blood cells are less likely to be attacked by the malarial parasite.

D normal red blood cells carry less oxygen from the lungs to the body organs.

[Turn over

49. The bar chart shows the number of students in four different height ranges. Which part of the bar chart shows the tallest students?



50. In a cross between a tall pigeon pea plant and a short pigeon pea plant, 100 plants were produced, 50 of which were tall and 50 were short. T represents the allele for tallness and t the allele for shortness. What are the genotypes of the parent plants?

A TT, TT

B TT, Tt

C Tt, Tt

D Tt, tt

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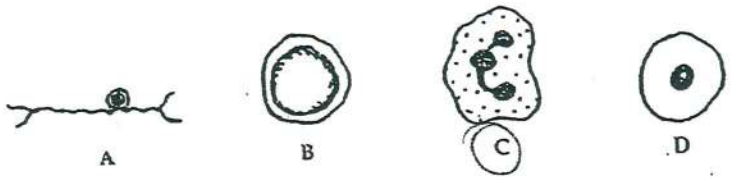
End]

11. The diagrams show different kinds of animal cells.

Which cell defends the body against harmful microorganisms?



12. Which cell organelle is large in plant cells but is small and temporary in animal cells?

A chloroplast

B mitochondrion

C nucleus

D vacuole

13. Which cells have a cell wall and cell membrane?

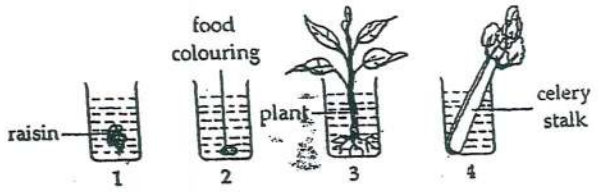
A palisade, muscle, liver

B palisade, phloem, root hair

C erythrocyte, phloem, root hair

D erythrocyte, muscle, liver

14. The diagrams show FOUR situations in which diffusion and osmosis are taking place. In which situation is osmosis taking place?



A 1, 2, 3

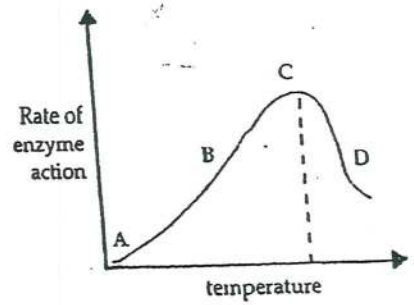
B 1, 3, 4

C 2, 3, 4

D 2, 4, 1

15. The graph shows the effect of temperature on enzyme action.

Which letter indicates that the enzyme is denatured?

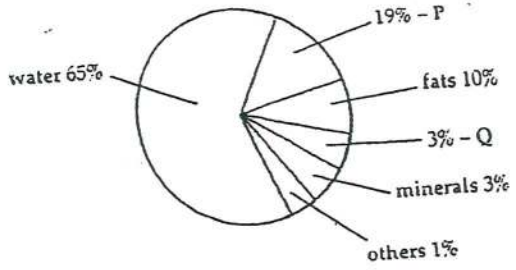


16. The chart shows some information about the diets of FOUR different individuals – A, B, C and D. Which person is most likely to suffer from rickets and develop scurvy?

Intake of nutrients in diet

Persons		Iron	Vitamin A	Vitamin B	Vitamin C	Vitamin D
A		✓		✓	✓	✓
B			✓			✓
C		✓	✓	✓		
D			✓	✓	✓	

17. The pie-chart shows composition of the human body.



What are P and Q?		
	P	Q
A	carbohydrates	proteins
B	carbohydrates	vitamins
C	proteins	carbohydrates
D	proteins	vitamins

18. Which of the following do proteins ...

A amino acids

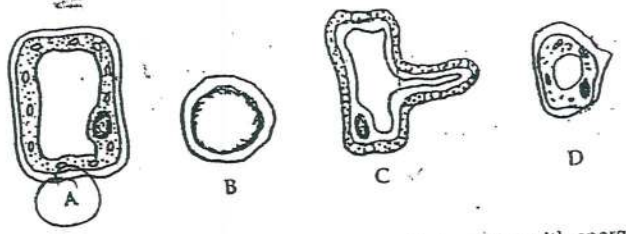
B fatty acids

C glucose

D maltose

19. The diagrams are of different types of plant cells.

Which cell is the chief food making cell in the plant?



20. The table contains the items in Mary's daily breakfast with energy value in kilojoules for each item.

Daily Breakfast	Energy Value (kJ)
2 boiled eggs	700
2 slices of bread	1 000
1 cup of tea with milk	25
sugar in tea	300

Mary is diagnosed with diabetes and is required to eat only one quarter of the carbohydrates. How many kJs will she consume for breakfast if she abides by the recommendations?

A 1 700

B 1 275

C 1 050

2006

1. The release of energy from food is known as

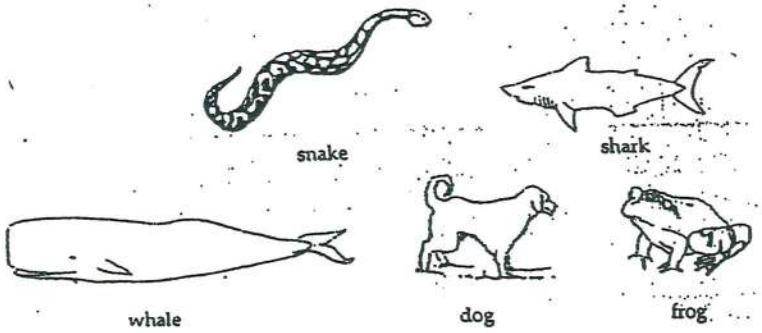
   A breathing.

   B growth.

   C reproduction.

   D respiration.

2. The diagram shows five animals. Which TWO animals are in the same class?



   A snake and frog

   B shark and whale

   C dog and whale

   D snake and shark

3. An animal species with a diaphragm can be expected to have

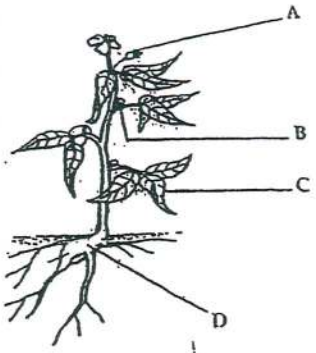
   A feathers.

   B gills.

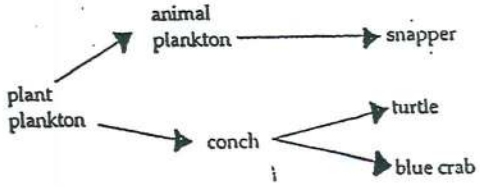
   C lungs.

   D scales.

4. The diagram shows a flowering plant. Which structure plays a part in sexual reproduction?



5. The diagram shows part of an aquatic food web.



The niche occupied by the conch in the food web is a

   A decomposer.

   B primary consumer.

   C primary producer.

   D secondary consumer.

6. Which term is used to describe organisms such as bacteria, fungi and detritivores?

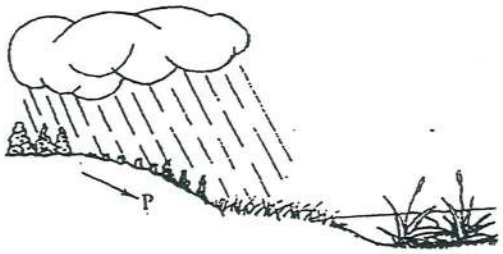
A carnivores

B decomposers

C parasites

D scavengers

7. The diagram shows a pond.



What term is used to describe P?

A fertilizer

B precipitation

C runoff

D sediment

8. Small boats, individually owned vessels, land about 80% of the fish caught locally. In one year 825,210 lbs of fish were caught in Grand Bahama. How many pounds of fish were caught by small boats?

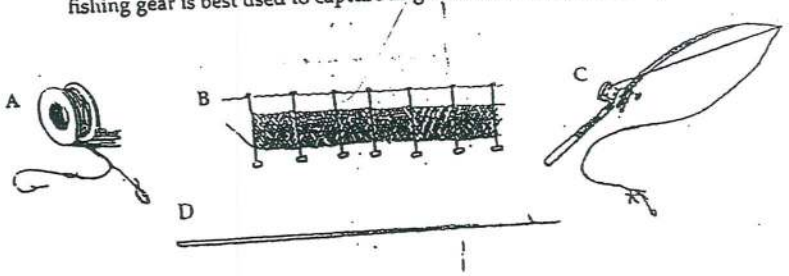
A 680,000

B 660,000

C 750,000

D 800,000

9. The diagrams show FOUR types of fishing gear used in The Bahamas. Which fishing gear is best used to capture large numbers of fish in the open sea?



10. The diagram shows a red mangrove plant.

How are the roots an adaptation to living in the mangrove swamp?

A absorb oxygen from the mud

B allow germination to take place

C extract oxygen from the air

D stabilize the plant in the mud

21. What is the primary function of the large intestine?

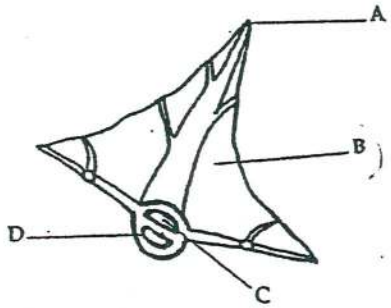
A absorption of glucose and other soluble substances

B absorption of water from undigested food

C assimilation of substances to form body structures

D ingestion of food materials

22. The diagram shows a section through a leaf. Which labelled structure is the xylem?



23. In addition to light and chlorophyll, photosynthesis requires

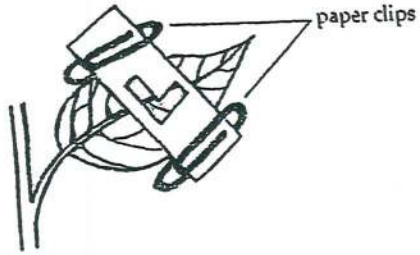
A oxygen and carbon dioxide.

B carbon dioxide and water.

C water and sugars.

D sugars and oxygen.

24. A potted plant was destarched before being left in bright sunlight for six hours. One leaf was treated as in the diagram.



The leaf was tested for starch after two days.

What colour would the L-shape section be after testing for starch?

A blue black

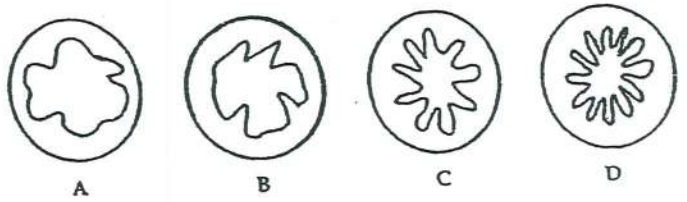
B brown

C green

D variegated

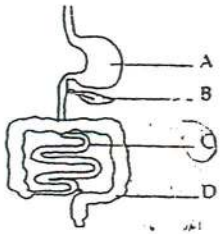
25. The diagram shows four models of cross-sections of the small intestine.

In which model would absorption take place the fastest?



26. The diagram shows a part of the human digestive system.

In which section are digested materials absorbed?



27. An enzyme that breaks the chemical bonds in starch, producing sugar, is

A amylase.

B lipase.

C maltase.

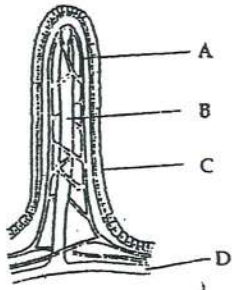
D pepsin.

28. An experiment was set up to investigate the rate of reaction of the enzyme pepsin on egg white (albumen). Four test tubes were set up.

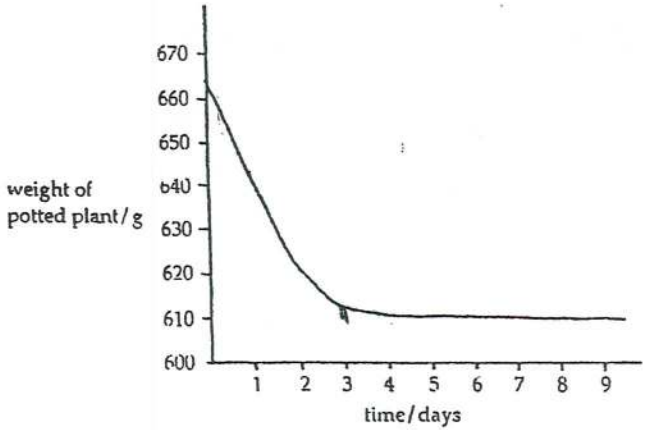
Tube	Contents	Conditions
A	egg white and boiled pepsin	alkaline, 37 °C
B	egg white and unboiled pepsin	alkaline, 37 °C
C	egg white and unboiled pepsin	acidic, 37 °C
D	egg white and boiled pepsin	acidic, 37 °C

If the digested product is clear, which tube contents would become clear first?

29 The diagram represents a villus. In which labelled part would the main products from the digestion of a lean steak be absorbed?



30. The graph shows the results of an experiment to observe the rate of transpiration of a potted plant using the weight loss method.



When was the rate of transpiration fastest?

A Day 1

B Day 2

C Day 3

D Day 4

31. The muscles of the left ventricle are thickest so as to

A accommodate the valves.

B hold more blood.

C produce greatest force or pressure.

D stop antibodies from entering the blood.

32. Carbon monoxide is one of the gases present in cigarette smoke. What is the effect of this gas on the body?

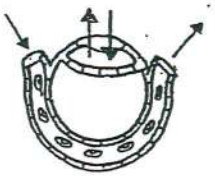
A Causes the development of lung cancer.

B Raises blood pressure.

C Reduces smoker's ability to do strenuous exercise.

D Reduces surface area for gas exchange.

33. The diagram shows the external view of an alveolus with a capillary surrounding it.



capillary

The presence of blood vessels surrounding the alveolus provides

A easy diffusion of respiratory gases.

B fuel for the alveolus.

C more thickness to alveolus.

D ready access of air to the lungs.

34. During strenuous physical exercise, sugar is broken down to produce

A glucose.

B lactic acid.

C glycogen.

D ethanol.

35. What changes occur when a mammal exhales?

A Muscles in bronchioles contract.

B The diaphragm becomes dome shaped.

C The epiglottis covers the oesophagus opening.

D The volume of the chest increases.

36. A patient's urine contains high levels of proteins.

Which organ of the body is most likely not functioning properly?

A bladder

B lung

C kidney

D pancreas

37. The maintenance of a constant internal environment within a human is

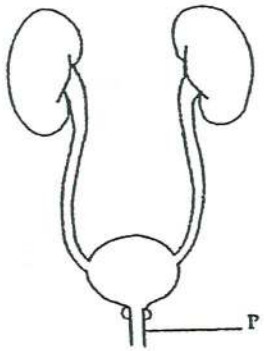
A excretion.

B homeostasis.

C poikilothermic.

D respiration.

38 The diagram shows the urinary system in man.



The structure P which takes urine from the bladder to the outside in humans is the

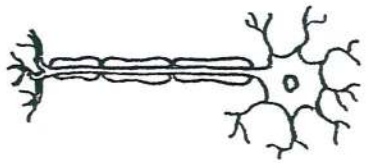
A cloaca.

B ureter.

C urethra.

D tubule.

39. This cell transmits information to an effector.



The diagram above is a

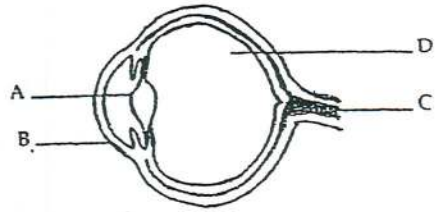
A mixed neurone.

B motor neurone.

C relay neurone.

D sensory neurone.

40. The diagram shows the cross-section of an eye. Which labelled structure bends light the most?



41. Which hormone lowers the level of sugar in the body?

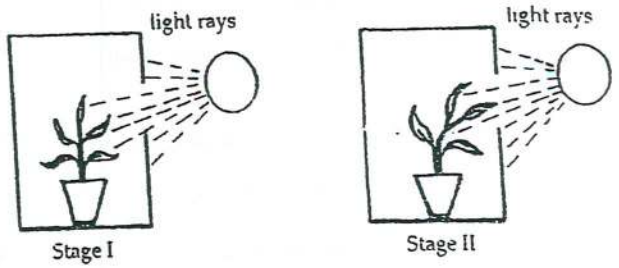
A adrenaline

B insulin

C oestrogen

D progesterone

42. What process is shown in stage II of the diagrams below?



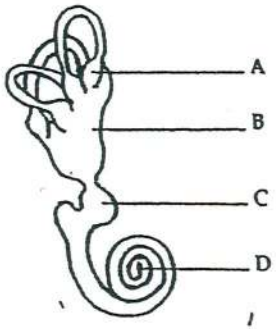
A chemotropism

B geotropism

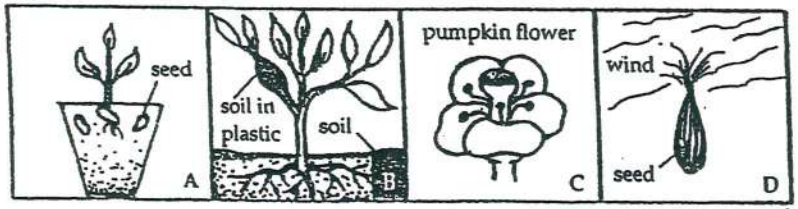
C hydrotropism

D phototropism

43. The diagram shows part of the structure of the human ear. Which label represents an ampulla?



44. Which diagram illustrates asexual reproduction?



45. If a young potted plant in a well-lit area starts to dry up, it is most likely due to a lack of

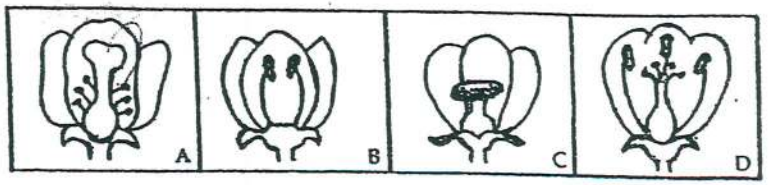
A air.

B mineral salts.

C warmth.

D water.

