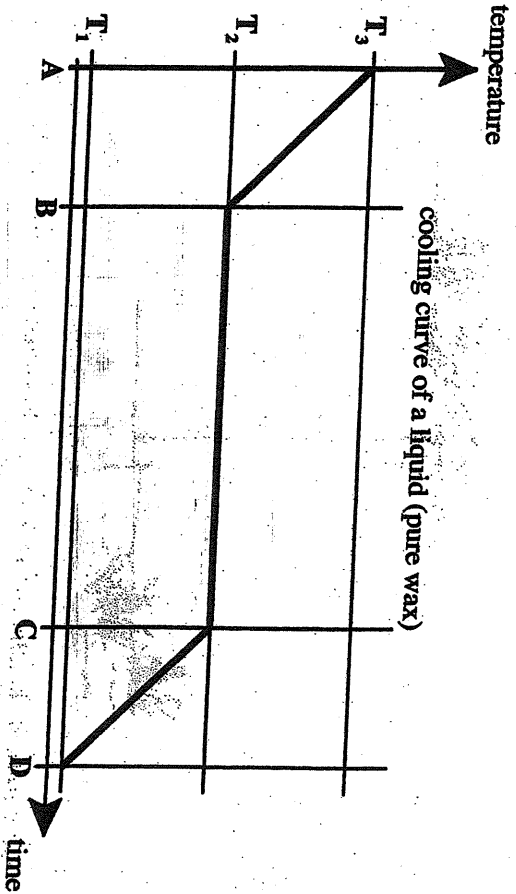


48.

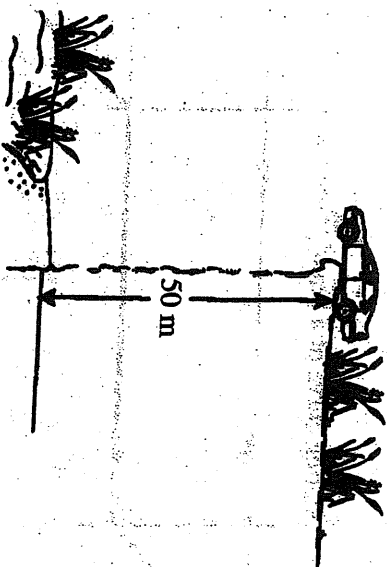
The graph shows the results of observing a hot liquid, pure wax, as it slowly cools to room temperature.



What can be deduced from these results?

- A A to B, the wax is starting to freeze
- B B to C, the wax is changing state from liquid to solid
- C C to D, some wax is still liquid
- D the freezing point of the wax is  $T_1$

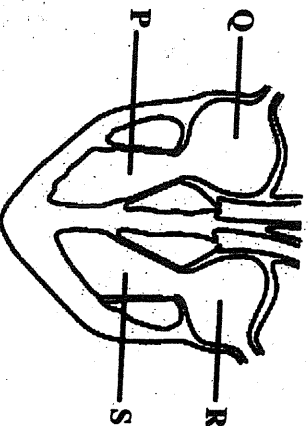
49. After an accident, a car of mass 1 500 kg comes to a stop at the edge of a 50 m cliff, then plunges into the water below.



What will be its kinetic energy halfway down the cliff? ( $g = 10 \text{ m/s}^2$ )

- A 37 500 J
- B 75 000 J
- C 375 000 J
- D 750 000 J

50. The diagram shows a longitudinal section of a human heart.



In which labelled chambers is deoxygenated blood?

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

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End]

School Number	Candidate Number
Surname and Initials	

# COMBINED SCIENCE

PAPER 1 3102/1

Tuesday **29 MAY 2012** 12.00 – 1.15 P.M.

Additional material  
Paper for rough work

## MINISTRY OF EDUCATION NATIONAL EXAMINATIONS

BAHAMAS GENERAL CERTIFICATE OF SECONDARY EDUCATION

### INSTRUCTIONS FOR CANDIDATES

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

Write your school number, candidate number, surname and initials in the spaces provided on this paper.

There are **FIFTY** questions on this paper.

Attempt **ALL** questions.

For each question there are **FOUR** possible answers labelled A, B, C and D. Choose the **ONE** you consider correct and record your choice by circling the **LETTER** next to the answer of your choice in the booklet.

A copy of the Periodic Table is printed on page 2.

Calculators are permitted, however **NO** graphing calculators are allowed.

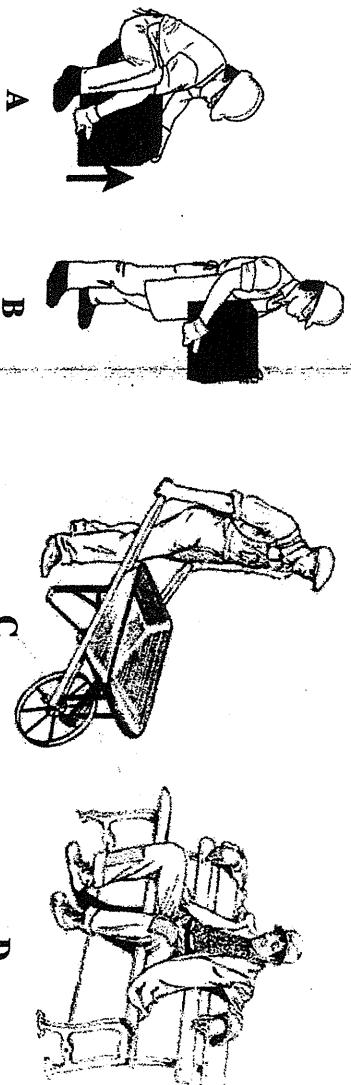
<b>FOR EXAMINER'S USE</b>	
<b>TOTAL</b>	

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

1. Which apparatus is used to measure the weight of an object?

- A beam balance
- B callipers
- C pipette
- D spring balance

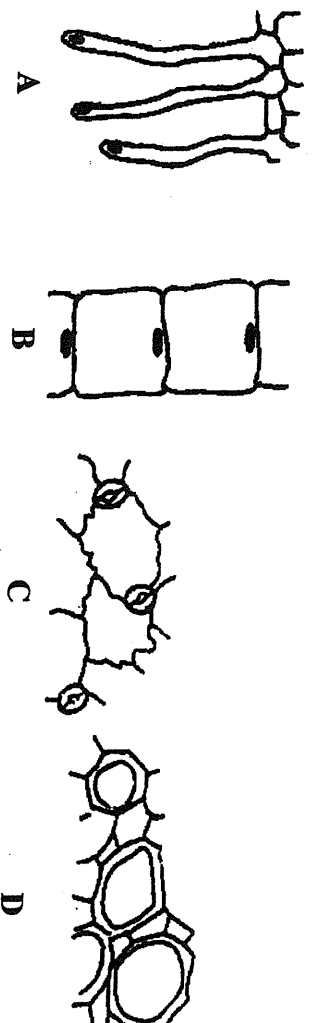
2. Which picture shows work being done?



3. Which part of a cell controls all its activities?

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

4. Which plant cells are responsible for the uptake of water with dissolved mineral salts from the soil?



5. Which process occurs only in plants?

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

6. What is the electronic configuration of the sodium atom?

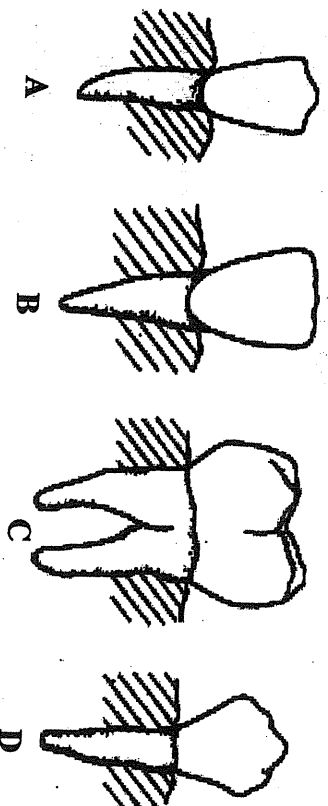
- A 1,1
- B 1,3
- C 2,8,1
- D 2,8,8,1

7. Which process is used to obtain a liquid solvent from a solution?

- A combustion
- B distillation
- C filtration
- D evaporation

8. The diagram show four types of teeth.

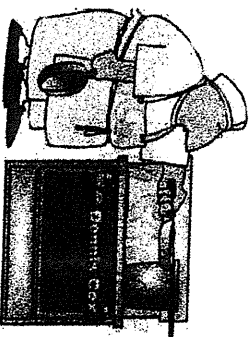
Which tooth is more effective in increasing the surface area of pieces of food?



9. Which description is a **physical change**?

- A cast iron solidifying from a blast furnace
- B burning petrol to form liquid water and carbon dioxide
- C shiny steel changing to a brown rust powder
- D zinc reacting with hydrochloric acid

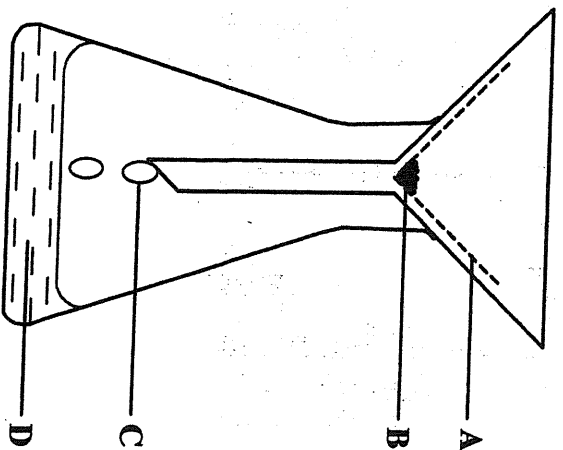
10. The diagram shows a person holding a hot pan. Although the pan is hot, the handle is cool.



Which material is used for the handle?

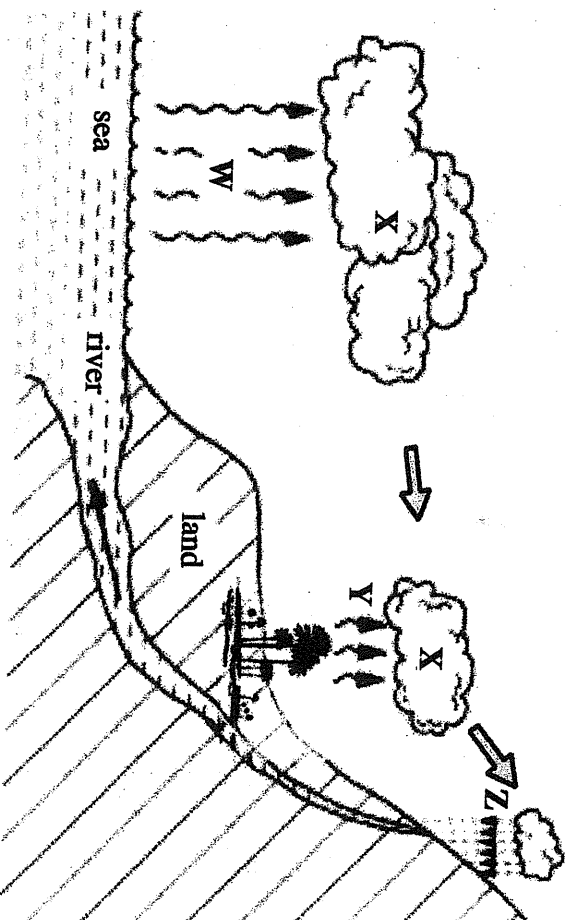
- A aluminium
- B copper
- C iron
- D wood

11. The diagram illustrates a method of separating a mixture.



Which letter labels the residue?

12. The diagram shows the stages in the water cycle.



Which TWO processes are taking place at W and Y?

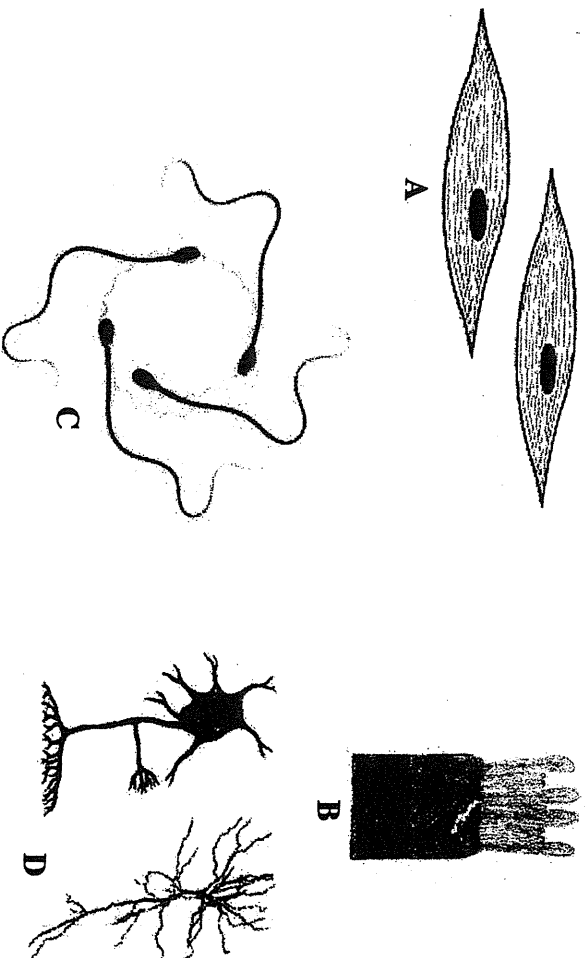
	W	Y
A	condensation	precipitation
B	condensation	evaporation
C	evaporation	transpiration
D	transpiration	precipitation

13. Which organ is **NOT** involved in the excretion of waste materials?

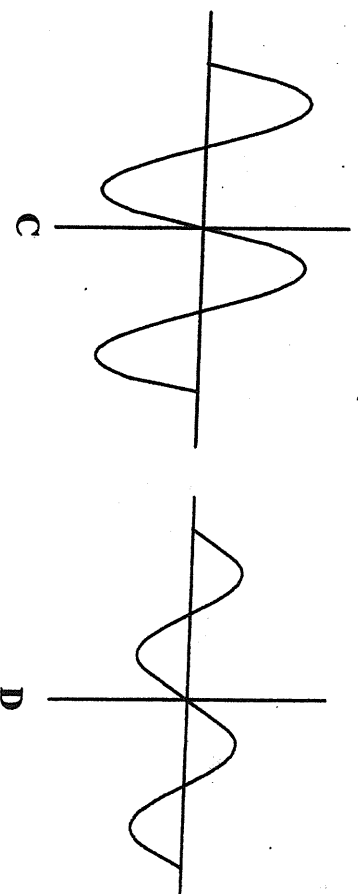
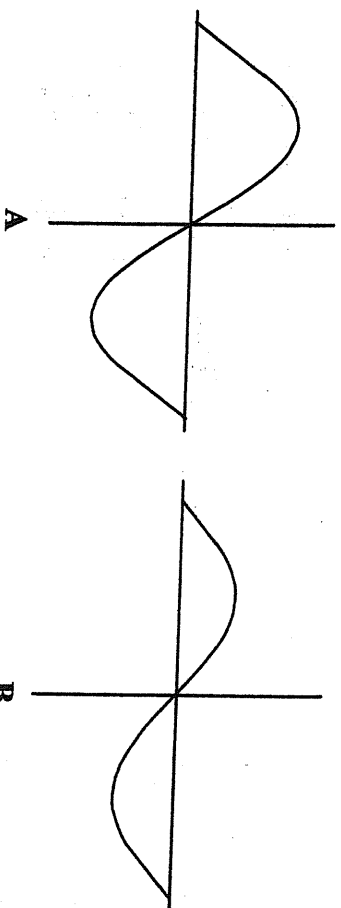
- A heart
- B kidneys
- C liver
- D lungs

14. The diagram shows **FOUR** different cells.

Which cells are found lining the wall of the small intestines?