46. In which flower is self-pollination most likely to occur?



47. If a human cell with 46 chromosomes undergoes mitosis, how many chromosomes will be present in the new cells?

A 24

B 36

C 46

D 96

48. Which birth control method is a chemical method?

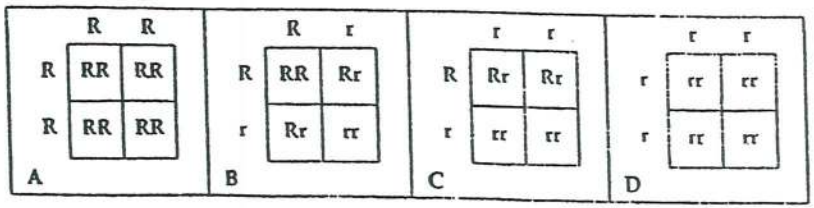
A diaphragm

B IUD

C rhythm method

D spermicide

49. If R is a dominant allele for red flowers and r is a recessive aliele for white flowers, which diagram shows a cross that produces offspring with 50% red flowers?



50. A plant that is produced vegetatively and grown in the same conditions will be identical with the parent in

A genotype only.

B phenotype only.

C genotype and phenotype.

D neither genotype nor phenotype.

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2007

1. We quickly withdraw our finger when it is pricked. This is an example of:

   A excretion.

   B irritability.

   C nutrition.

   D respiration.

2. Biologists use the binomial system to name organisms. Which pair of terms is used in the names?

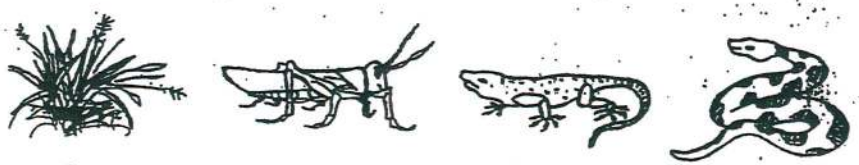
   A Class and genus

   B Family and phylum

   C Genus and species

   D Kingdom and order

3. Which organism in these diagrams is a herbivore?



A B C D

4. The body temperature of homeothermic (warm-blooded) animals:

   A always remains nearly the same.

   B may vary with the outside temperature.

   C rises 10 °C during hot weather.

   D rises 10 °C during cold weather.

5. The diagram shows a typical flowering plant.

Which statement is a correct description of this plant?

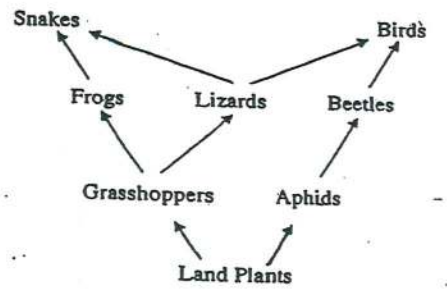
   A It has a fibrous root system.

   B It has leaves with parallel veins.

   C It is a dicotyledon.

   D It is a monocotyledon.

6. The diagram shows a food web.



Which organism occupies the third trophic level?

   A Beetles

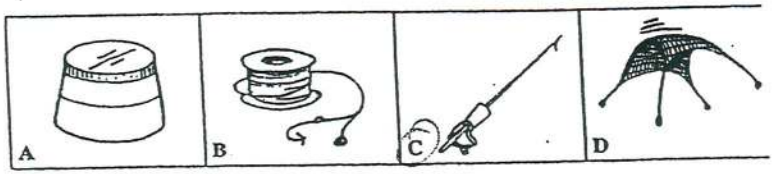
   B Birds

   C Grasshoppers

   D Snakes

[Turn over

7. Which fishing gear is most appropriate for harvesting conchs?



8. Which is a correct restriction on the method used to harvest crawfish?

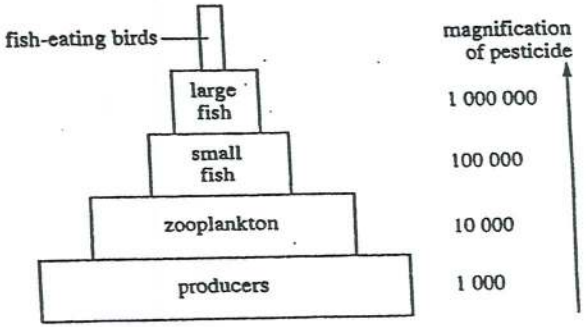
A Any mesh size is acceptable for traps.

B Bleach and other noxious substances are illegal.

C Only certain types of explosives should be used.

D Scuba gear may be used.

9. The diagram shows the increasing concentration of a pesticide (biological magnification) along a food chain.



How much more concentrated is the pesticide in the fish-eating bird than in the zooplankton?

A ×10

B ×100

C ×1 000

D ×10 000

10. Which are the best water conditions for the growth of reef-building corals?

A deep, cold, clear

B deep, warm, clear

C shallow, cold, clear

D shallow, warm, clear

11. Structures common to all cells include:

A cell membrane, cytoplasm and nucleus.

B cytoplasm, nucleus and cell wall.

C nucleus, cell wall and chloroplast.

D chloroplast, cell membrane and cytoplasm.

12. Exchange between the cell and its surroundings takes place at the:

A cell membrane.

B cytoplasm.

C mitochondria.

D nucleus.

13. Which type of cells contract and cause movement?

A blood

B bone

C muscle

D nerve

14. The diagrams show two plant cells.

P Q

What structure is present in P but absent in Q?

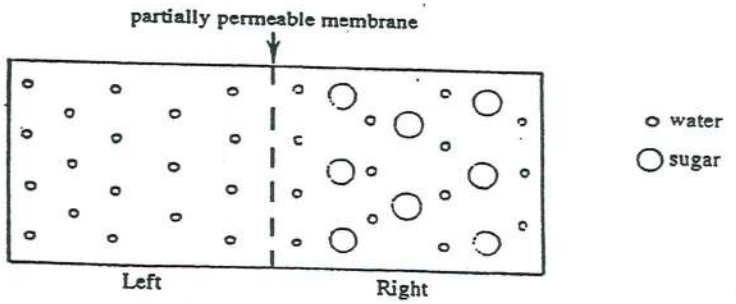
A cell membrane

B cell wall

C chloroplast

D vacuole

15. The diagram shows a sugar solution separated from pure water by a partially permeable membrane.



What would be the effect on the net movement of the molecules if more sugar is added to the right side of the container?

A There will be no effect.

B More sugar molecules will move to the left.

C More water molecules will move to the left.

D More water molecules will move to the right.

[Turn over

16. The diagrams show four plant cells in different solutions. Which diagram shows a cell in a dilute solution?

A B C D

17. Which term describes the effect of high temperature on enzymes?

A contraction

B decomposition

C denaturation

D expansion

18. What nutrient turns black when tested with iodine?

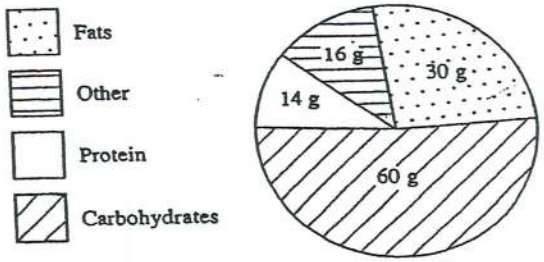
A fat

B protein

C reducing sugar

D starch

19. The pie chart illustrates four nutrients found in a meal. What percentage of this is fat?



A 12%

B 25%

C 45%

D 50%

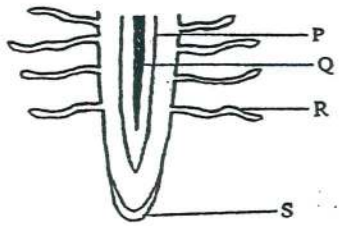
20. The chart shows regions of the alimentary canal and the processes and secretions associated with those regions.

Which secretions are associated with the small intestine?

Regions of the Alimentary Canal	Activity/Secretions
A	bile and gastric juice
B	gastric juice and saliva
C	pancreatic juice and bile
D	saliva and pancreatic juice

P.66

26. The diagram shows the root apex of a plant.



Which letter points to the structure which transports water?

A P

B Q

C R

D S

27. Which of the following factors least affects the rate of transpiration?

A humidity

B respiration

C temperature

D wind

28. Which is a correct description of a leaf with a high rate of photosynthesis?

	Upper epidermis	Palisade cells	Lower epidermis
A	thick	many chloroplasts	few stomata
B	thin	few chloroplasts	many stomata
C	thick	few chloroplasts	few stomata
D	thin	many chloroplasts	many stomata

29. Which is the correct pathway for the circulation of blood in man?

A left atrium → lungs → right ventricle

B left ventricle → body → right ventricle

C right atrium → body → left atrium

D right ventricle → lungs → left atrium

30. Some babies are born with a hole in the septum between the two atria of the heart. Why would this be harmful to the baby?

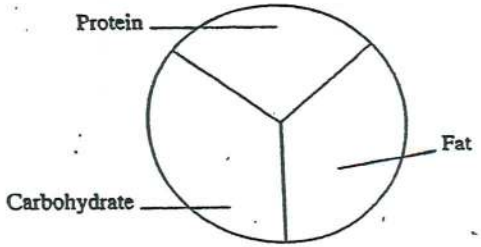
A The baby would not be able to breathe.

B The blood would not be able to flow to the lungs.

C Deoxygenated and oxygenated blood would mix.

D The heart would not be able to pump blood.

31. The pie chart below shows the major nutrients consumed in the current Bahamian diet.



How should this diagram be changed if a person wanted to lower their risk of heart disease?

A decrease carbohydrates

B increase proteins

C reduce fat

D reduce protein

32. Which organism(s) perform cellular respiration?

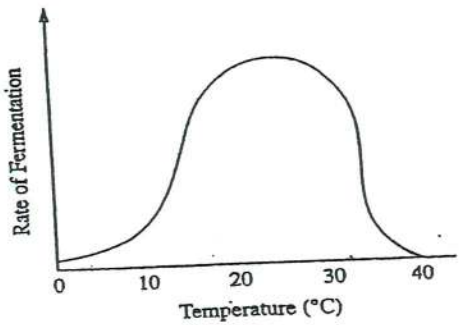
A Only C

B Only A and C

C Only A and B

D A, B, C and D

33. The graph shows the rate of alcoholic fermentation for yeast at different temperatures.



What is the relationship between the rate of fermentation and temperature?

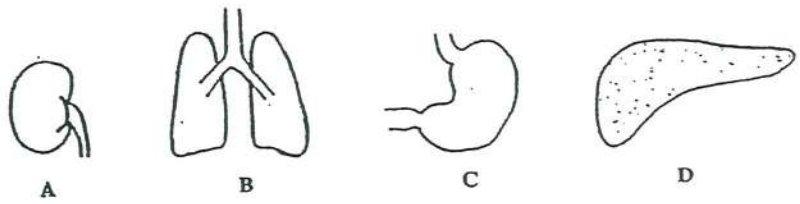
A The rate of fermentation continually increases as temperature increases.

B The rate of fermentation continually decreases as temperature increases.

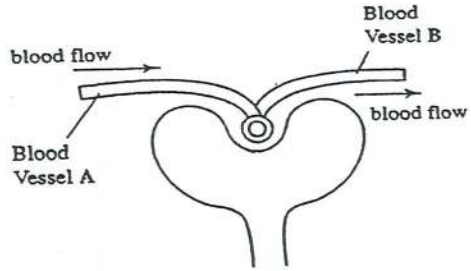
C The rate of fermentation increases with temperature, then it decreases.

D The rate of fermentation decreases with temperature, then it increases.

34. Which organ shown carries out osmo-regulation?



35. The diagram shows part of a kidney nephron.



Which statement best describes the blood in vessel B compared with vessel A?

A less urea, less glucose, less water

B less urea, more glucose, more water

C more urea, less glucose, less water

D more urea, more glucose, more water

36. The process of maintaining a constant internal environment is called:

A excretion.

B homeostasis.

C vasoconstriction.

D vasodilation.

[Turn over

37. Stems show positive phototropism because:

A auxins are equally distributed in stems.

B auxins collect in cells on the shaded side.

C auxins collect in cells on the non-shaded side.

D auxins collect in the tip of the stem.

38. Which of the following is an endocrine gland?

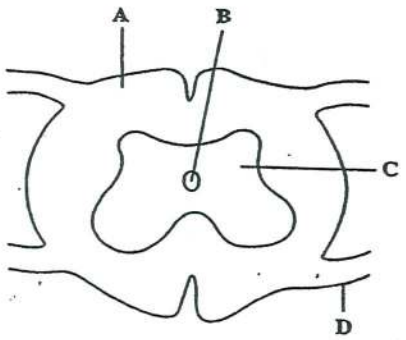
A adrenal gland

B salivary gland

C sweat gland

D tear gland

39. The diagram below shows a cross-section of the spinal cord.



The part labelled C is:

A grey matter.

B white matter.

C membrane.

D dorsal root.

40. The diagrams below show the iris in two different light conditions.

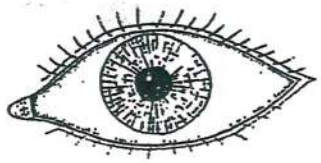


Diagram 1

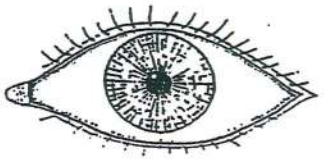


Diagram 2

What changes occur in the iris from diagram 1 to diagram 2?

A Radial muscle contracts, circular muscle relaxes.

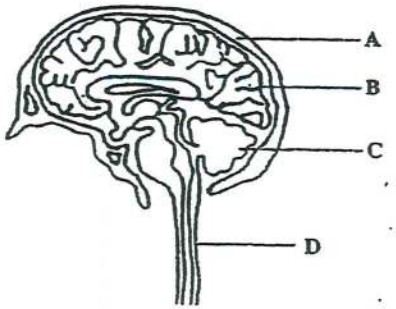
B Radial muscle contracts, circular muscle contracts.

C Radial muscle relaxes, circular muscle contracts.

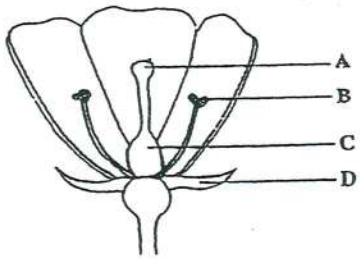
D Radial muscle relaxes, circular muscle relaxes.

41. A car driver damaged part of his brain in a crash. When he recovered he had difficulty in standing upright and balancing properly.

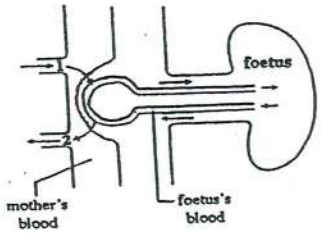
Which labelled part of the brain was damaged?



42. The diagram below shows a section cut through a flower.
In which one of the labelled structures do pollen tubes start to develop?



43. The diagram below shows the arrangement of blood vessels in the uterus and the placenta of a female mammal.



Which one of the following will increase in concentration in the blood flowing from 1 to 2?

A amino acids

B carbon dioxide

C glucose

D oxygen

44. Which one of the following is not an example of birth control measures?

A abortion

B condom

C spermicides

D tubal ligation

45. Which is a correct description of wind pollinated and insect pollinated flowers?

	Wind Pollinated		Insect Pollinated
A	Nectar	Yes	No
B	Petals	Large, brightly coloured	Small and green
C	Pollen grains	Small and smooth	Large, rough, or sticky
D	Stigma	Small and rigid	Flexible and long

46. Which structures in a seed make up the embryo?

A plumule and cotyledon

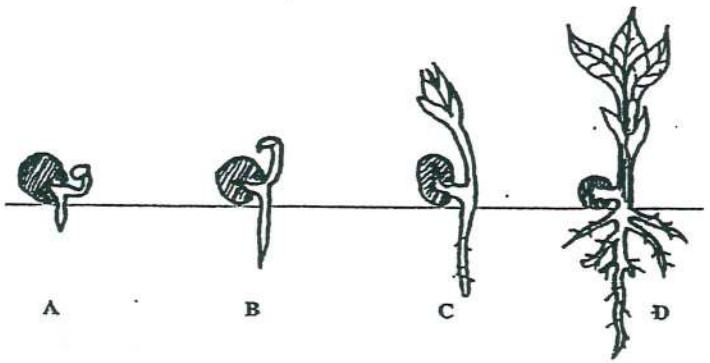
B plumule, radicle and cotyledon

C plumule and radicle

D radicle and cotyledon

[Turn over

47. The diagrams below show various stages in the germination of a broad bean seed. During which of the four stages does the seedling start to increase in dry mass?



48. In males, cells with nuclei dividing by meiosis would be found in the:

A kidney.

B liver.

C penis.

D testes.

49. If a woman heterozygous for blood group A marries a man heterozygous for blc group B, what are the chances of their first child having blood group AB?

A 25%

B 50%

C 75%

D 100%

50. A red flowered plant (Rr), with R dominant, was self-fertilized. What will be the chance of getting red flowered plants?

A 1 : 1

B 1 : 3

C 2 : 2

D 3 : 1

End]

2008

1. What is the correct way to write the scientific name for modern man?

A *homo sapiens*

B *homo Sapiens*

C *Homo Sapiens*

D *Homo sapiens*

2. A group of organisms which can produce fertile offspring with each other is called a

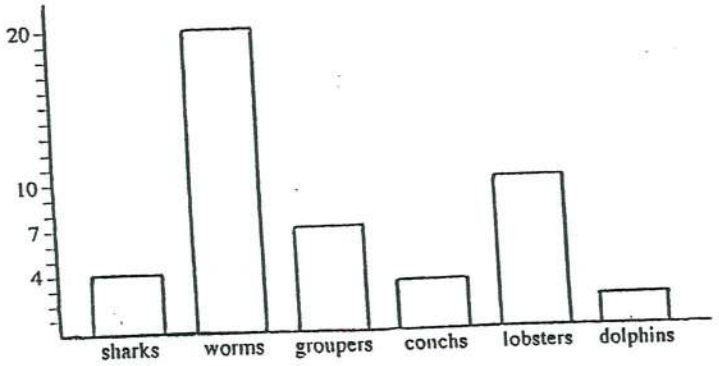
A class.