15. Which mechanical wave has the greatest energy?



16. What is the temperature shown equivalent to on the Kelvin temperature scale?



- A 223 K
- B 273 K
- C 323 K
- D 373 K

17. Why is water from the water tables of The Bahamas considered hard?

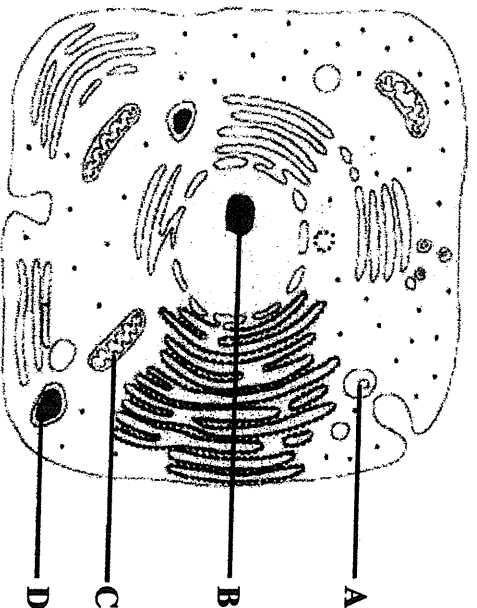
- A contains pollutants
- B contains sodium chloride
- C contains ions of a Group II element
- D contains a detergent

18. What is the formula of the compound formed by element X, in Group 2 element Y, in Group 7 of the Periodic Table?

A XY  
B  $XY_2$   
C  $X_2Y$   
D  $X, Y_2$

19. The diagram shows a typical animal cell.

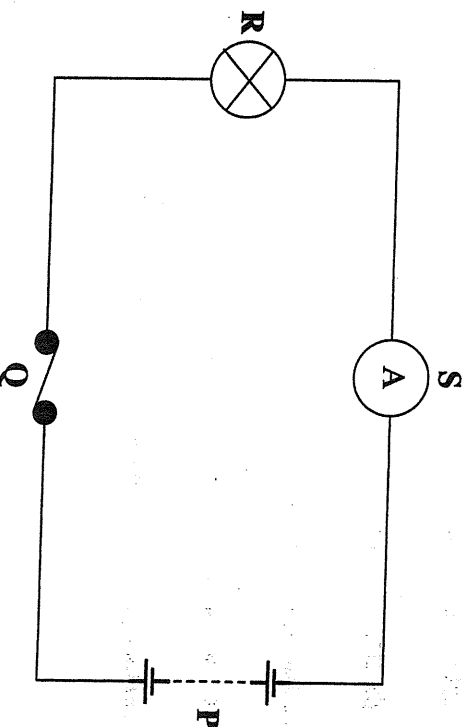
Which part of the cell is the place where respiration occurs?



20. Which group of animals is cold-blooded with moist, soft skin?

A amphibians  
B arthropods  
C fish  
D reptiles

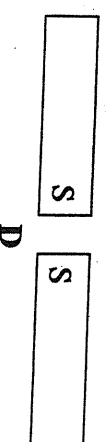
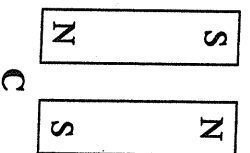
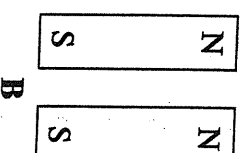
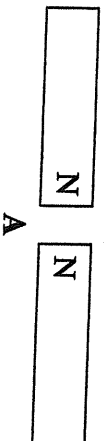
21. The diagram represents an electric circuit.



Which labelled part pushes electrons through the circuit?

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

22. Which arrangement of magnets would produce attraction?



23. Which gas is given off when hydrochloric acid reacts with magnesium?

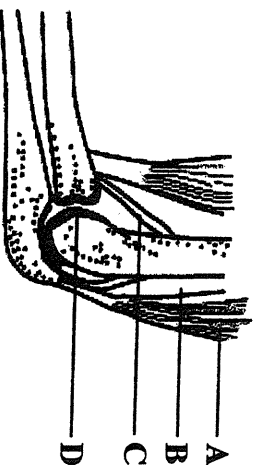
- A carbon dioxide
- B chlorine
- C hydrogen
- D oxygen

24. Which organ is responsible for the chemical breakdown of alcohol?

- A brain
- B kidney
- C liver
- D stomach

25. The diagram represents a section through a joint.

Which labelled structure represents cartilage?



26. What happens to a sodium ion when it turns back into a sodium atom.

- A it gains one electron
- B it gains one proton
- C it loses one electron
- D it loses one proton

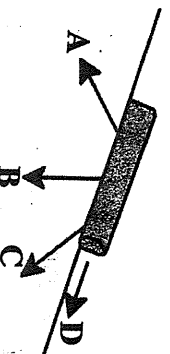
27.

Which element name and symbol are correctly paired?

- A copper C
- B manganese Mg
- C potassium P
- D silver Ag

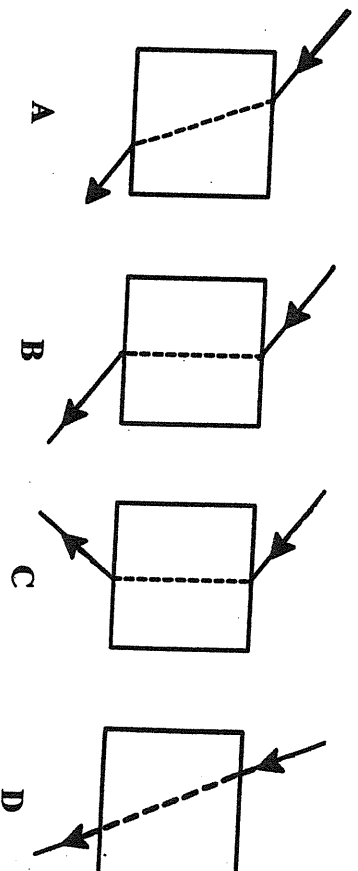
28.

The diagram shows a book resting on a slope. In which direction does the weight of the book act?



29.

Which diagram correctly shows the path of a ray of light as it passes through a glass block?



30.

Which is a useful adaption for the survival of mangroves in their environment?

- A large leaves
- B long narrow stems
- C salt tolerant tissues
- D short roots

31. Which layer of cells contains the most chloroplast organelles?

- A lower epidermal
- B palisade mesophyll
- C spongy mesophyll
- D upper epidermal

32. Which organism causes AIDS?

- A a bacterium
- B a fungus
- C a mosquito
- D a virus

Use the information to answer questions 33 and 34.

The table contains information about **FOUR** substances likely to be found in the kitchen of a home.

The responses may be used once, more than once or not at all.

letter	substance	pH
A	vinegar	4
B	milk	6
C	salt	7
D	oven cleaner	14

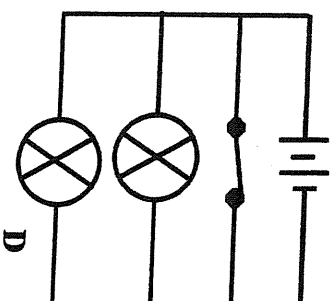
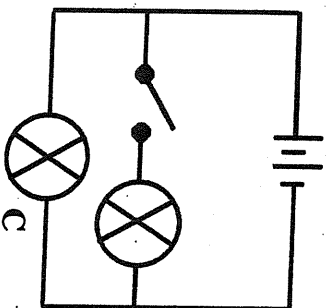
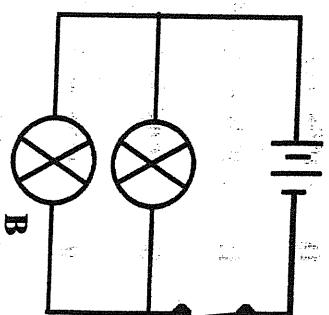
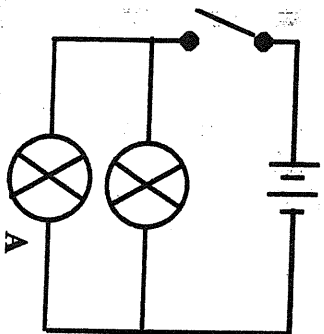
33. Which substance is alkaline?

- A
- B
- C
- D

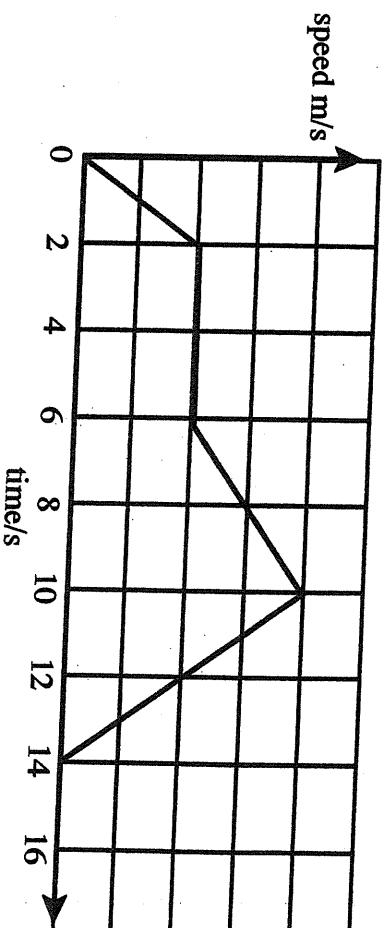
34. Which substance would change the colour of universal indicator to green?

- A
- B
- C
- D

35. In which circuit diagram will both lamps be on?



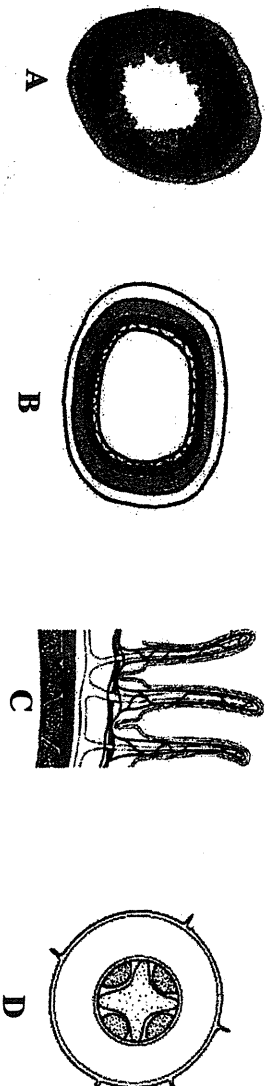
36. The speed-time graph is for a cyclist on the course of a race.



During what time interval was the cyclist travelling at a constant speed?

- A 0 s to 2 s  
 B 2 s to 6 s  
 C 6 s to 10 s  
 D 10 s to 14 s

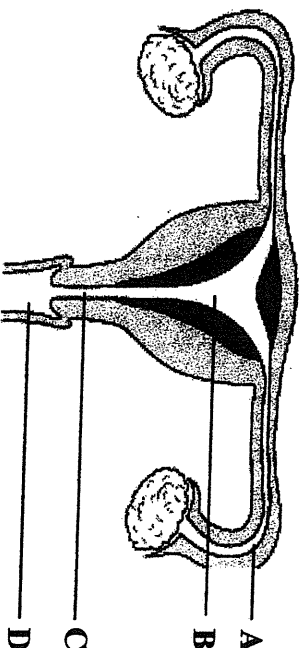
37. Which diagram shows the structure of a vein?



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

- A aqueous humour
- B choroid layer
- C cornea
- D lens

39. The diagram shows the female reproductive system.



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

40. Which pair of elements will form an ionic bond?

- A Ar and O
- B Cl and C
- C H and O
- D Na and Cl

41.

A Royal Bahamas Defence Force Marine sees the flare from a distress rocket in the sky and 5 seconds later he hears the blast.

How far is the distress rocket from the marine? (speed of sound in air = 330 m/s)

- A 60 m
- B 325 m
- C 335 m
- D 1650 m

Use the information provided on the atom labelled X to answer questions number 42 and 43.

The mass number (nucleon number) and atomic number are shown for atom X.



42.

Which row describes atom X?

	mass number	protons	electrons	neutrons
A	19	20	39	19
B	19	39	39	20
C	39	19	19	20
D	19	19	20	19

43.

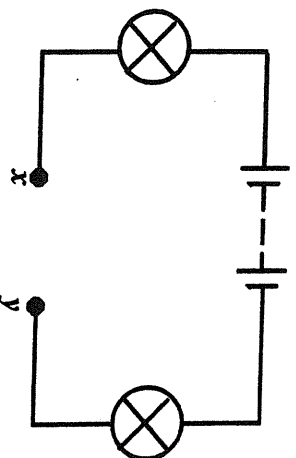
What is the atomic number of atom X?

- A 9
- B 10
- C 19
- D 39



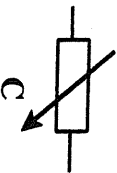

44. How are the processes of **alcoholic fermentation** and **aerobic respiration** similar?

- A both processes produce ethyl alcohol
- B both processes release carbon dioxide
- C both processes require free oxygen
- D both processes utilize light

45. The diagram shows part of an electrical circuit.



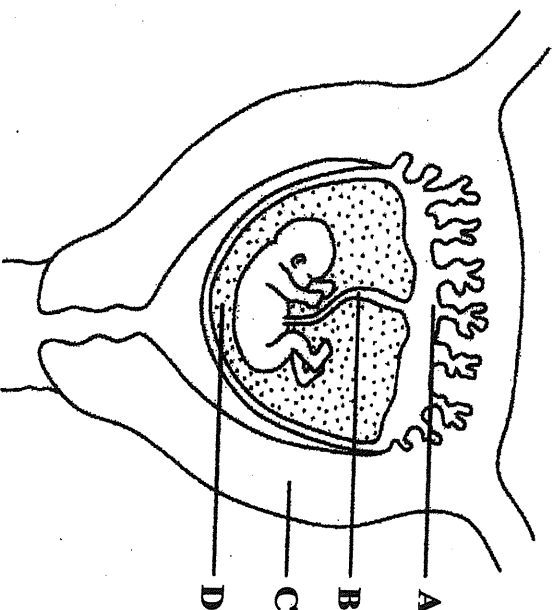
Which component can be connected between *x* and *y* to vary the brightness of the lamps?

- A 
- B 
- C 
- D 

46.

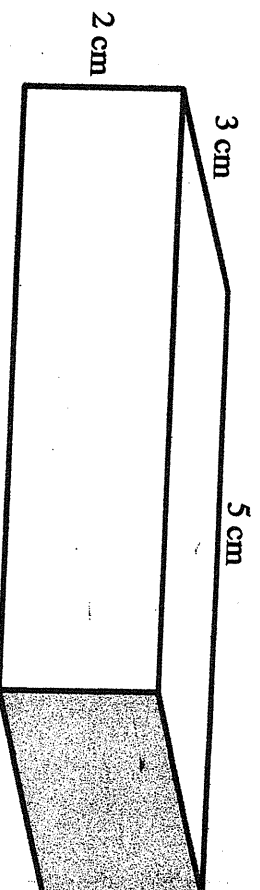
The diagram shows a foetus 14 weeks after the beginning of pregnancy.

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



47.

The diagram shows a wooden block of 150 g and its dimensions.



What is the density?

- A  $2 \text{ g/cm}^3$
- B  $3 \text{ g/cm}^3$
- C  $4 \text{ g/cm}^3$
- D  $5 \text{ g/cm}^3$

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

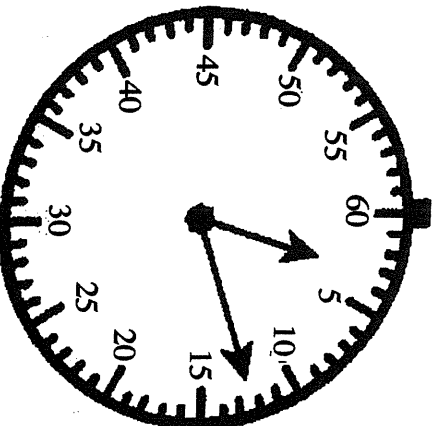
Which property of enzymes explains this difference?