B family.

C genus.

D species.

3. The bar graph shows the number of different types of organisms on a small coral reef.



How many vertebrates are on the reef?

A 4

B 7

C 13

D 20

4. The diagram shows the water cycle.

Which TWO processes are involved at W and Z in the diagram?

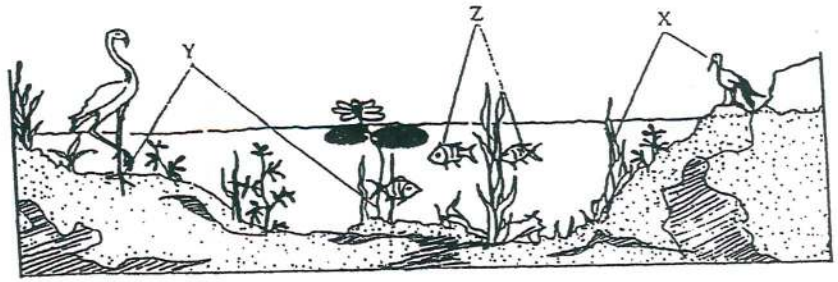
A evaporation and absorption

B evaporation and precipitation

C evaporation and transpiration

D transpiration and precipitation

5. The diagram shows an aquatic ecosystem.



Which of the labelled organisms form a population?

A X

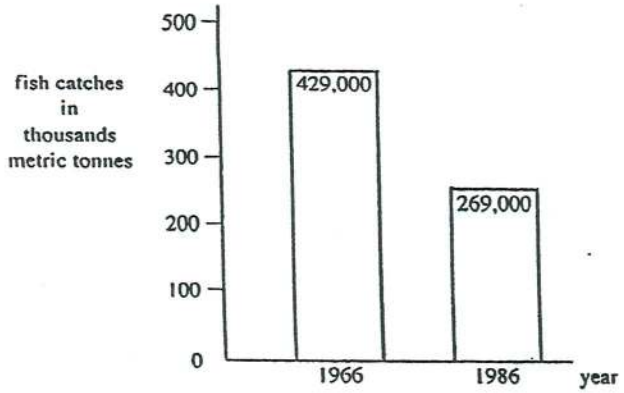
B Y

C Z

D X , Y and Z

[Turn over

6. The bar graph compares coral reef fish catches from 1966 and 1986.



What is the percentage decrease in reef fish catches between 1966 and 1986?

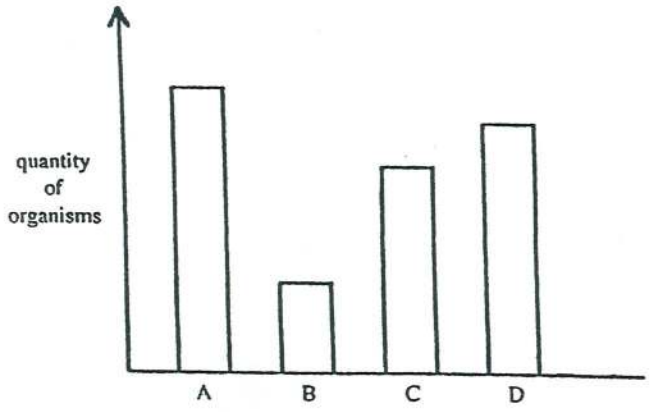
A 50%

B 43%

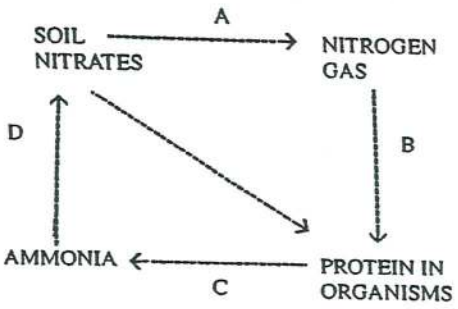
C 37%

D 23%

7. The bar graph shows the relative quantity of organisms in a food chain. Which letter represents the herbivores?



8. The diagram shows some of the ways in which nitrogen is recycled in nature. Which stage involves decomposers or putrefying bacteria?



9. Which of the following would be a useful adaptation for the survival of mangroves in their environment?

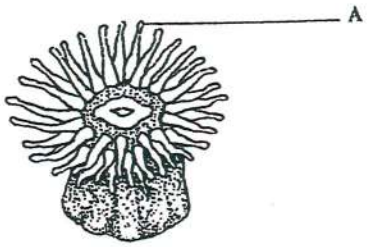
A large leaves

B long narrow stems

C salt tolerant tissues

D short roots

10. The diagram shows a coral polyp.



What is the structure labelled A used for?

A catching prey

B detecting sound waves

C detecting temperature change

D swimming

11. Which cells in the leaf contain the most chloroplasts?

A lower epidermal cells

B palisade mesophyll cells

C spongy mesophyll cells

D upper epidermal cells

12. Which part of a cell controls all activities?

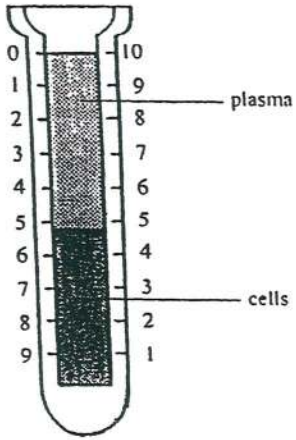
A cytoplasm

B membrane

C nucleus

D vacuole

13. The diagram of a Wintrobe tube shows blood separated into cells and plasma.



What percentage of the blood is shown as cells?

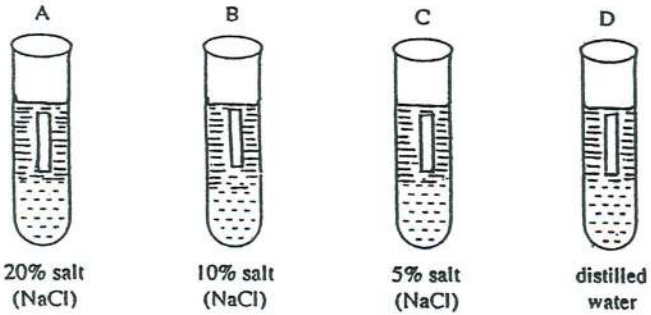
A 10%

B 47%

C 53%

D 80%

14. The apparatus shows four potato cylinders of equal lengths in solutions of different salt concentrations.



Which potato cylinder increased in length?

15. The table shows **THREE** food testing chemicals and the results of tests performed on coconut jelly.

food testing chemicals	biuret solution	ethanol	Benedict's solution
appearance	blue	cloudy	orange

Which nutrients are present in the jelly?

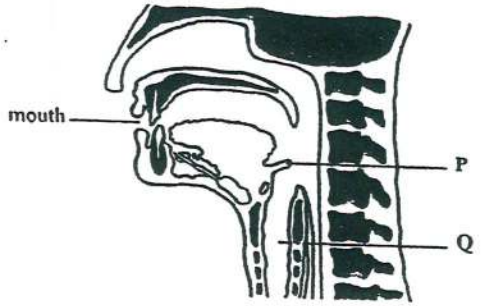
A fat, protein

B fats, sugar

C proteins, sugar

D protein, sugar, fat

16. What is the function of structure P?



A It closes the trachea as food is being swallowed.

B It enables solid foods and water to mix.

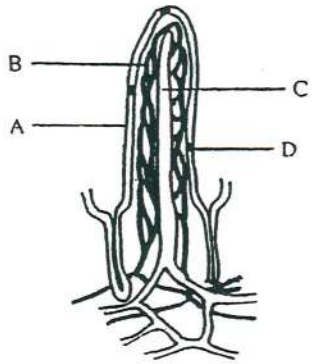
C It enables water and food to enter part Q.

D It moistens foods in the digestive system.

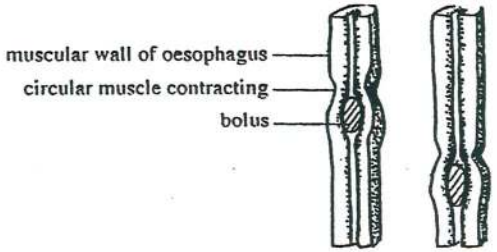
17. The diagrams show four types of teeth. Which tooth is most effective in increasing the surface area of pieces of food?

18. The diagram represents the structure of a villus.

Which structure absorbs fatty acids?



19. The diagram shows a ball of food (bolus) in the oesophagus.



What process is occurring in the diagram?

A diffusion

B emulsification

C mastication

D peristalsis

P. 76

20. An enzyme in raw apples makes them go brown when they are peeled. This colour change is not observed in cooked apples. heated

Which property of enzymes explains this difference?

A Enzymes are specific in their action.

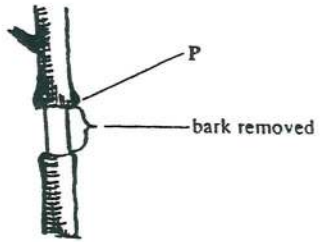
B Enzymes can be used over again.

C Enzymes work best at a particular pH.

D Enzymes work best at a particular temperature.

C

21. The diagram shows part of the stem of a woody plant with a ring of bark removed.



What does the part P indicate has happened?

A excretion

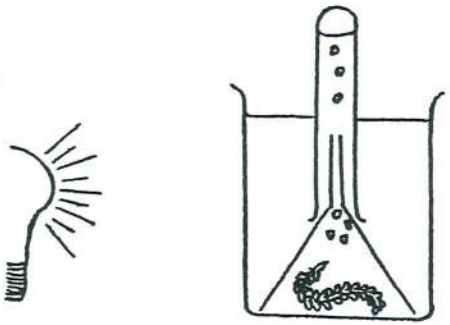
B respiration

C translocation

D transpiration

[Turn over

22. The diagram shows an experiment that was carried out to measure the rate of photosynthesis in a water plant.



The shoot was exposed to different light intensities and the rate of photosynthesis was estimated by counting the number of bubbles of gas leaving the shoot. The results are recorded below.

number of bubbles per minute	7	14	19	23	25	28	27
light intensity (units)	1	2	3	4	5	6	7

What level of light intensity had the greatest effect on the rate of photosynthesis?

A 2

B 4

C 6

D 7

23. What must be present for photosynthesis to occur?

A carbon dioxide, glucose, chlorophyll

B chlorophyll, sunlight, carbon dioxide

C glucose, carbon dioxide, sunlight

D sunlight, chlorophyll, oxygen

24. Which ONE of these is an essential substance needed by plants?

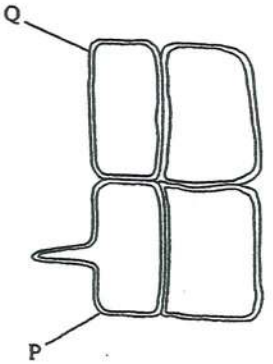
A amino acids

B DNA

C nitrogen

D vitamins

25. The diagram shows the outline of some root cells.



Which feature of cell P makes it more efficient in absorbing water than cell Q?

A the amount of its surface area

B the concentration of its cell sap

C the size of its vacuole

D the thickness of its membrane

26. The table shows the conditions which affect the transpiration rate in plants. Which correctly shows the effect of changes in external conditions on the rate of transpiration?

	External conditions		Transpiration rate
A	higher light intensity	lower humidity	decreases
B	higher temperature	lower humidity	decreases
C	lower light intensity	lower temperature	increases
D	higher temperature	higher light intensity	increases

27. Why do leaves wilt when they lose a lot of water?

A guard cells are flaccid

B mesophyll cells are no longer turgid

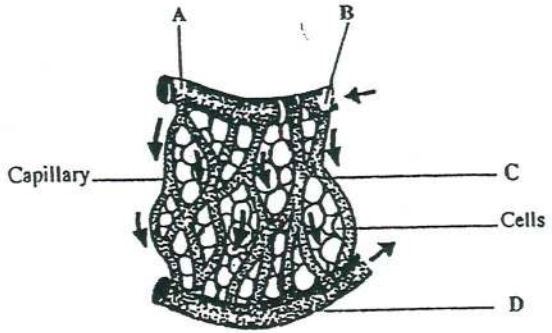
C phloem transport has stopped

D stomata are closed

P. 78

28. The diagram shows a network of blood vessels associated with some body cells.

Where would the blood pressure be greatest?



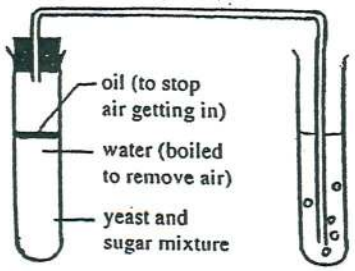
29. What would be the expected effect on the heartbeat rate and breathing rate of a person running a kilometre?

	rate of heartbeat	rate of breathing
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

30. Which correctly matches the structure with its function?

	structure	function
A	chloroplast	transports water vapour
B	mesophyll cell	reflects light
C	stoma	absorbs light
D	vascular bundle	transports water

The diagram shows the apparatus used to investigate respiration in yeast.



What type of respiration is being carried out and what gas is being given off?

A aerobic respiration, carbon dioxide

B aerobic respiration, oxygen

C anaerobic respiration, carbon dioxide

D anaerobic respiration, oxygen

The table shows the gaseous composition of air.

Gas	Inspired air	Expired air
oxygen	20%	16%
carbon dioxide	0.03%	4.0%
nitrogen	78%	78%

What percentage of the inspired oxygen is being used in tissue respiration?

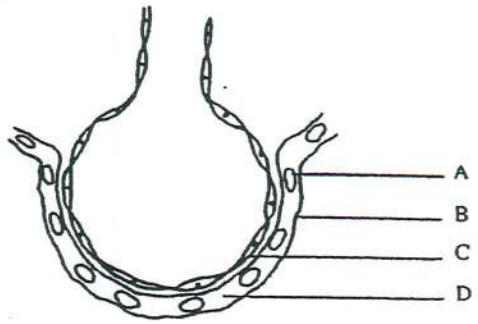
A 10%

B 20%

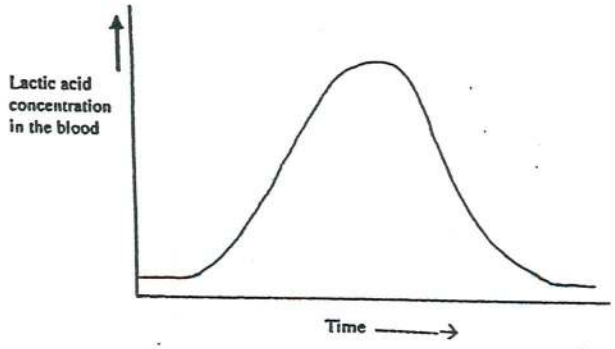
C 25%

D 50%

33. The diagram shows the structure of an alveolus and its capillaries.
Which label indicates the gas exchange surface of the alveolus?



34. The graph shows the changes in lactic acid concentration in the blood as a result of vigorous exercise.



Which statement correctly describes the metabolic process that causes the increase in lactic acid?

A aerobic respiration resulting in the complete breakdown of glucose in the skeletal muscles

B aerobic respiration resulting in the incomplete breakdown of glucose in smooth muscles

C anaerobic respiration resulting in the incomplete breakdown of glucose in skeletal muscles

D anaerobic respiration resulting in the complete breakdown of glucose in smooth muscles

Why is haemoglobin so important in human respiration?

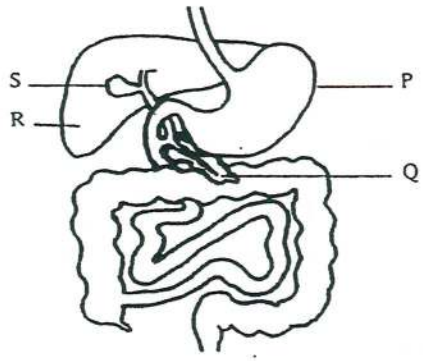
A Haemoglobin binds tightly to both oxygen and carbon monoxide.

B Haemoglobin binds easily with glucose.

C Haemoglobin increases the oxygen – transporting capacity of the blood.

D Haemoglobin is mostly found in the liquid part of the blood.

5. The diagram shows some of the organs of the digestive system.



Which organs are involved in the homeostasis of blood glucose?

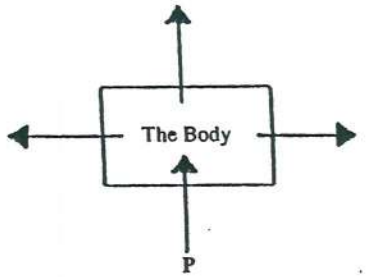
A R and P

B R and Q

C S and P

D S and Q

37. The diagram represents the body and the arrows represent the movement of water into and out of it.



Which process is represented by P?

A eating

B defaecation

C sweating

D urinating

38. Which of the following characteristics of living organisms enables them to detect and respond to stimuli?

A excretion

B growth

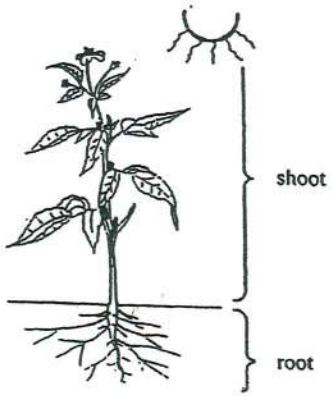
C irritability

D movement

What are **THREE** effects of adrenaline on humans?

A	decreased heartbeat rate	decreased glucose in blood	small pupils
B	decreased heartbeat rate	increased glucose in blood	small pupils
C	increased heartbeat rate	decreased glucose in blood	wide pupils
D	increased heartbeat rate	increased glucose in blood	wide pupils

The diagram shows a plant.



What kind of positive response is being shown by the shoot system of the plant?

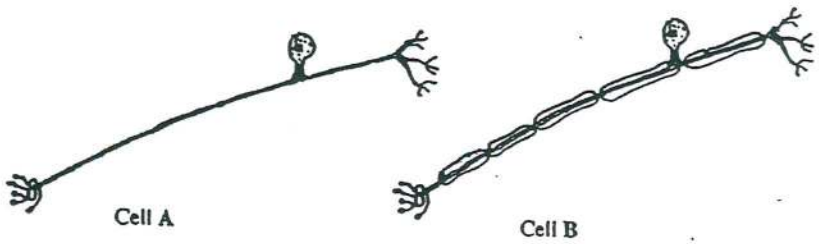
A chemotropism

B geotropism

C hydrotropism

D phototropism

41. The diagrams show two nerve cells.



Which statement is true about cell B only?