- A enzymes are specific
- B enzymes can be used over again
- C enzymes work best at a particular pH
- D enzymes are denatured by heat

49. What is the change of state represented by the equation  $\text{CO}_2(\text{g}) \rightarrow \text{CO}_2(\text{s})$ ?

- A boiling
- B condensation
- C melting
- D sublimation

50. A student times an experiment using a stop clock. If the clock started from zero, what was the duration of the experiment in seconds?



- A 12 s
- B 15 s
- C 193 s
- D 723 s

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**End]**

School Number	Candidate Number
Surname and Initials	

# COMBINED SCIENCE

PAPER 1 3102/1

Wednesday **29 MAY 2013** 12:00 Noon-1:15 P.M.

Additional materials:  
Paper for rough work

## MINISTRY OF EDUCATION NATIONAL EXAMINATIONS

BAHAMAS GENERAL CERTIFICATE OF SECONDARY EDUCATION

### INSTRUCTIONS TO CANDIDATES

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

Write your school number, candidate number, surname and initials in the spaces provided above this paper.

There are **FIFTY** questions on this paper.

Attempt **ALL** questions.

For each question, there are **FOUR** possible answers labelled A, B, C and D. Choose the **ONE** you consider correct and record your choice by circling the **LETTER** next to the answer of your choice in the booklet.

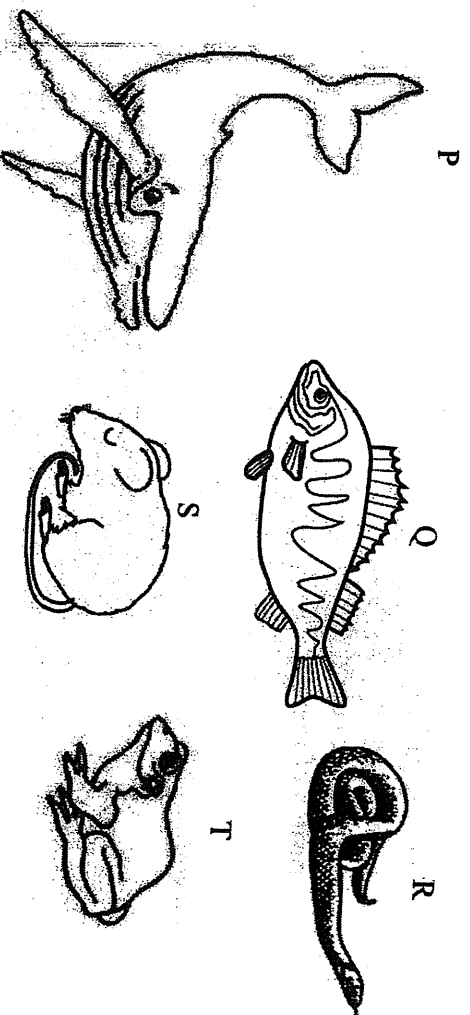
A copy of the Periodic Table is printed on page 2.

Calculators are permitted, however **NO** graphing calculators are allowed.

FOR EXAMINER'S USE ONLY	
Total Marks	

This question paper consists of 22 printed pages and 2 blank pages.

1. The diagram shows five animals.



Which organisms belong to the same class?

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

2. Which piece of apparatus is used to find the volume of a stone?

- A. burette
- B. displacement can
- C. ruler
- D. pipette

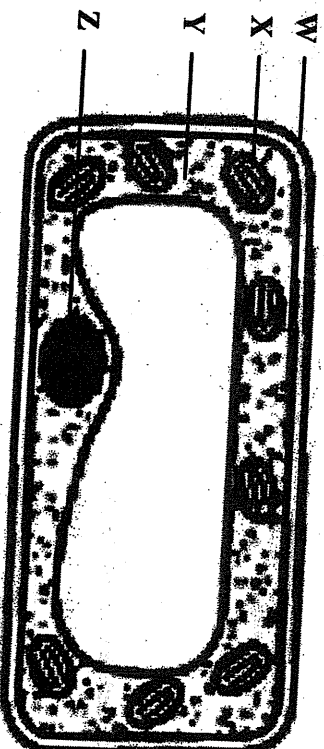
3. Which formula does NOT represent a molecule?

- A. Cu
- B.  $\text{Cl}_2$
- C.  $\text{H}_2\text{O}$
- D.  $\text{CH}_4$

4. Which of the following is an example of a physical change?

A. burning gasoline  
B. burning paper  
C. melting ice cubes  
D. rusting of iron

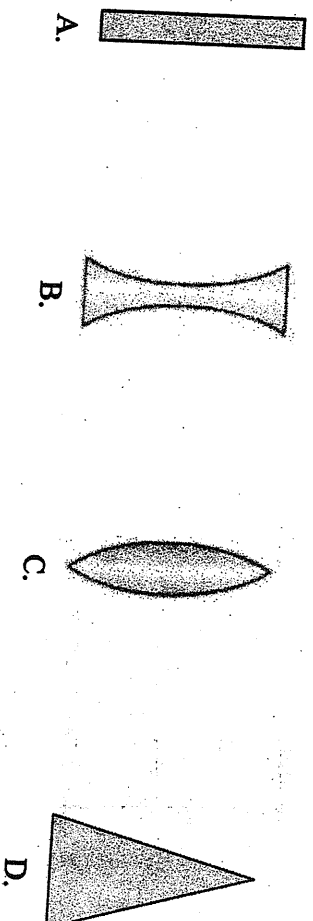
5. The diagram shows a typical plant cell.



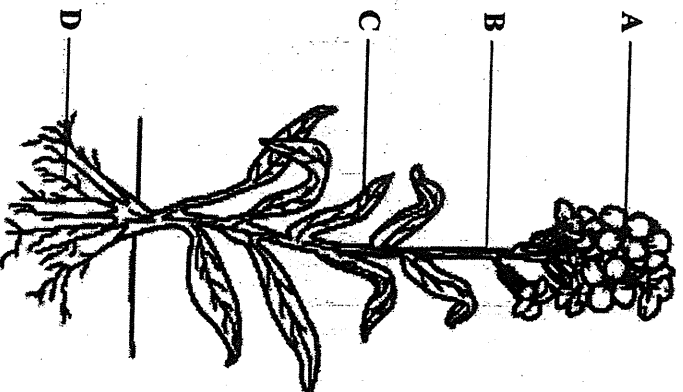
Which labelled structures are NOT found in an animal cell?

A. W and X  
B. W and Z  
C. X and Y  
D. Y and Z

6. Which piece of glass is used to converge light rays?



7. The diagram shows the main structures of a flowering plant.



Which structure is responsible for sexual reproduction?

8. The chart shows a food chain.

decaying plant  $\rightarrow$  termite  $\rightarrow$  P  $\rightarrow$  snake

Which organism might be represented by P?

- A. frog
- B. goat
- C. rabbit
- D. snail

9. Which device is designed to transfer kinetic energy into electrical energy?

- A. battery
- B. fan
- C. generator
- D. motor

10. The pH of a solution is 1. What colour will this solution be after testing with Universal Indicator?

A. blue  
B. green  
C. purple  
D. red

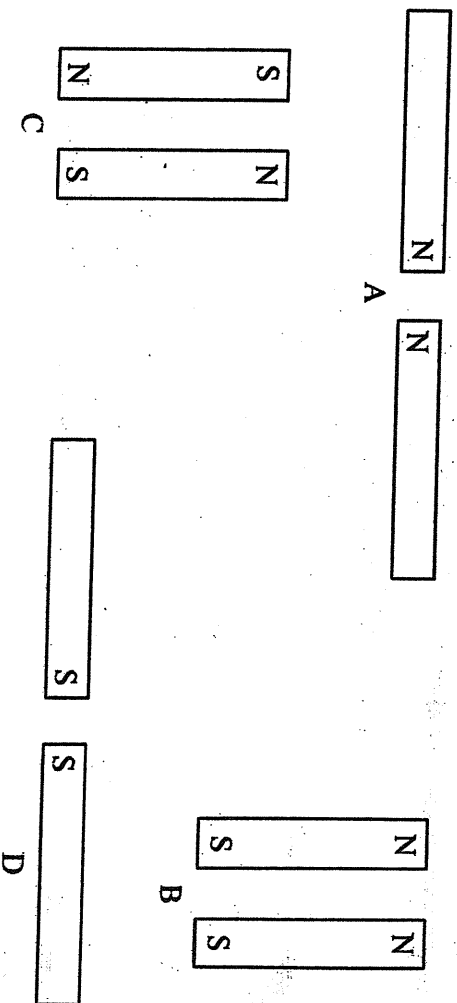
11. Which leaf structure is the main site for photosynthesis?

A. cuticle  
B. palisade cell  
C. stomata  
D. root hairs

12. The mouth of an adult human contains four of which type of teeth?

A. canines  
B. incisors  
C. molars  
D. premolars

13. Which arrangement of magnets would produce attraction?



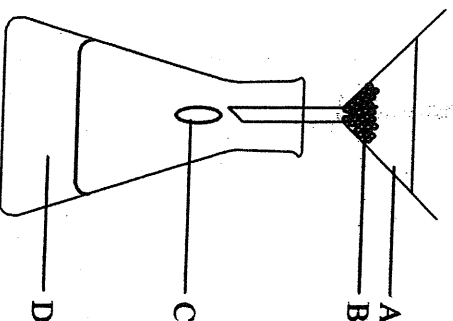
14.

Which particles move to cause an electric current in a conductor?

- A. atoms
- B. electrons
- C. neutrons
- D. protons

15.

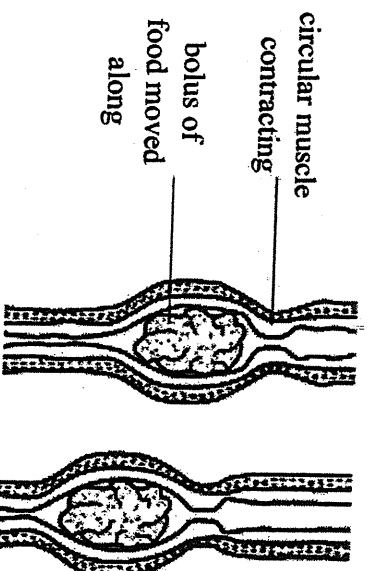
The diagram illustrates a method of separation.



Which letter labels the residue?

16.

Which process is shown in the diagrams of the esophagus or gullet?

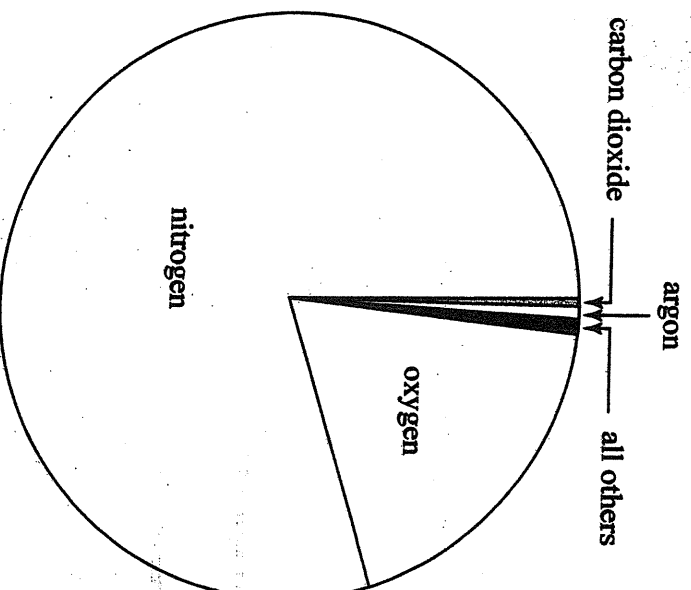


- A. assimilation
- B. chewing
- C. egestion
- D. peristalsis

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[Turn over

17. The diagram shows the approximate percentage of gases in the atmosphere.



Which gas has the highest percentage?

- A. argon
- B. carbon dioxide
- C. nitrogen
- D. oxygen

18. Which substance is produced by anaerobic respiration in muscles?

- A. alcohol
- B. glucose
- C. lactic acid
- D. oxygen

19. Which process releases carbon dioxide into the atmosphere?

- A. transpiration
- B. photosynthesis
- C. respiration
- D. rusting

20. What happens to the molecules when ice changes to water?

- A. form a pattern
- B. move faster
- C. move slower
- D. lose energy

21. Electricity consumption is measured in kilowatt hours (kWh). What does a kWh measure?

- A. current
- B. energy
- C. power
- D. time

22. Which wave is longitudinal?

- A. microwave
- B. radio wave
- C. sound wave
- D. water surface wave

23. The chart shows the percentage composition by weight of a food.

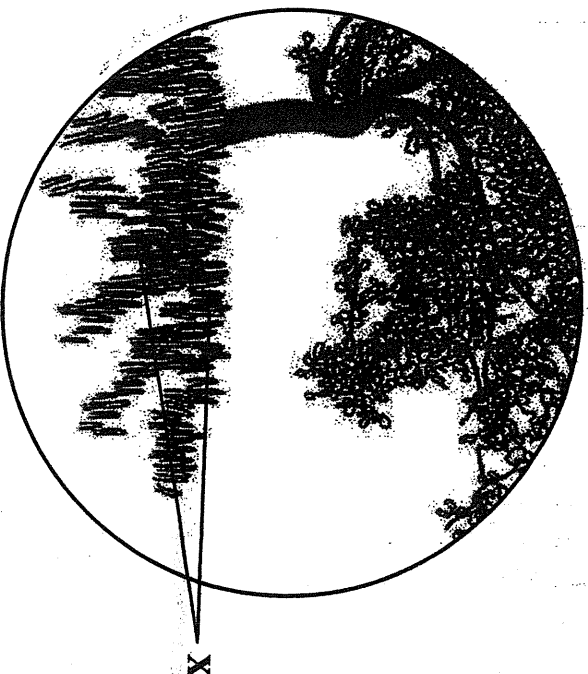
food	percentage
carbohydrates	4.7
proteins	3.3
fats	3.8
water	88.2

Which food is most likely represented?

- A. milk
- B. potatoes
- C. roast beef
- D. wheat bread

24.

The drawing shows a mangrove plant.



What purpose is structure X adapted for?

- A. gaseous exchange
- B. osmosis
- C. photosynthesis
- D. transpiration

25.

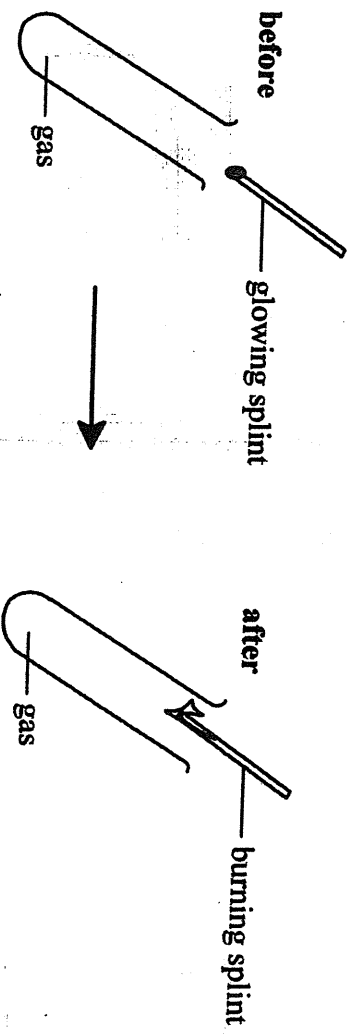
Which of these is NOT a solution?