A It is a motor neuron.

B It is a sensory neuron.

C It transmits impulses.

D It transmits impulses faster than cell A.

42. Which structure must sound vibrations pass through in order to reach the cochlea of the human ear?

A eustachian tube

B oval window

C round window

D semi-circular canals

43. Which part of the eye contains the blood vessels which nourish the eye?

A aqueous humour

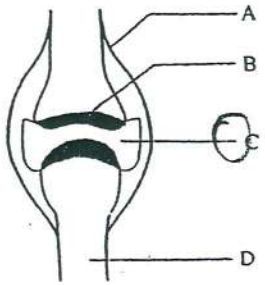
B choroid layer

C cornea

D retina

The diagram represents a section through a joint.

Which labelled structure represents cartilage?



5. Which organ of the body changes the chemical composition of alcohol?

A brain

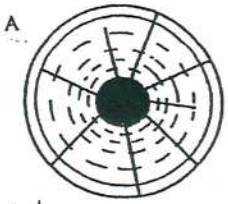
B kidney

C liver

D stomach

46. Which of the diagrams show the condition of the iris muscles when the eye is in bright light?

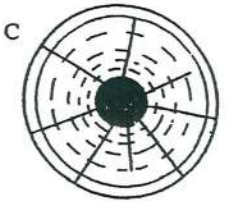
A



circular muscles contracted

radial muscles relaxed

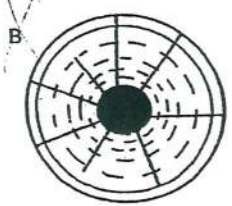
C



circular muscles relaxed

radial muscles relaxed

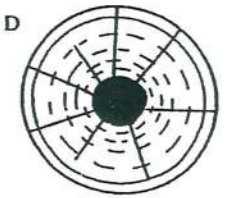
B



circular muscles contracted

radial muscles contracted

D



circular muscles relaxed

radial muscles contracted

47. The diagrams represent two vegetative organs.

Irish potato tuber

Germinating bean seed

Which statement correctly describes both organs?

A Only one new plant will develop from each.

B They are both formed from the ovules of flowers.

C They are both formed from underground stems.

D They both store food for the new shoots.

3. Mitosis occurs in an animal cell but no cell membrane is formed to divide the cell in two.

What is the most likely result?

A cell which contains half the amount of cytoplasm

B cell which contains half the number of chromosomes

C cell which contains one nucleus

D cell which contains two nuclei

). Which statement describes the disease syphilis?

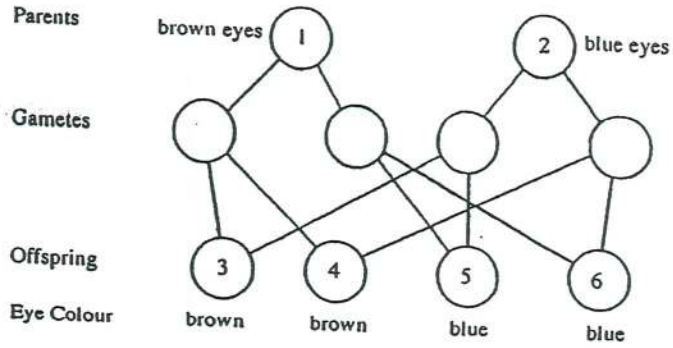
A A sore appears on the genitals in the first stage.

B It is caused by a virus.

C It may cause sterility in men.

D The first sign is a burning sensation when urinating.

50. The diagram shows a cross between a heterozygous brown-eyed parent and a blue-eyed parent. The allele for brown eyes is dominant to the allele for blue eyes.



Which individuals are homozygous for eye colour?

A 1, 2, 6

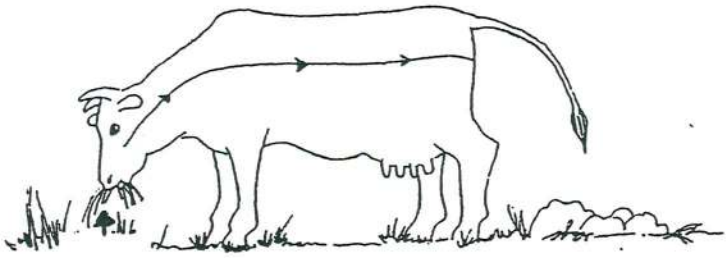
B 1, 5, 6

C 2, 3, 4

D 2, 5, 6

2009

The diagram shows a mammal.



Which characteristic of living things is represented by the arrows?

A excretion

B growth

C nutrition

D respiration

Which of the following animal pairs are most closely related to each other?

A bony fish and crawfish

B frog and lizard

C grouper and shark

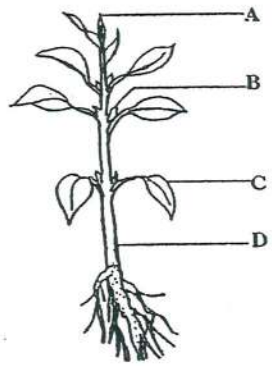
D lion and seahorse

P. 84

9018

3. The diagram shows a typical flowering plant.

Which letter labels the structure from which the branches or aerial roots grow?



4. Which consumer obtains its energy from producers only?

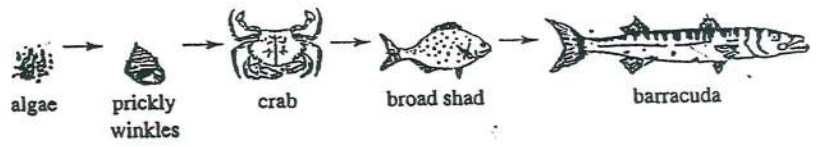
A carnivore

B decomposer

C herbivore

D omnivore

5. The diagram shows a food chain.



Over-fishing the barracuda may result in the

A decrease in the number of shads.

B decrease in the number of prickly winkles.

C increase in the number of the crabs.

D increase in the number of the prickly winkles.

9018

Which process removes carbon dioxide out of the atmosphere?

A combustion

B decomposition

C photosynthesis

D respiration

During which process are nitrates broken down to release nitrogen gas?

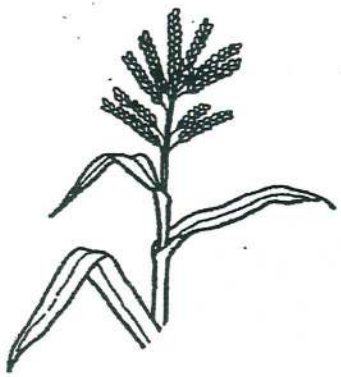
A ammonification

B denitrification

C nitrogen fixation

D respiration

The diagram shows a part of the inflorescence of a maize plant (*Zea mays*). Which statement about this part of the inflorescence is correct?



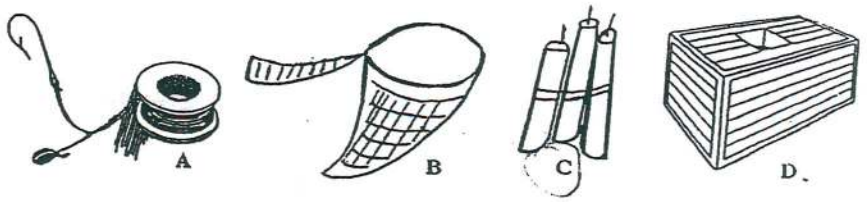
A It develops from an axillary bud.

B It is called the "cob" or "ear."

C It contains the female flowers.

D It contains the male flowers.

9. The diagrams show four types of instruments used to capture marine species. Which method is illegal in The Bahamas?



10. Which is the most important method used today to protect the mangrove ecosystem?

A Limit collection of firewood.

B Moving the animals to a zoo.

C Pass laws to preserve the ecosystem.

D Put dams around the ecosystem.

11. Which of the following is an example of osmosis?

A mineral salts passing into root hairs

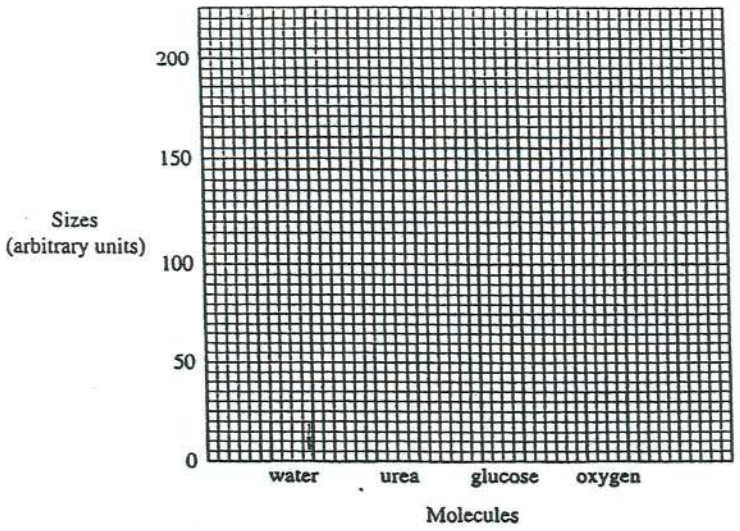
B oxygen passing into the blood

C sunlight entering leaf cells

D water moving into root hairs

[Turn over

12. The graph shows the sizes of several molecules that can diffuse across a partially permeable membrane.



Which substance will diffuse across the partially permeable membranes the fastest?

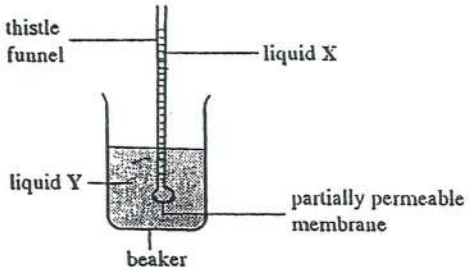
A glucose

B oxygen

C urea

D water

13. An experiment was set up to demonstrate a process which occurs in living organisms.



After 30 minutes the level in the thistle funnel rose. What does this show?

A Liquid X is a concentrated solution and Y is a dilute solution.

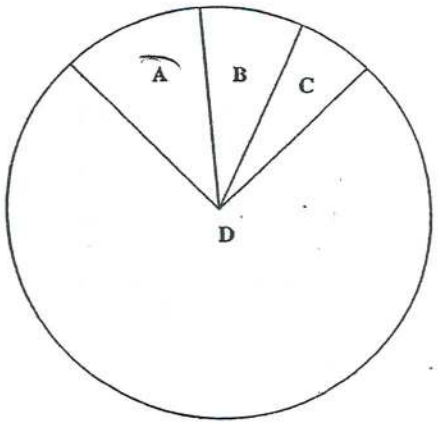
B Liquid X and liquid Y are dilute solutions.

C Liquid X is a dilute solution and liquid Y is a concentrated solution.

D Liquid X and liquid Y are concentrated solutions.

14. The pie chart shows the relative amounts of carbohydrate, fat, protein and water which make up the human body.

Which letter identifies the amount of protein in the body?



5. An experiment was set up to find the effect of different concentrations of sucrose solutions on potato strips. The changes in the weight of the strips are shown below.

Which sample was placed in the solution with a concentration almost equal to that of the potato cells?

Sample	Concentration of sucrose solution (m)	Chance in weight (%)
A	0.05	+10
B	0.1	+8
C	0.3	−1
D	0.7	−13

6. Which of 30 g of the food samples listed will give the most energy when digested and absorbed?

A boiled cabbage

B bread

C butter

D lean meat

17. The table shows the amount per serving of nutrients listed on a box of cereal.

Nutrient	Amount per serving (serving size 1 cup/g)
Total fat	2
Sodium	280
Total carbohydrate	22
Protein	3

How many grams of nutrients containing carbon, hydrogen and oxygen only, will be eaten if a person ate two cups of this product?

A 54

B 48

C 27

D 24

18. Which enzyme breaks down fat?

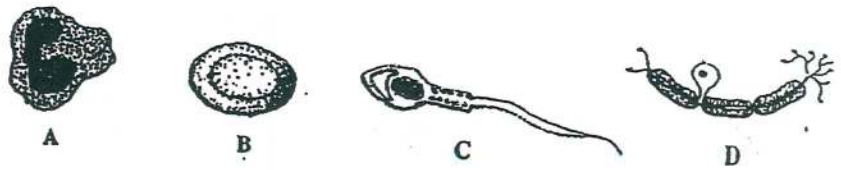
A amylase

B carbohydrase

C lipase

D protease

19. Which cell is best suited to transmit impulses?



What is the role of roughage in the diet?

A for growth and repair

B to help food move through the gut

C to help form healthy bones and teeth

D to provide energy

Which factor below is NOT necessary for photosynthesis to occur?

A carbon dioxide

B chlorophyll

C oxygen

D water

Which organelle in plant cells contains the pigment that makes leaves green?

A cell wall

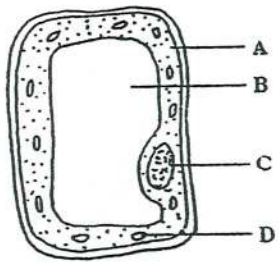
B chloroplast

C mitochondria

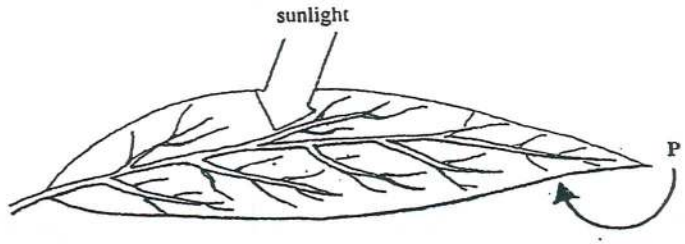
D vacuoles

The diagram shows a typical plant cell.

Which part of the cell is the place where photosynthesis occurs?



24. The diagram shows a leaf in sunlight.



What gas is represented by arrow P?

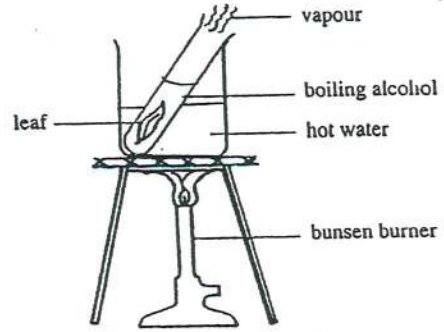
A carbon dioxide

B nitrogen

C oxygen

D water vapour

25. The diagram shows an experiment used to prove the presence of a certain substance in a leaf.



Which substance is being tested for?

A carbohydrate

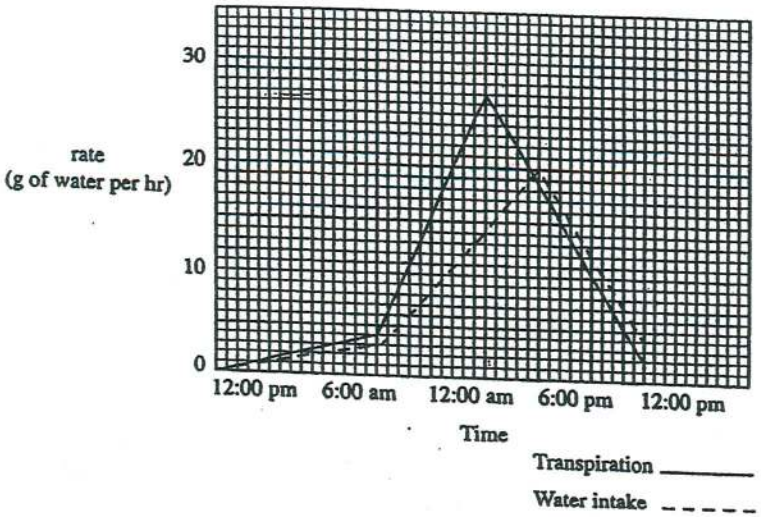
B chlorophyll

C nitrogen

D protein

[Turn over

The diagram shows the rates of transpiration and water intake of a plant over a 24 hour period.



How many grams of water are lost from the plant every hour when the transpiration rate is at the maximum?

A 6

B 17

C 20

D 27

Which substance is transported by haemoglobin?

A amino acids

B glucose

C glycogen

D oxygen

28. When a ring of bark is removed from a tree trunk a bulge appears above the ring after a while.

What valid conclusion can be drawn from this information?

A Sugars are transported in the phloem.

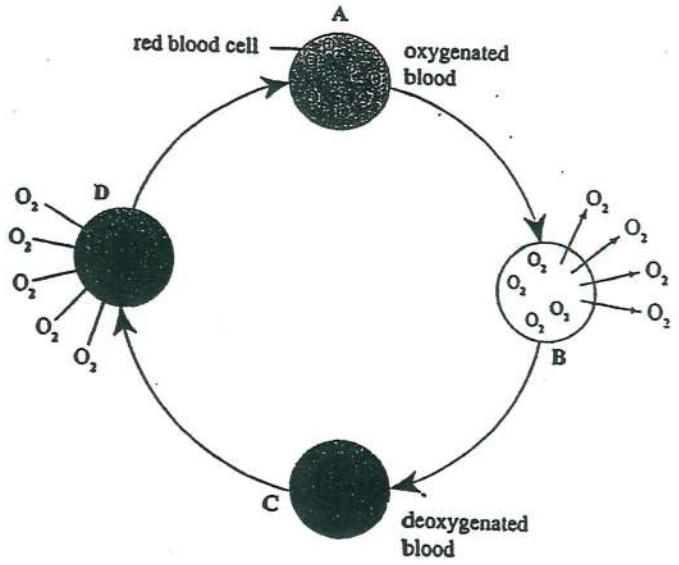
B The contents of the phloem are transported downwards.

C The contents of xylem are transported upwards.