- |    |                         |                    |     |           |
|----|-------------------------|--------------------|-----|-----------|
|    | dilute<br>sulfuric acid | distilled<br>water | tea | sea water |
| A. |                         |                    |     |           |
| B. |                         |                    |     |           |
| C. |                         |                    |     |           |
| D. |                         |                    |     |           |

26. How is cocaine classified?

- A. a depressant
- B. an hallucinogen
- C. a sedative
- D. a stimulant

27. The diagram shows a test for a gas.

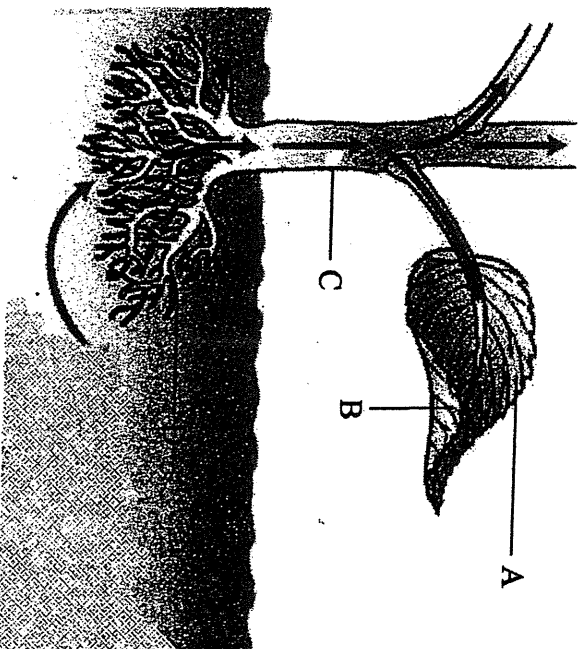


Which gas will this test identify?

- A. ammonia
- B. carbon dioxide
- C. hydrogen
- D. oxygen

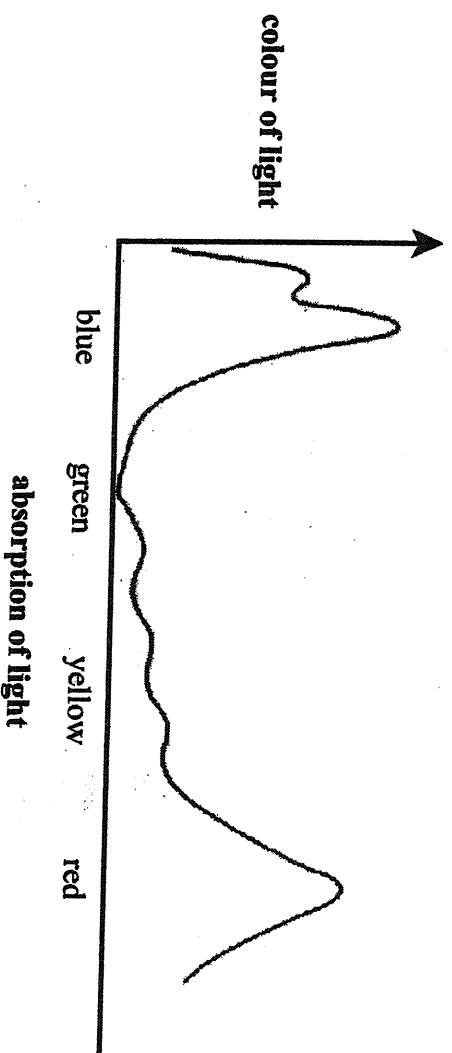
28.

The diagram shows the pathway of water through a plant. Where does transpiration occur?



29.

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



In which colour of light would plants synthesise most slowly?

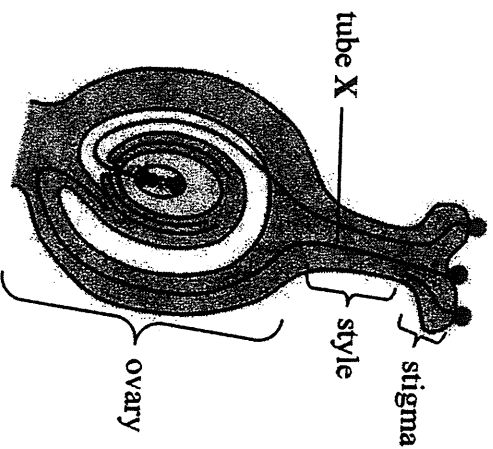
- A. blue
- B. green
- C. red
- D. yellow

30.

When a mixture of substances reacts chemically, the temperature of the substance increases. What does this increase in temperature indicate?

- A. bonds in the products are broken
- B. reactants contain less energy than the products
- C. products contain less energy than the reactants
- D. heat energy is being absorbed during the reaction

31. The diagram shows the carpel of a flower after pollination



What passes along tube X?

- A. a male gamete
- B. an ovule
- C. a pollen grain
- D. a seed

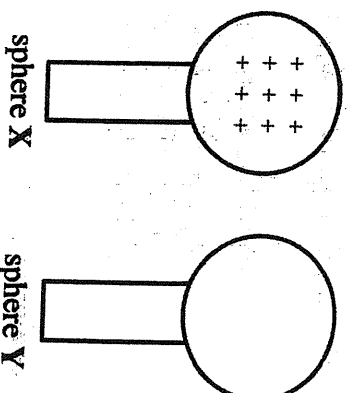
32.

Which instrument detects and tests small electric charges?

- A. an ammeter
- B. an electroscope
- C. an electromagnet
- D. a voltmeter

33.

The diagram shows two identical metal spheres, X and Y. Sphere X has positive charge and sphere Y is uncharged.

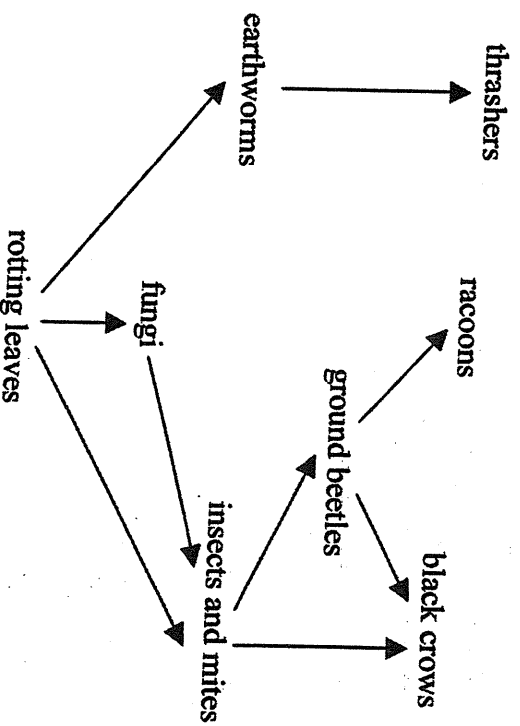


A student, who is earthed, touches sphere X and moves it close to, but not touching sphere Y. What is the nature of the charges left on the two spheres?

- |    | sphere X  | sphere Y  |
|----|-----------|-----------|
| A. | positive  | positive  |
| B. | no charge | no charge |
| C. | positive  | negative  |
| D. | negative  | positive  |

34.

The diagram shows a food web.



What will happen to this food web if the earth worms, insects and mites are removed?

- the population of black crows will increase
- the population of fungi will increase
- the population of raccoons will increase
- the population of thrashers will increase

35.

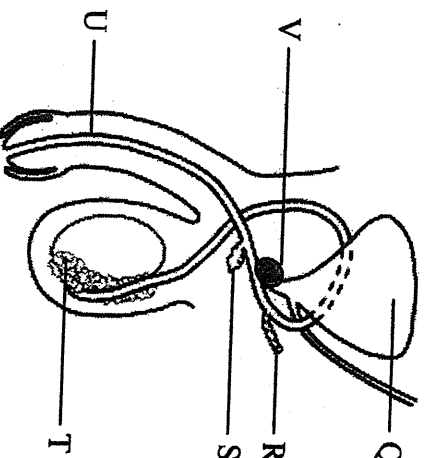
The table shows the pH ranges best suited for the growth of some vegetables.

Which vegetable grows best in the most alkaline soil?

	vegetable	5.0	5.5	6.0	6.5	7.0	7.5	8.0
A	cabbage				✓	✓	✓	
B	onion				✓	✓	✓	✓
C	lettuce			✓	✓	✓		
D	potato	✓	✓	✓	✓			

36.

The diagram shows the human male reproductive system.



Which structures contribute to the composition of semen?