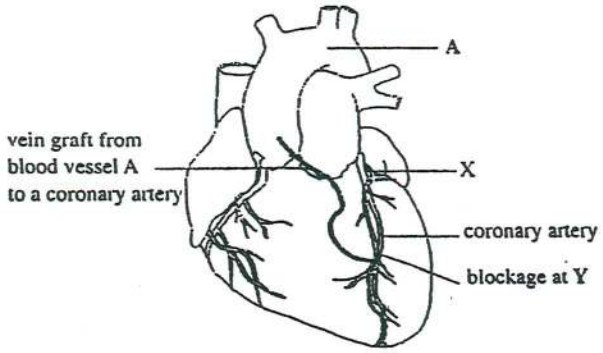
D Water is transported in the xylem.

29. The diagram shows changes which occur in red blood cells as they move through parts of the body.

Which stage in the diagram identifies what happens in all body tissue?



The diagram shows a heart which has undergone by pass surgery.



How would the blockage at Y affect blood circulation if the surgery was not done?

A Blood would not be able to pass to the atria.

B Blood would not be able to pass to the heart muscles.

C Blood would not be able to pass to the lungs.

D Blood would not be able to pass to the ventricles.

Which process occurs in living cells at all times?

A photosynthesis

B reproduction

C respiration

D translocation

32. A scientist was growing yeast cells in a nutrient solution. What is the likely source of carbohydrate for the yeast cells?

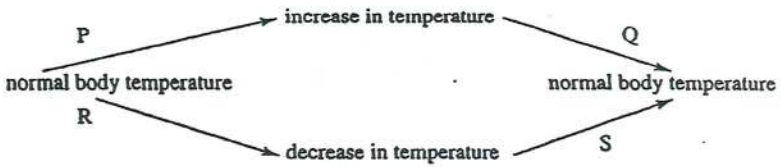
A alcohol

B cellulose

C fibre

D sucrose

33. The diagram illustrates the process of temperature regulation in a mammal.



Which process is occurring at S?

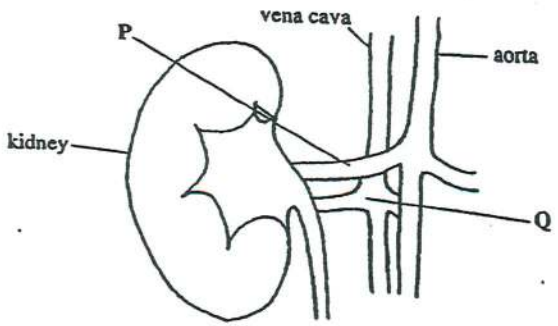
A sweating

B urinating

C vasoconstriction

D vasodilation

4. The diagram shows a section through a kidney and the related blood vessels.



How is the composition of the blood in P likely to vary from the composition of the blood in Q?

A less carbon dioxide, more oxygen, more urea, more water

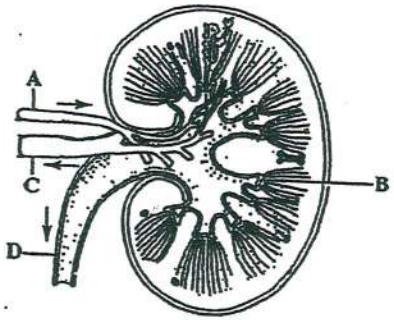
B less carbon dioxide, more oxygen, less urea, more water

C more carbon dioxide, less oxygen, less urea, less water

D more carbon dioxide, less oxygen, more urea, more water

The diagram shows a human kidney.

Which structure contains the lowest concentration of urea?



36. Which of the following activities in a mammal is not controlled by hormones?

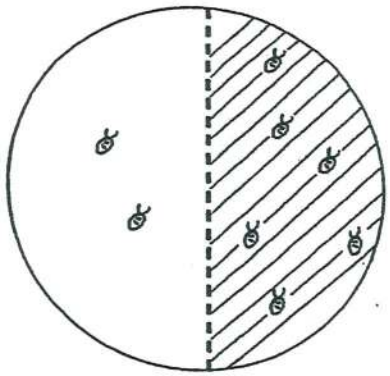
A change of glycogen to glucose

B contraction of leg muscles

C control of growth rate

D production of eggs

37. The diagram shows the results of an experiment using woodlice.



The majority of the woodlice collect on the dark side. What other stimulus cause the same behaviour?

A friction

B gravity

C high humidity

D high temperature

38. Which term best describes the movement of woodlice away from the light?

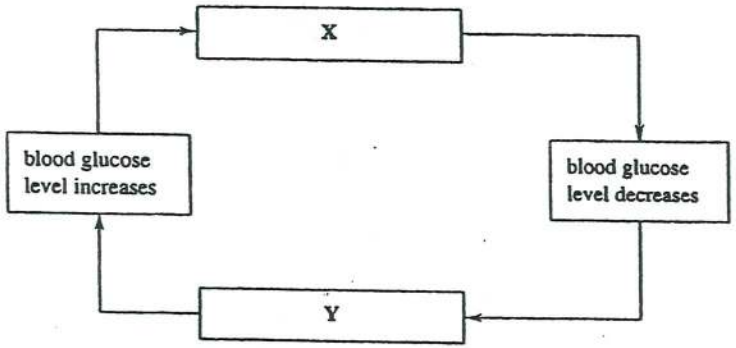
A taxis

B thrombosis

C tropism

D trypsin

39. The diagram represents glucose metabolism in the body.



What is hormone X?

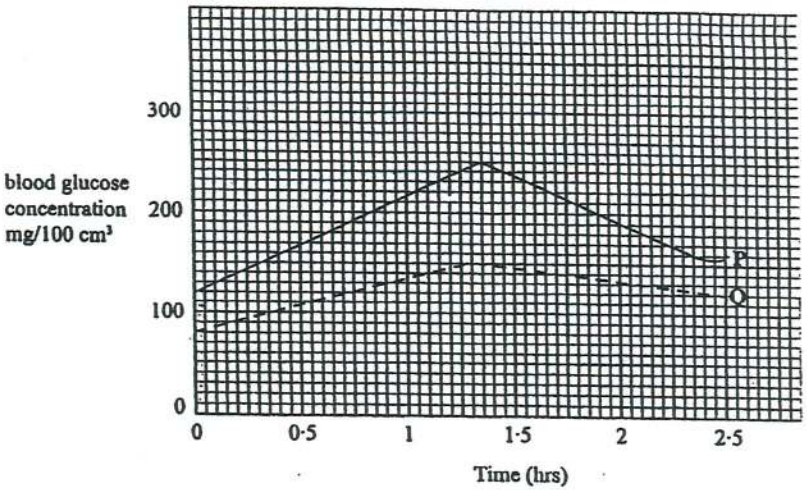
A adrenaline

B insulin

C oestrogen

D testosterone

40. The graph shows the result of a blood test for glucose of two persons, P and Q.



What is the difference between the maximum blood glucose concentration of P and Q?

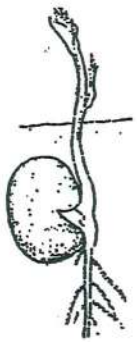
A 25 mg/100 cm^3

B 75 mg/100 cm^3

C 100 mg/100 cm^3

D 125 mg/100 cm^3

The diagram shows a germinating seed.



Which of the following are all needed for germination?

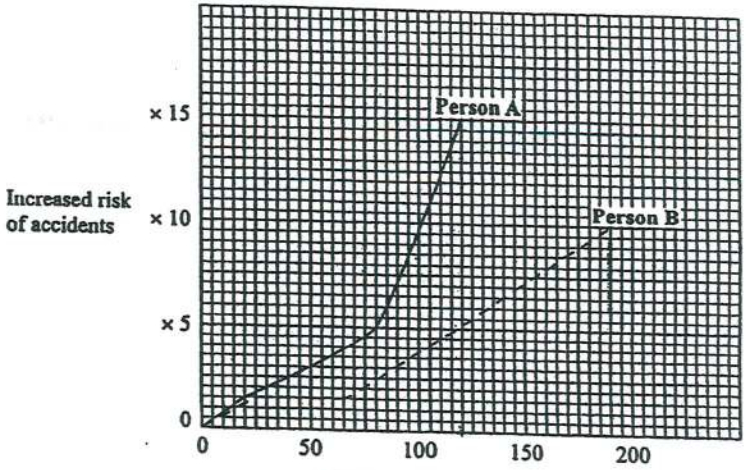
A chlorophyll, light, water

B light, oxygen, water

C oxygen, water, enzymes

D water, soil, enzymes

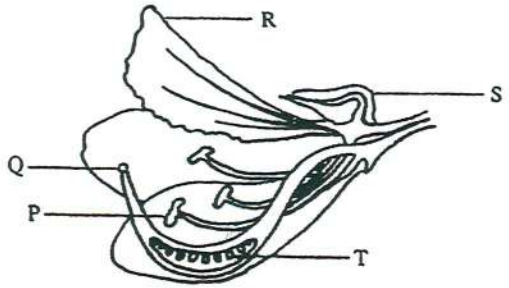
42. The graph shows the increased risk of accident associated with drinking alcohol in two different persons.



Approximately what concentration of blood alcohol level is needed in Person A and Person B for the accident risk to increase ten times?

	Person A	Person B
A	60	100
B	30	80
C	90	160
D	100	180

The diagram shows a flower.



Which structure(s) could not be removed from the flower if self-pollination is to occur?

A P

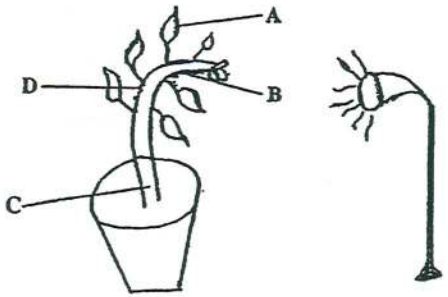
B P and Q

C P and S

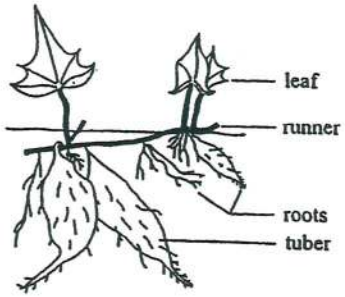
D S

The diagram shows phototropism in a potted plant.

Which letter indicates the area where the concentration of auxin is greatest?



45. The diagram shows a sweet potato plant.



If the plant has adequate water, what other factor will have a positive effect on the growth of the potato tuber?

A deeper soils

B increased leaf area

C longer roots

D shorter roots

46. Which of the following structures produces spermatozoa?

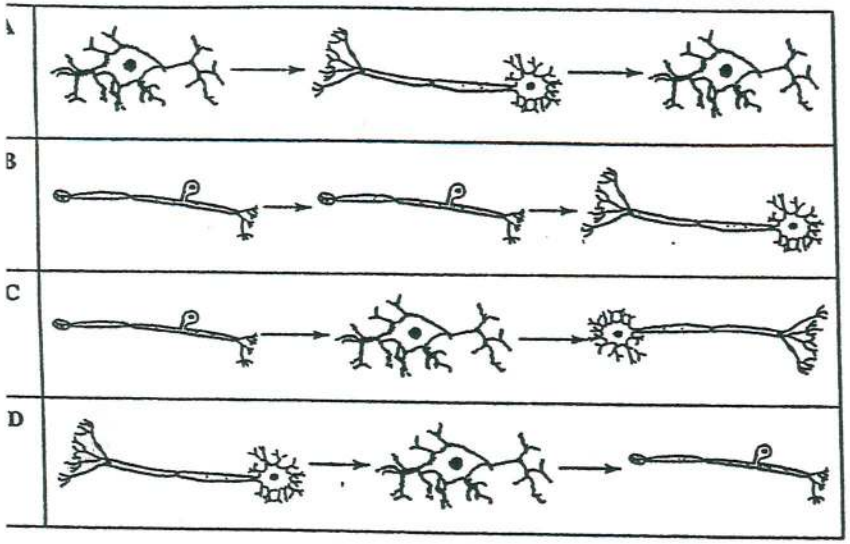
A epididymis

B prostate gland

C sperm duct

D testes

A person is startled by a dog and starts to run. What would be the correct sequence of neurones involved in the reflex action?



3. Which of the following can be detected by chemical receptors?

A gravity

B pressure

C stretching

D taste

49. Which is the correct sequence of structures through which light passes in the human eye before the impulse reaches the brain?

1 aqueous humor
2 cornea
3 lens
4 optic nerve
5 rods and/or cones
6 vitreous humor

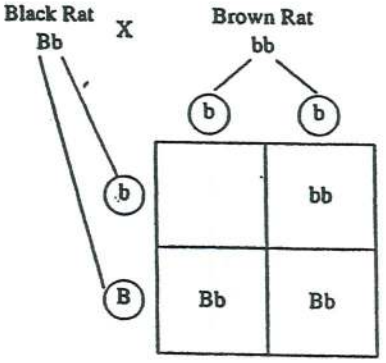
A 1, 3, 2, 6, 4, 5

B 2, 1, 3, 6, 5, 4

C 2, 6, 3, 1, 4, 5,

D 3, 6, 2, 1, 5, 4,

50. The diagram shows the possible genotypes of the offspring in a litter of rats.



Key B = allele for black fur
b = allele for brown fur

Which genotype should be placed in the empty box?

A BB

B Bb

C bB

D bb

End

2010

A plant was placed in a dark cupboard for 24 hours. It was then exposed to sunlight for 6 hours. After this time, starch was found in its leaves.

Which characteristic of living things is observed?

A excretion

B nutrition

C respiration

D sensitivity

Which characteristic below is common to birds and mammals?

A constant body temperature

B feet with four digits

C hair all over the body surface

D teeth

Which is the scientific name for the Queen conch?

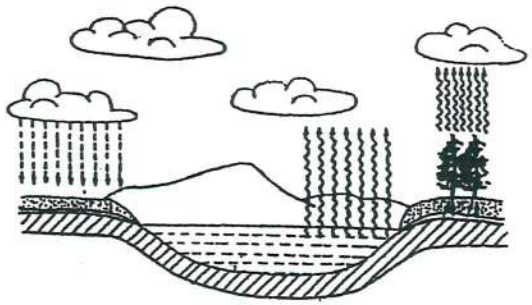
A *Homo sapiens*

B *Rhizophora mangle*

C *Strombus gigas*

D *Zea mays*

4. The diagram shows the water cycle.



What will happen if all the plants are removed?

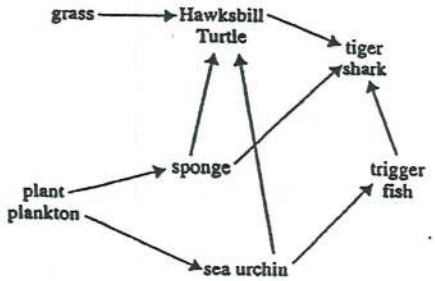
A Evaporation will increase.

B Precipitation will increase.

C Transpiration will decrease.

D Transpiration will increase.

5. The diagram shows part of a marine food web.



Which statement best describes the Hawksbill Turtle?

A a primary consumer only

B a primary and a secondary consumer

C a primary and a tertiary consumer

D a secondary and a tertiary consumer

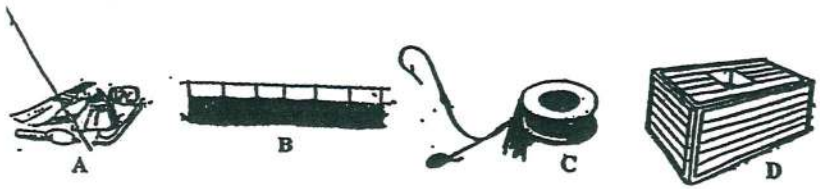
A carbon dioxide, oxygen

B methane, carbon dioxide

C sulphur dioxide, carbon dioxide

D sulphur dioxide, methane

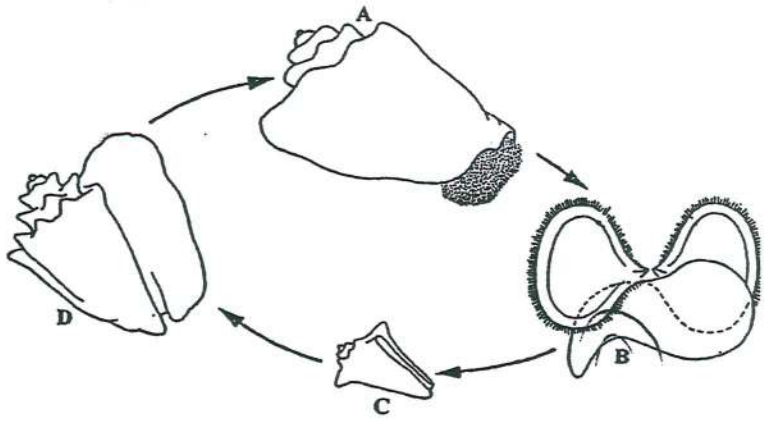
The diagram shows four types of fishing gears.



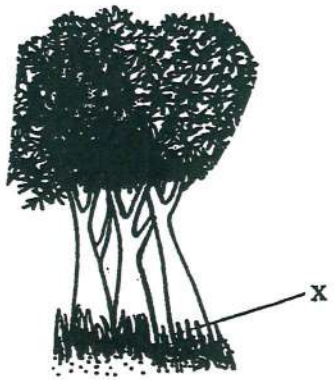
Which is a correct statement about the gear shown?

Gear	Statement
A	Should only be used to capture conchs
B	Used to capture shallow water fish
C	Legal only for sports fishing
D	Used to capture large quantity of scale fish

Which letter identifies the veliger?



The diagram shows a black mangrove plant.



Which statement describes the purpose of the structures labelled X?

A They allow oxygen to diffuse into the roots.

B They form new plants.

C They help to anchor the plant in the mud.

D They help to remove excess salt from the water.

10. The table shows some of the results of a transect down a rocky seashore.

Animal species	Quadrat number										
	Splash zone			Tidal pool zone		Intermittently wet zone			Permanent wet zone		
	1	2	3	4	5	6	7	8	9	10	11
Number of Nerite	7	2	6	12	4	6	7	5	26	40	65

What is the average number per quadrat of *Nerite* found in the area of the shore that is covered and uncovered by the ebb and flow of the tides?

A 5

B 6

C 8

D 18

11. Which structure in a plant cell gives it the green colour?

A cell wall

B chloroplast

C cytoplasm

D vacuole

Which part of a plant cell enables it to maintain its shape?

A cell membrane

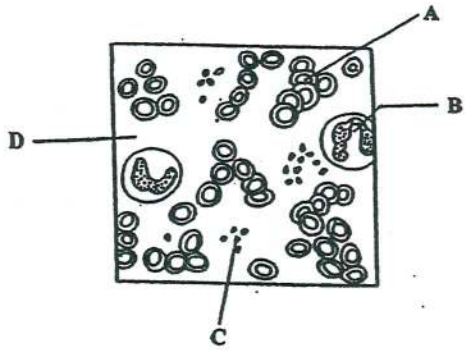
B cell wall

C nucleus

D vacuole

The diagram represents blood components as seen under a microscope.

Use the diagram to answer questions 13 and 14.



Which component represents structures needed for blood to clot?

A

B

C

D

14. Which component is responsible for the transportation of oxygen?

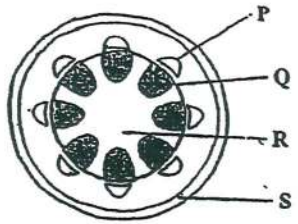
A

B

C

D

15. The diagram shows a transverse section through a stem.



Which labelled structures contain transporting tissues?

A P and Q

B Q and S

C R and S

D S and P

16. What is the function of fats in the body?

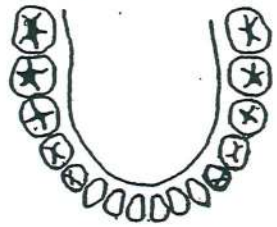
A production of energy

B production of proteins

C production of red blood cells

D production of white blood cells

7. The diagram shows the arrangement of teeth in the lower jaw of an adult male.



What is the total number of teeth in the mouth of this adult male?

A 16

B 26

C 32

D 38

8. The diagrams show a food bolus at various points in the oesophagus.

What process do the arrows illustrate?

A absorption

B assimilation

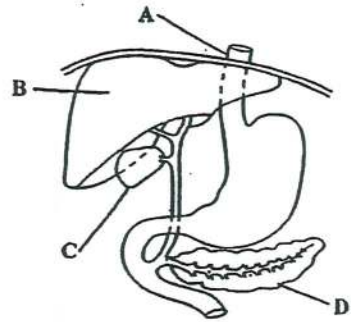
C chemical digestion

D peristalsis

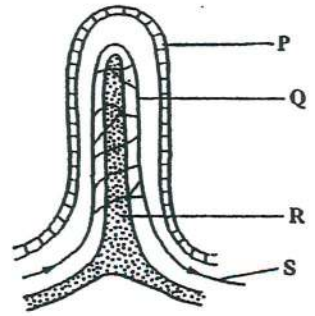
P. 100

19. The diagram shows some organs of the digestive system.

Which structure produces enzymes that act upon carbohydrates, fats and proteins?



20. The diagram shows the structure of a villus.



Which of the products of digestion are absorbed into the part labelled Q?

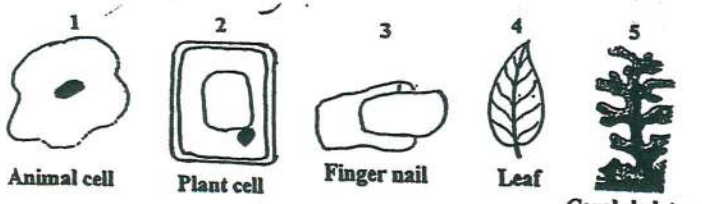
A amino acids and glucose

B amino acids and fatty acids

C fatty acids and glycerol

D glucose and glycerol

The following diagrams represent living and non-living substances.



In which of these structures does respiration occur?

A 1, 2, 4

B 1, 3, 5

C 1, 2, 3, 4

D 1, 2, 3, 5

Which of the following is true of the composition of expired air compared with inspired air?

	% nitrogen	% carbon dioxide	% oxygen	% water vapour
A	less	less	less	more
B	more	less	more	less
C	same	more	less	more
D	same	more	less	less

Why is haemoglobin useful to the human respiratory system?

A Haemoglobin binds tightly to both oxygen and carbon dioxide.

B Haemoglobin decreases the ability of the blood to transport carbon dioxide.

C Haemoglobin increases the ability of the blood to transport oxygen.

D Most of the haemoglobin is dissolved in the plasma.

24. Which of the following is true of gas exchange surfaces?

A The surface is always at a constant temperature.

B The surface is moist.

C The surface is thick.

D The surface must be exposed to air.

25. What is the effect of cigarette smoke on the functioning of the respiratory tract?

A It causes the epiglottis to malfunction.

B It damages the rings of cartilage around the bronchi.

C It slows down the beating of the cilia lining the respiratory system.

D It speeds up the beating of the cilia in the respiratory system.

26. Which of the following are the products of anaerobic respiration in humans?

A carbonic acid + energy

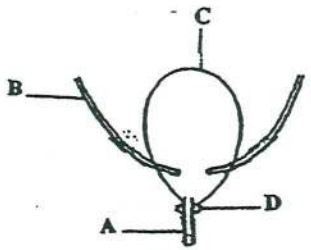
B carbon dioxide + energy

C ethanol + carbon dioxide + energy

D lactic acid + energy.

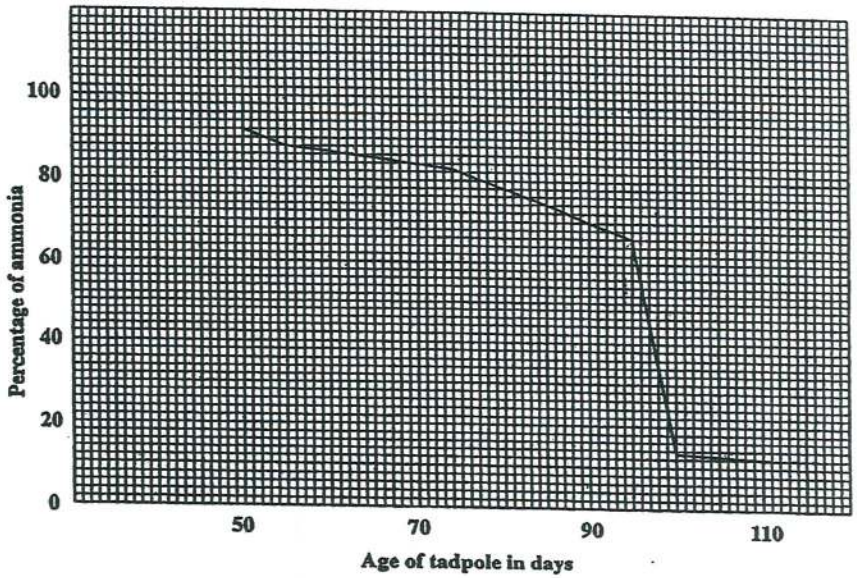
The diagram shows the bladder and accessory structures.

Which part represents the urethra?



28. The graph shows the percentage excretion of ammonia by a tadpole with age.

When tadpoles become frogs, they stop secreting a great deal of ammonia and start secreting mainly urea as they move from water to land.



During which days do tadpoles come out of the water in which they live?

A 50 – 60

B 70 – 80

C 90 – 100

D 100 – 110

29. Which term describes the maintenance of a fairly constant blood sugar level?

A epistasis

B homeostasis

C osmosis

D osmoregulation

[Turn over

Sunlight and chlorophyll are needed for photosynthesis.

What compounds are needed for this reaction to occur?

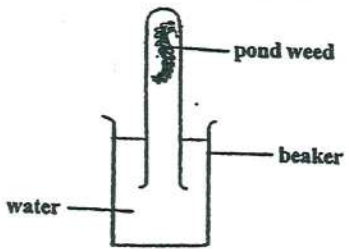
A carbon dioxide and water

B glucose and water

C oxygen and water

D oxygen and carbon dioxide

The diagram shows a water plant in a solution in a well lit area.



Which gas is produced by the plant?

A carbon dioxide

B glucose

C nitrogen

D oxygen

32. The table shows the number of stomata in the leaves of three plants.

Plant	Number of stomata per leaf
Bean	38
Pumpkin	30
Tomato	16

What is the average number of stomata per leaf?

A 20

B 25

C 28

D 30

33. Which of these describes the process of osmosis?

A The movement of solutes along a diffusion gradient.

B The movement of particles from a place of low to a place of high concentration.

C The movement of a solvent from a dilute to a concentrated solution through a selectively permeable membrane.

D The movement of solutes through a selectively permeable membrane.

34. For which condition could the risk be reduced by taking regular exercise and eating a balanced, low-fat diet?

A asthma

B heart attack

C iron deficiency anaemia

D weight loss

Why is blood clotting important?

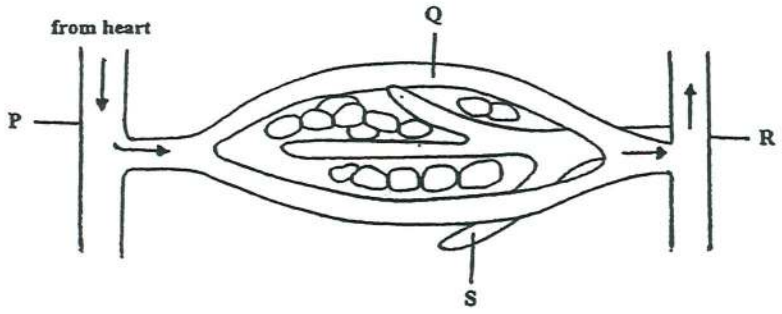
A controls blood pressure

B increases haemoglobin content

C prevents loss of red blood cells

D provides entry of micro-organisms

The diagram shows an arteriole, a venlue, a blood capillary and a lymph capillary.



Which blood vessel has a high concentration of oxygen?

A P

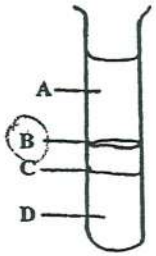
B Q

C R

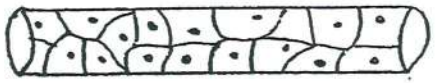
D S

37. The diagram shows a blood sample that has been allowed to separate into its various components.

Which label identifies the location of platelets?



38. The diagram shows the structure of a capillary.



Which cell can pass through the capillary wall?

A lymphocyte

B phagocyte

C platelet

D red blood cell

39. What name is given to the plasma protein needed for blood clotting?

A fibrinogen

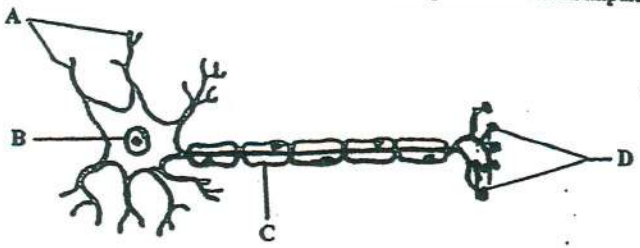
B glycogen

C haemoglobin

D insulin

The diagram shows a motor neurone.

Identify the structure whose thickness influences the speed at which an impulse travels.



Which is a characteristic of a person with a severely damaged cerebellum?

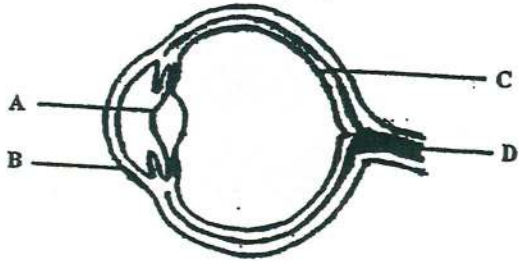
A an inability to learn

B a low heart rate

C high blood pressure

D a lack of coordination

Which structure has photo receptors that convert light rays to electrical impulses?



)18

43. Which structure in the ear does NOT vibrate during the process of hearing?

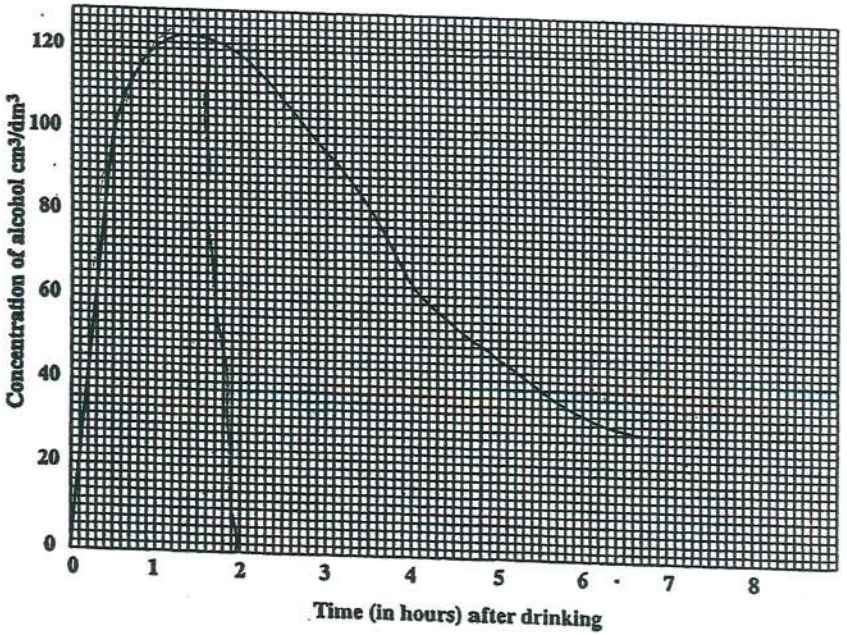
A anvil

B cochlea fluid

C eardrum

D eustachian tube

44. The graph shows the concentration of alcohol in cm^3/dm^3 blood over an 8-hour period.



If the legal limit to drive is 80 cm^3/dm^3, how long will it take after drinking alcohol for it to be legal to drive again?

A 1 hr

B 2.5 hrs

C 3 hrs

D 3.5 hrs

What is the difference between sexual and asexual reproduction?

A Asexual reproduction cannot occur in diploid species.

B Asexual reproduction cannot occur in multicellular organisms.

C Asexual reproduction produces offspring that are clones of the parent.

D Sexual reproduction does not require cell division.

The photograph shows a baby holding an apple.

Which part of the fertilized flower develops into the fruit?

A anther

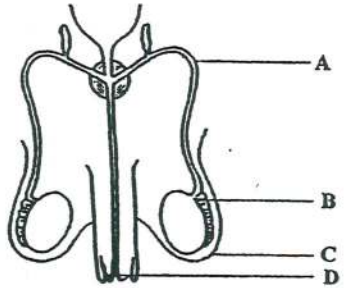
B ovary

C stigma

D style

47. The diagram represents a frontal view of the male reproductive system.

Which labelled structure shows where sperms are temporarily stored until ejaculation?



48. Which term is used to describe an organism's allele combinations?

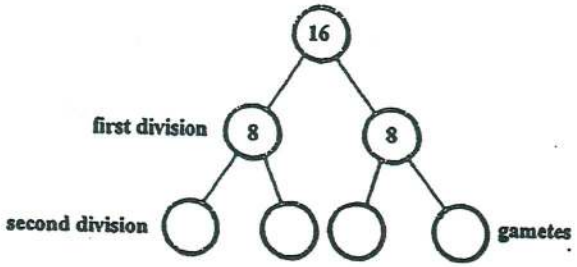
A genotype

B mutation

C nucleus

D phenotype

The diagram shows the number of chromosomes in each cell up to the first division of meiosis.



How many chromosomes would each gamete have?

A 4

B 8

C 12

D 16

The difference between organisms in a species is described as variation. Which of the following can be described as continuous variation?

A blood groups

B height

C sex

D tongue rolling

End

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2011

The picture shows a poor man's orchid tree in bloom.

What is structure T?

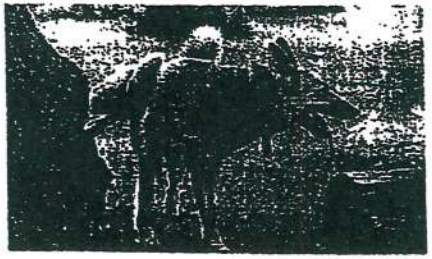
A apical bud

B axillary bud

C fruit

D terminal bud

The picture shows one characteristic of living things.



Which characteristic is shown?

A excretion

B growth

C nutrition

D irritability

3. Which is the correct way of writing the scientific name for the Nassau grouper?

A *epinephelus striatus*

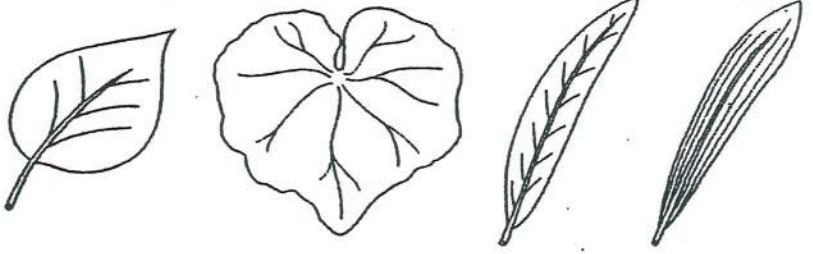
B *epinephelus Striatus*

C *Epinephelus striatus*

D *Epinephelus Striatus*

4. Which leaf comes from a monocotyledonous plant?

A B C D



5. An animal with the following characteristics was collected: scales, backbone, claws.

To which group does this animal belong?

A amphibian

B fish

C insect

D reptile

What term describes animals that are hunted by other animals?

A decomposers

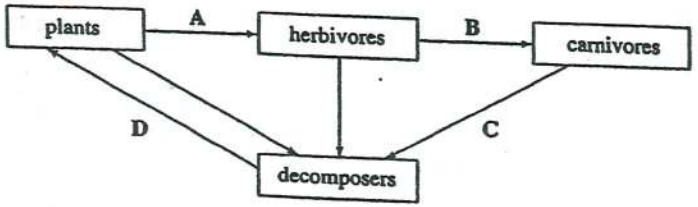
B predators

C prey

D scavengers

The diagram shows a food web.

Which arrow does **NOT** show the direction of energy flow?



Which process adds carbon dioxide into the atmosphere?

A digestion

B photosynthesis

C respiration

D transpiration

Which is the correct definition of monoculture?

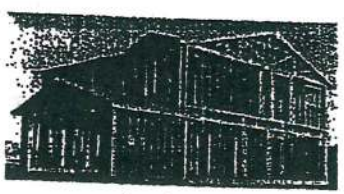
A a single crop grown over a large area

B many crops grown over a large area

C supplying plants with the necessary nutrients/nitrogen

D supplying plants with water

10. Which picture shown does **NOT** cause land destruction?



A

B

C

D

11. In which cell organelle is glucose oxidised to release energy?

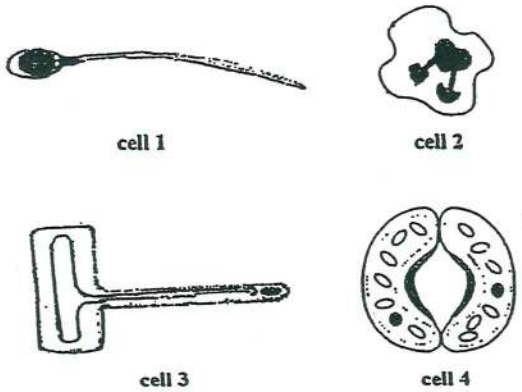
A chloroplast

B mitochondrion

C nucleus

D vacuole

The cells below are specialized to carry out specific functions.

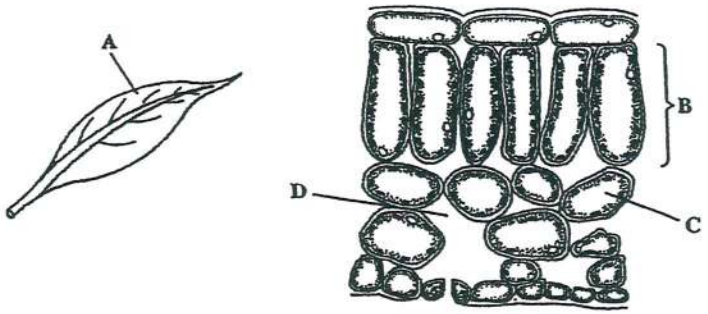


Which row correctly matches the cell with its function?

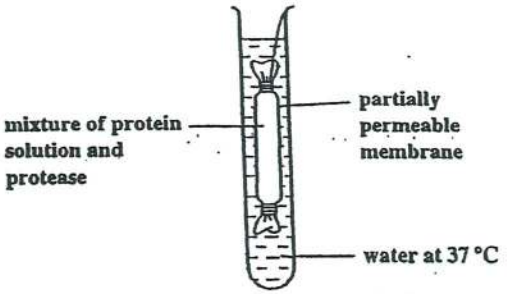
	Cell	Function
A	1	controls the size of the stomata
B	2	engulfs and digests bacteria
C	3	fertilizes the female ovum
D	4	absorbs water and mineral salts from the soil

13. The diagram shows a leaf and a section through part of the same leaf.

Which label indicates an organ?



14. The diagram shows an investigation to demonstrate the process of diffusion.



What was found in the water after 15 minutes?

A amino acids

B fatty acids

C glucose

D glycerol

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B predators

C prey

D scavengers

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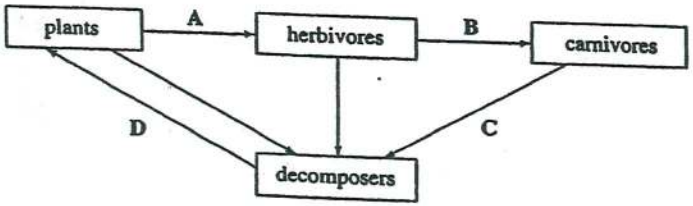

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A

B

C

D

11. In which cell organelle is glucose oxidised to release energy?

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B mitochondrion

C nucleus

D vacuole

The cells below are specialized to carry out specific functions.

cell 1

cell 2

cell 3

cell 4

Which row correctly matches the cell with its function?

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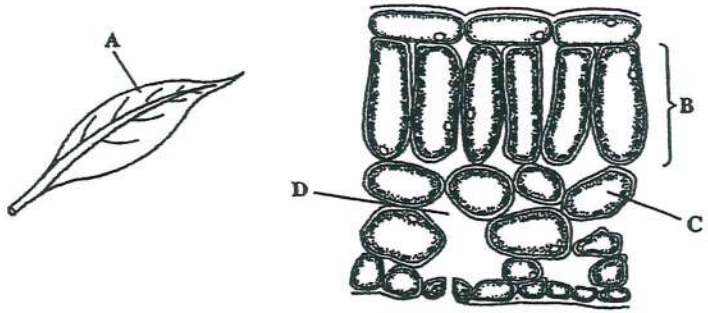

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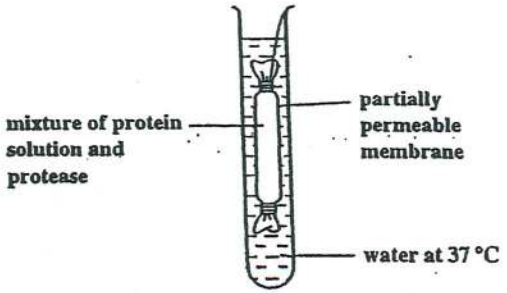


What was found in the water after 15 minutes?

A amino acids

B fatty acids

C glucose

D glycerol

If red blood cells are placed in distilled water they will swell up and burst.

What term describes the process by which water moves into the cell?

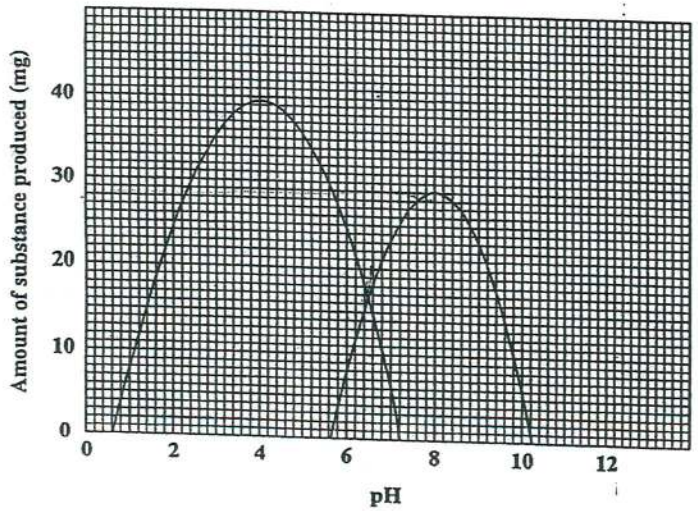
A active transport

B osmosis

C plasmolysis

D transpiration

The graph shows the effect of different pH on two enzymes.



What is the total amount of substance produced at the optimum pH of both of the two enzymes?

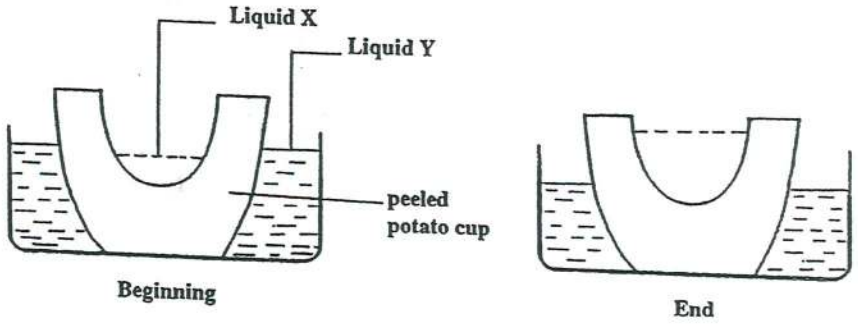
A 0 mg

B 17 mg

C 68.5 mg

D 70 mg

17. The diagram shows the beginning and end of a biological investigation.



Which statement is true concerning liquids X and Y?

A Liquid X and Y are both dilute sugar solutions.

B Liquid X is distilled water and Y is concentrated sugar solution.

C Liquid X is concentrated sugar solution and Y is dilute sugar solution.

D Liquid X is dilute sugar solution and Y is concentrated sugar solution.

18. What is the function of fibre in the diet?

A for energy

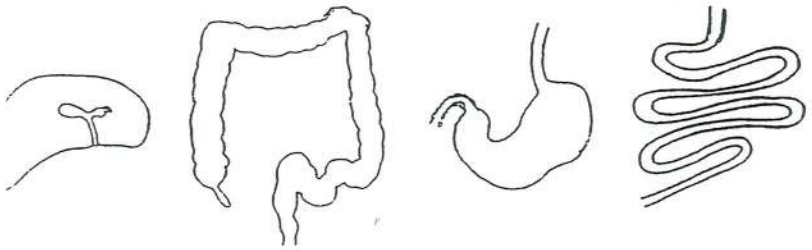
B for growth and repair

C to develop strong teeth and bones

D to maintain a healthy colon

The diagram shows four organs of the digestive system.

Which organ contains villi?



A B C D

The diagram represents a type of tooth.

Six year old Lisa is missing all of her teeth like the one shown.

What problem will she experience when eating?

She will have difficulty:

A biting off pieces of food.

B chewing her food.

C grinding food into tiny pieces.

D tearing off pieces of food.

21. Which is the correct word equation for photosynthesis?

A $\text{glucose} + \text{oxygen} \xrightarrow[\text{chlorophyll}]{\text{sunlight}} \text{carbon dioxide} + \text{water}$

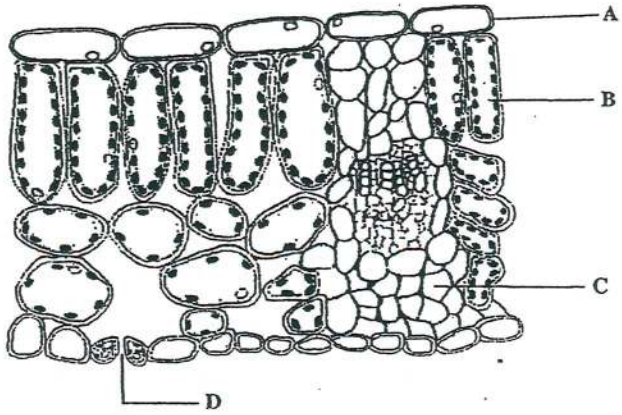
B $\text{oxygen} + \text{water} \xrightarrow[\text{chlorophyll}]{\text{sunlight}} \text{glucose} + \text{carbon dioxide}$

C $\text{carbon dioxide} + \text{water} \xrightarrow[\text{chlorophyll}]{\text{sunlight}} \text{glucose} + \text{oxygen}$

D $\text{energy} + \text{carbon dioxide} + \text{glucose} \xrightarrow[\text{chlorophyll}]{\text{sunlight}} \text{oxygen}$

22. The diagram shows a cross section of a leaf.

Which structure in the leaf regulates water loss and gas exchange?



23. Which type of cell lacks chlorophyll?

A guard cell

B palisade mesophyll

C spongy mesophyll

D xylem

Why does a young, herbaceous, well watered seedling often wilt when transplanted?

A shortage of air

B shortage of leaves

C shortage of root hairs

D shortage of mineral salts in the soil

Under which of these conditions would transpiration be most rapid?

A cool, dry and windy

B hot, dry and still

C hot, dry and windy

D hot, humid and still

The picture shows the position of taking the radial pulse in the lower arm.

If the measurement taken is 25 beats in 20 seconds, what is the number of beats per minute?

A 55

B 65

C 75

D 85

27. A vein has a wider lumen than an artery.

What is the advantage of this?

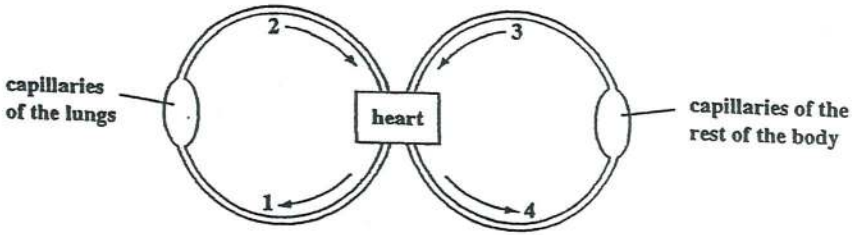
A bringing blood into close contact with the tissues

B offering less resistance to blood flow

C preventing back flow of blood

D resisting high blood pressure from the heart

28. The diagram shows a double circulatory system.



Which two vessels carry blood at the highest pressure?

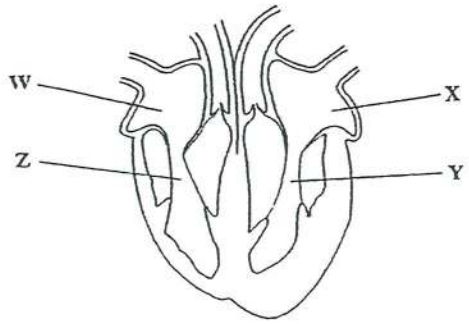
A 1 and 2

B 1 and 4

C 2 and 3

D 2 and 4

The diagram shows the structure of the human heart.



Which two chambers contract at the same time?

A W and X

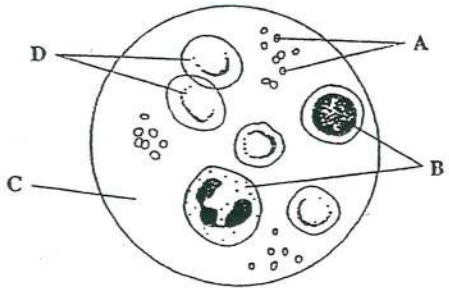
B W and Z

C X and Z

D X and Y

The diagram shows the components of human blood seen under a microscope.

Which component has the function of preventing blood loss?



31. Which TWO features are found in both a root hair cell and a red blood cell?

A cell membrane and cytoplasm

B cell membrane and vacuole

C nucleus and chloroplast

D nucleus and cytoplasm

32. What is the role of anaerobic respiration in the process of bread-making?

A to produce alcohol to flavour the bread

B to produce gas to make the bread rise

C to release enough energy to bake the bread

D to release enough lactic acid to kill the yeast

33. The picture shows athletes running a 100m race.

Which substance builds up in their muscles as a result of this activity?

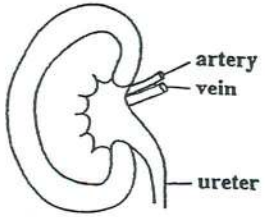
A carbon dioxide

B glycogen

C lactic acid

D urea

The diagram shows a kidney and its blood vessels.



In a healthy person, which structures transport glucose?

A artery only

B artery and ureter

C artery and vein

D ureter and vein

Urea is produced in one organ, filtered from the blood by a second organ and stored inside a third organ before being expelled from the body.

Which organs are responsible for carrying out these functions?

	production	filtration	storage
A	kidney	bladder	liver
B	kidney	liver	bladder
C	liver	bladder	kidney
D	liver	kidney	bladder

36. The table shows the amount of water and salt lost from the kidneys and skin on a hot day and on a cold day. Food and drink intake are the same on both days.

	water lost from kidneys/dm^3	water lost from skin/dm^3	salt lost from kidney/g	salt lost from the skin/g
cold day	1.8	0.0	20.2	0.0
hot day	0.4	2.3	14.4	5.8

What do these results show?

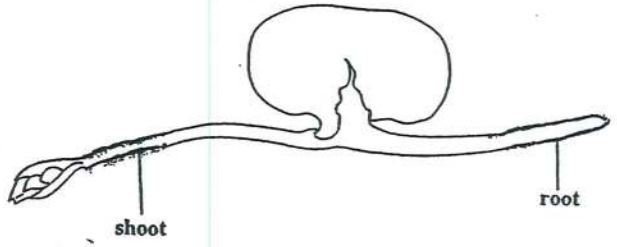
A Less water is lost from the kidneys on a cold day than on a hot day.

B More salt is lost from the kidneys on a hot day than on a cold day.

C The total amount of salt lost each day is the same.

D Water is not lost from the kidneys on hot days.

37. The diagram shows a bean seedling that is placed horizontally, in the dark, at the start of an investigation.



Which result would be observed after a few days?

A There is no change in the direction of the growth of the root and shoot.

B The root grows downward and shoot grows upwards.

C The shoot grows horizontally and the root grows downwards.

D The shoot grows upwards and the root grows horizontally.

Which term describes the effect of gravity on the growth of a plant's root?

A geotropism

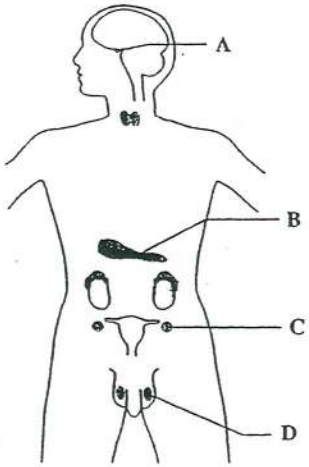
B hydrotropism

C phototropism

D thigmotropism

The diagram represents the endocrine system.

Which gland produces the hormone that controls the concentration of sugar in the blood?



Which processes take place in the body of a runner at the end of a marathon race?

A sweating and vasoconstriction

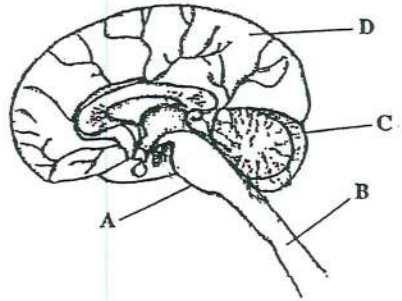
B sweating and vasodilation

C vasoconstriction only

D vasodilation only

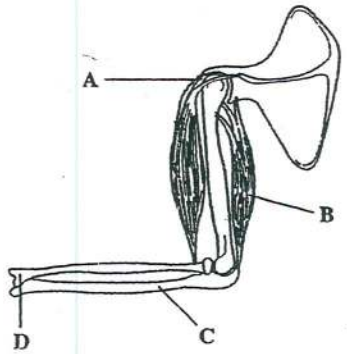
41. A family was enjoying a day at the beach. Suddenly the father noticed that the baby push with the baby had rolled into the middle of a busy street. He raced, bare feet, onto the hot asphalt road to retrieve his baby.

Which part of the nervous system caused him to run on the hot asphalt road?

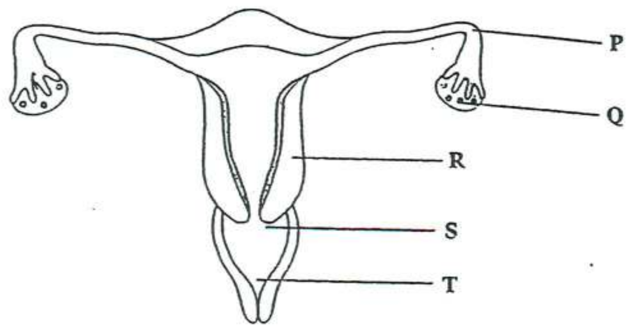


42. The diagram shows the bones and muscles in the human arm.

Which label represents a tendon?



. The diagram shows the human female reproductive system.



Which of the following combinations contain **TWO** structures in which mitosis may occur and **ONE** structure in which meiosis may occur?

A P, R, S

B Q, R, S

C R, S, T

D S, T, P

Which of the following structures is **incorrectly** matched with its function?

A	cervix	connection between the uterus and vagina
B	placenta	attaching the foetus to the mother
C	umbilical cord	connects the ovum to the uterus
D	uterus	opens into the vagina

50. hous produ mall 400 ds in kyard . Sh
that 287 of them were green and 113 were yellow.

What parental genotypes would give rise to these results and what phenotypic ratio do they represent?

A Heterozygous × Heterozygous 1: 1

B Heterozygous × Homozygous 3: 1

C Heterozygous × Heterozygous 3: 1

D Homozygous × Homozygous 1: 1

	Parental genotypes	Phenotypic ratio
A	heterozygous × heterozygous	1:1
B	heterozygous × homozygous	3:1
C	heterozygous × heterozygous	3:1
D	homozygous × homozygous	1:1

[End

What do the two parts of the name *Cajanus cajan* represent?

A genus, species

B invasive species

C nerve fibre

D vascular system

Which characteristics of life are common to all living organisms?

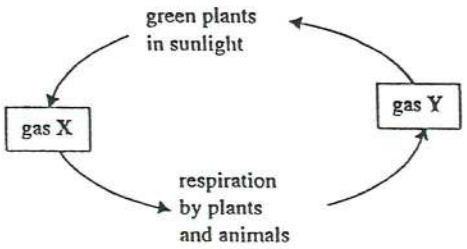
A breathing, excretion, growth, irritability

B excretion, growth, irritability, reflex action

C growth, irritability, photosynthesis, reproduction

D irritability, excretion, growth, reproduction

3. The diagram shows a part of the carbon cycle.



What are gases X and Y?

	X	Y
A	carbon dioxide	oxygen
B	water vapour	carbon dioxide
C	oxygen	carbon dioxide
D	oxygen	nitrogen

4. The diagram shows part of a pigeon pea plant.

Which words describe structures visible in the diagram?

A legume, dicotyledonous leaves

B legume, monocotyledonous leaves

C nut, dicotyledonous leaves

D nut, monocotyledonous leaves

5. Which list contains animals belonging to four different classes of vertebrates?

A frog, pigeon, grouper, rat

B pigeon, grouper, rat, cat

C grouper, rat, frog, insect

D rat, frog, grouper, shark

Which is the correct definition of an omnivore?

A an organism that eats only plants

B an organism that eats both plants and animals

C an organism that eats only animals

D an organism that eats dead organisms

The table represents energy present at different trophic levels of an ecosystem.

trophic level	organism	energy/kcal per m^2 per year
1	producer	1300
2	primary consumer	126
3	secondary consumer	13

What percentage of energy is transferred from trophic level 2 to trophic level 3?

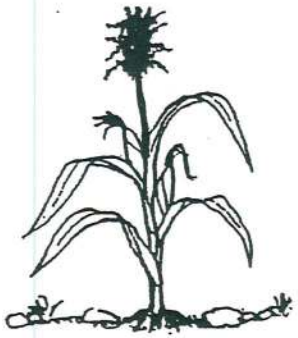
A 9.6%

B 9.8%

C 10.0%

D 10.3%

8. The diagram shows a maize plant.



Why is this plant classified as a monocotyledon?

A broad leaves, net veins, tap root

B broad leaves, parallel veins, fibrous roots

C narrow leaves, net veins, tap roots

D narrow leaves, parallel veins, fibrous roots

9. In a fresh water pond containing a population of land turtles, which process would prove most detrimental to the turtles?

A dumping construction debris into the pond

B enlarging the pond by fifty percent

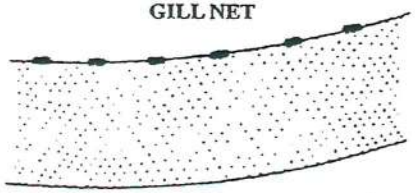
C planting trees around the edge of the pond

D rainwater falling directly into the pond

The pictures show different types of fishing gears.

Which type of gear is potentially most destructive to the fish population?

GILL NET

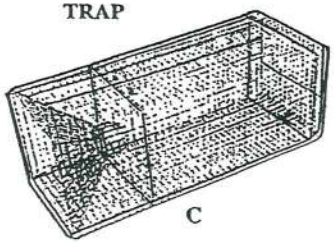


A

SPEAR GUN

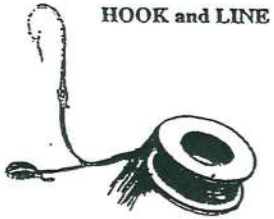
B

TRAP



C

HOOK and LINE



D

Which list shows the four levels of organisation in living things, arranged in order from smallest to largest?

A cell, organ, organism, organ system

B cell, tissue, organ, organ system

C organism, cell, tissue, organ system

D tissue, cell, organ system, organism

12. Which **three** structures do all cells have in common?

A cell membrane, chromosomes, cytoplasm

B cell wall, chloroplast, cytoplasm

C chloroplast, mitochondria, nucleus

D cell wall, mitochondria, nucleus

13. What is the process by which particles move from a region of high concentration to a region of low concentration until they are evenly distributed?

A active transport

B diffusion

C fermentation

D ultra-filtration

[Turn over

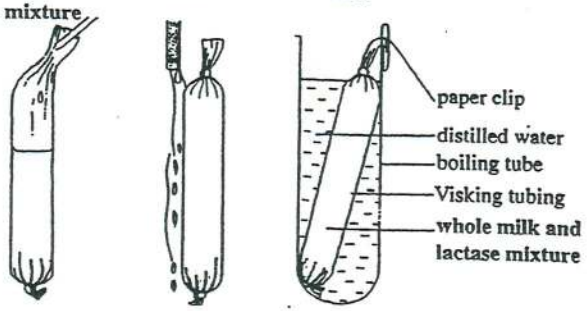
... before ... illustrate a simple model of digest...

Method

Fill a length of Visking tubing, knotted at one end, with **whole milk and lactase mixture**

Tie the second end and rinse the tubing with tap water

Place tubing into a boiling tube of distilled water



After 20 minutes which of the following substances would you expect to be present in the boiling tube?

A amino acids

B cellulose

C glucose

D starch

What is the ratio of milk teeth to permanent teeth?

A 2 : 3

B 5 : 8

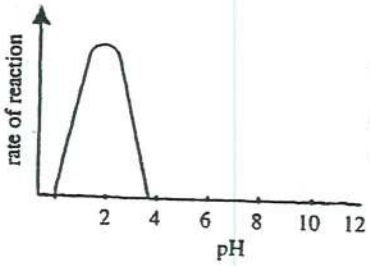
C 10 : 12

D 22 : 30

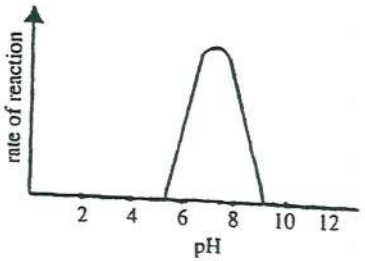
... The graphs show the effect of pH on four enzymes.

Which graph shows the effect of pH on the enzyme pepsin?

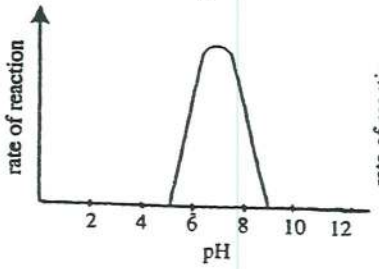
A



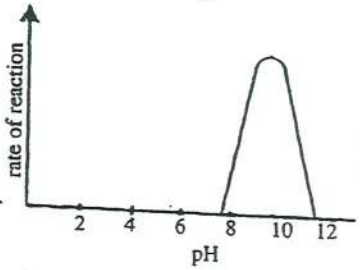
B



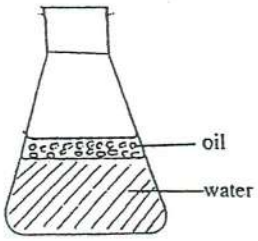
C



D

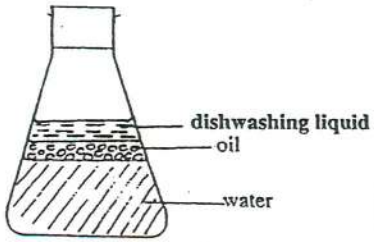


The diagrams show a simple experiment involving water and oil to form a mixture.



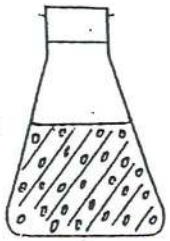
I

added to water in flask, ney remain separated



II

dishwashing liquid added



III

flask shaken vigorously, water and oil mixture

The dishwashing liquid acted like:

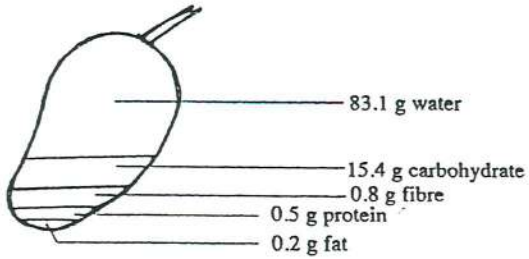
A amylase

B bile

C pepsin

D saliva

18. The diagram shows the masses of nutrients in 100 g of ripe mango.



What percentage of the nutrients would help to prevent kwashiorkor?

A 0.2%

B 0.5%

C 0.8%

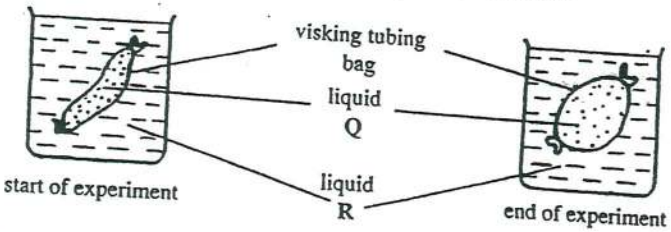
D 15.4%

19. The table shows part of the digestive process.

name of enzyme	site of action	glands producing the enzyme	food molecule affected by the enzyme	products
amylase	small intestine	II	starch	IV
I	stomach	gastric glands	III	peptides

What are I, II, III and IV?

	I	II	III	IV
A	lipase	pancreas	protein	amino acids
B	pepsin	stomach	fats	fatty acids and glycerol
C	amylase	saliva	starch	maltose
D	pepsin	pancreas	protein	maltose



Which statement about Q and R is correct?

A Q and R are both distilled water.

B Q and R are both concentrated sucrose solutions.

C Q is concentrated sucrose solution and R is distilled water.

D Q is dilute sucrose solution and R is concentrated sucrose solution.

21. Which structure in the leaf regulates transpiration and gas exchange?

A guard cell

B palisade layer

C waxy cuticle

D xylem tube

22. What happens to blood when it flows through the capillaries of the lungs?

A Blood changes from bright red to dark red.

B Platelets are exchanged for plasma.

C Carbon dioxide leaves the blood and oxygen enters it.

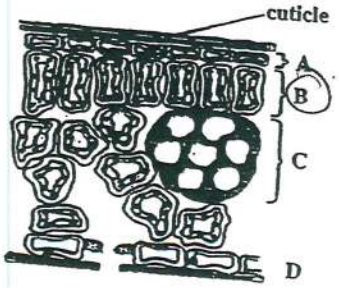
D Oxygen leaves the blood and carbon dioxide enters it.

23. Which list shows how a change in the rate of exercise affects the rate of oxygen intake and rate of heartbeat?

	rate of exercise	rate of oxygen intake	rate of heartbeat
A	decrease	increase	increase
B	decrease	decrease	decrease
C	increase	decrease	increase
D	increase	increase	decrease

24. The diagram shows a cross-section through the leaf of a plant.

In which area is most food made?



25. Which of the following is needed for the clotting of blood?

A calcium

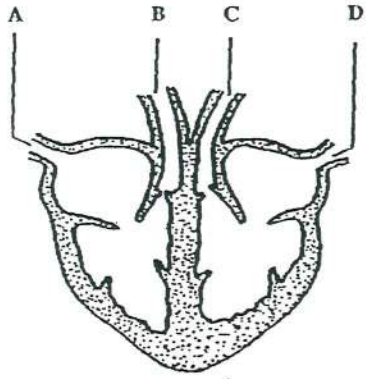
B haemoglobin

C iodine

D pepsin

6. The diagram shows the structure of the heart.

Which blood vessel collects deoxygenated blood from the body?



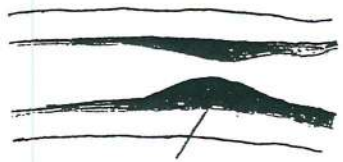
27. Which blood vessels deliver oxygen and food to the heart muscles?

A coronary artery

B pulmonary artery

C pulmonary vein

D vena cava



What would happen if the fatty substance blocks the artery?

A Organs beyond the blockage would be starved of nutrients.

B The size of the artery would increase.

C The blood in the artery would become deoxygenated.

D The blood pressure in the artery would be lowered.

29. The diagram shows an opening in the lower epidermis of a leaf.

What would be most likely to occur if the opening was closed?

A a decrease in transpiration

B an increase in photosynthesis

C an increase in transpiration

D wilting

30. What is the approximate oxygen content in human exhaled air?

A 4%

B 16%

C 21%

D 79%

A student took her pulse rate and then exercised for two minutes before resting again.

The table shows the result of an investigation into the volume of air breathed in at rest and after running.

	volume of air breathed in with one breath/cm^3
at rest	450
after running	1000

What volume of air in one breath, after running, will be carbon dioxide?

A $0.03\ cm^3$

B $0.3\ cm^3$

C $3.00\ cm^3$

D $30.00\ cm^3$

Which statement is correct concerning both plant and animal hormones?

A They are growth chemicals.

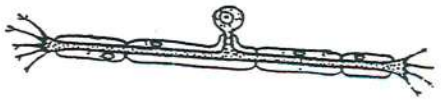
B They are made in the cells.

C They are produced by endocrine glands.

D They are transported in the blood.

33. Which structure, in males, transports urine to the outside of the body?

41. The diagram shows a sensory neurone.



What would happen if the myelin sheath was removed?

A The impulse would travel faster.

B The impulse would travel slower.

C The impulse would travel in the opposite direction.

D There would be no movement of the impulse.

42. Which of the following structures is able to carry out vegetative reproduction?

A

corn

B

potato

C

pumpkin

D

tomato

43. Which region of the brain is most likely to be used in solving a genetic problem?

A cerebellum

B cerebrum

C hypothalamus

D medulla oblongata

Which cells are produced in animals from the process of meiosis?

A muscle

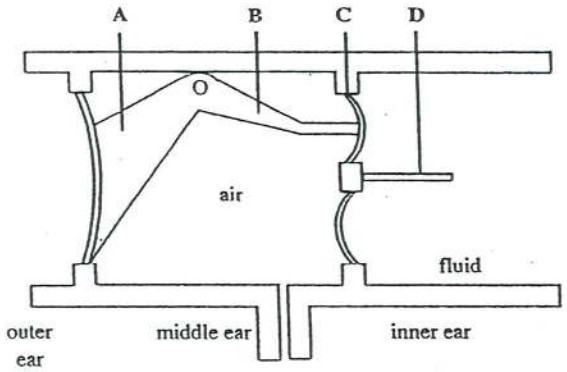
B nerve

C ova

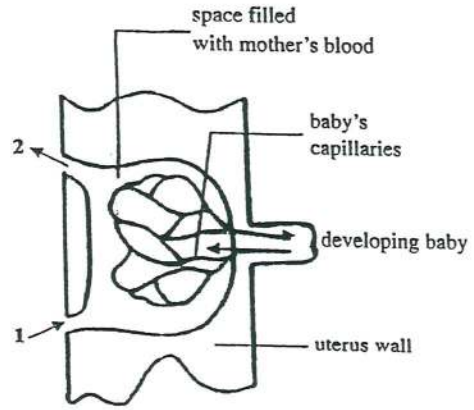
D red blood

The diagram shows a mechanical model of the ear.

Which letter represents the malleus?



46. The diagram shows the arrangement of blood vessels in the uterus and placenta of a female mammal.



Which of the following will increase in concentration in the blood flowing from 1 to 2?

A amino acids

B carbon dioxide

C glucose

D inorganic salts

47. What would be the result of cutting the vas deferens in a male mammal?

A Sex hormones would no longer circulate in the blood.

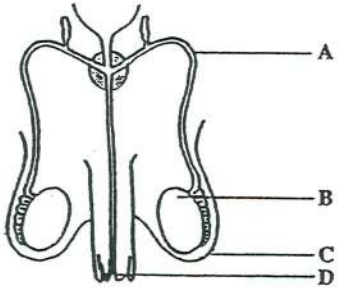
B Male would be unable to pass urine.

C Male would be unable to develop sperms.

D Sperms would be absent from the semen.

The diagram represents the human male reproductive system.

Which structure works best at a temperature below body temperature?



Which gland produces the hormones needed for the development of secondary sexual characteristics?

A adrenal

B pancreas

C testes

D thyroid

A man heterozygous for brown eyes marries a woman who is heterozygous for brown eyes. If blue eyes is controlled by a recessive allele, what is the chance of their first child having brown eyes?

A 1 : 2

B 1 : 1

C 1 : 3

D 3 : 1

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BIOLOGY

BGCSE PAST PAPERS

PAPER 2