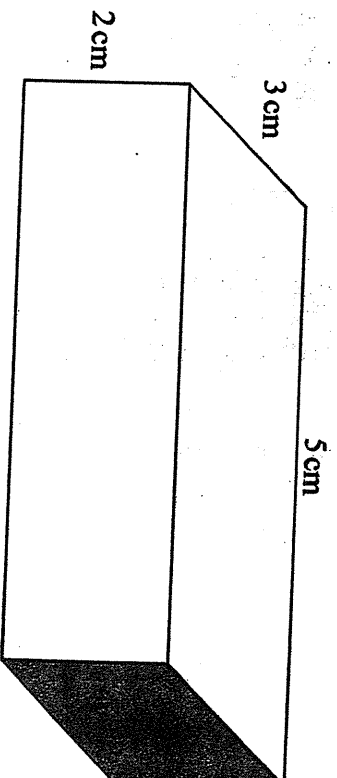
- A. Q, R, T, V
- B. Q, R, V, U
- C. R, S, T, V
- D. S, T, U, V

37.

Which structure of the eye contains muscles which control the amount of light entering the eye?

- A. cornea
- B. iris
- C. lens
- D. pupil

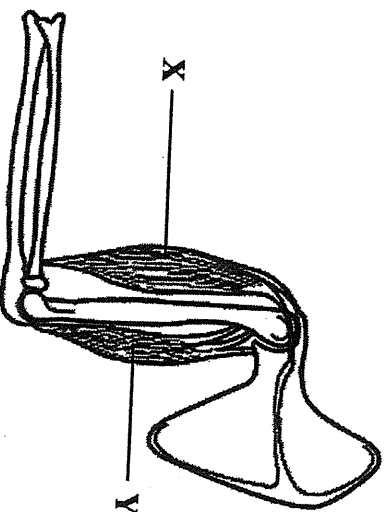
38. The diagram shows a 150 g wooden block and its dimensions.



What is its density?

- A.  $2 \text{ g/cm}^3$
- B.  $3 \text{ g/cm}^3$
- C.  $4 \text{ g/cm}^3$
- D.  $5 \text{ g/cm}^3$

39. The diagram shows two muscles in a human arm.

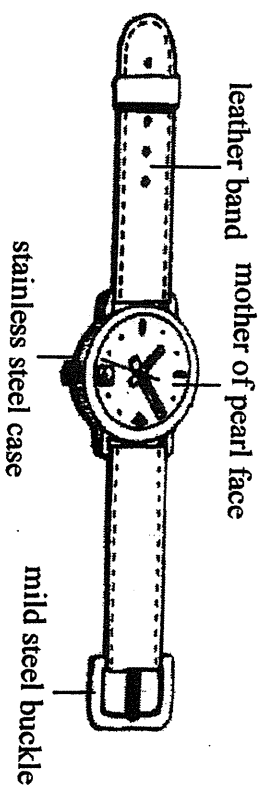


What happens to muscles X and muscles Y when the lower arm is lowered?

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

40.

The diagram shows a watch made of different materials.

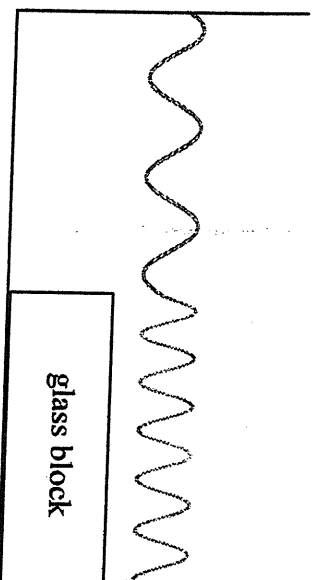


Which part of the watch is likely to undergo gradually rusting?

- A. band
- B. buckle
- C. case
- D. face

41.

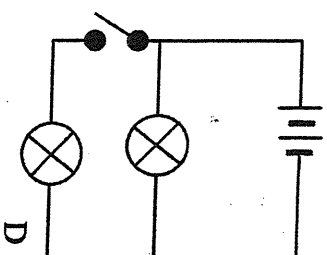
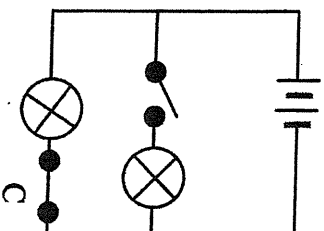
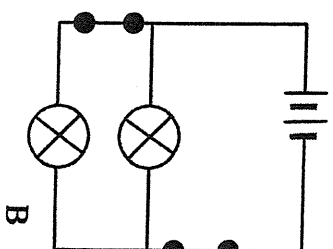
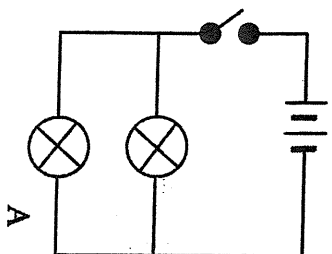
Straight waves in a ripple tank pass from deep to shallow water, shown in a cross section in the diagram.



Which pair of quantities is changed as the wave moves from deep to shallow water?

- A. amplitude and speed
- B. amplitude and wavelength
- C. speed and wavelength
- D. wavelength and frequency

42. In which circuit diagram will both lamps be on?

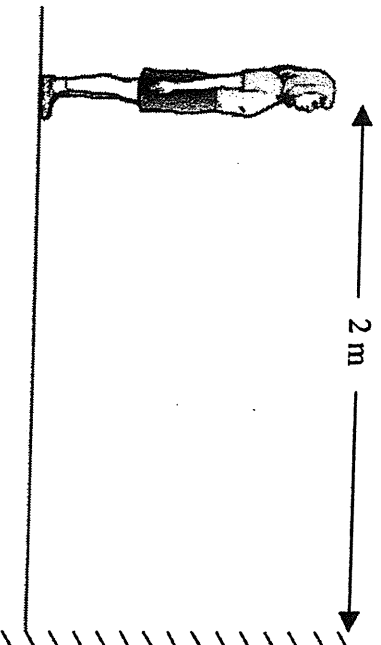


43. The diagram shows a portion of a nephron showing blood entering the capillary at P and leaving at Q.



- Which substance in the blood remains the same at P and Q?
- A. glucose  
B. protein  
C. urea  
D. water

44. A student stands 2 m in front of a plane mirror.



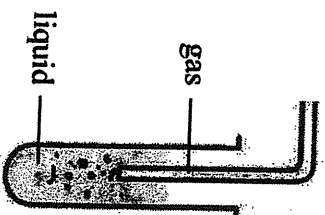
What is the distance from the student to the image formed?

- A. 1 m
- B. 2 m
- C. 4 m
- D. 8 m

45. Which substance is a liquid at room temperature ( $20^{\circ}\text{C}$ )?

substance	melting point / $^{\circ}\text{C}$	boiling point / $^{\circ}\text{C}$
A	-101	-38
B	-34	357
C	98	883
D	114	183

46. Which row names the cloudy liquid in the test-tube and the gas bubbling through it?



	liquid	gas
A	alcohol	carbon dioxide
B	alcohol	oxygen
C	lime water	carbon dioxide
D	lime water	oxygen

47. The table shows the pulse rate of a student taken each minute for 5 minutes while sitting still.

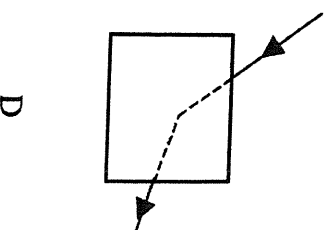
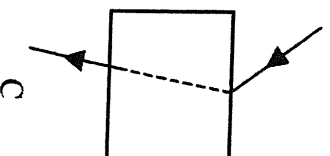
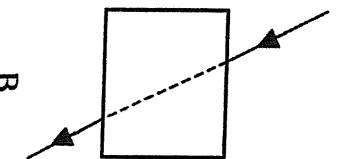
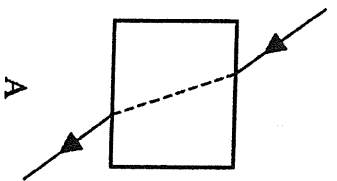
time	beats per minute
1	72
2	74
3	78
4	52
5	69

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

- A. 69  
B. 73  
C. 75  
D. 80

48.

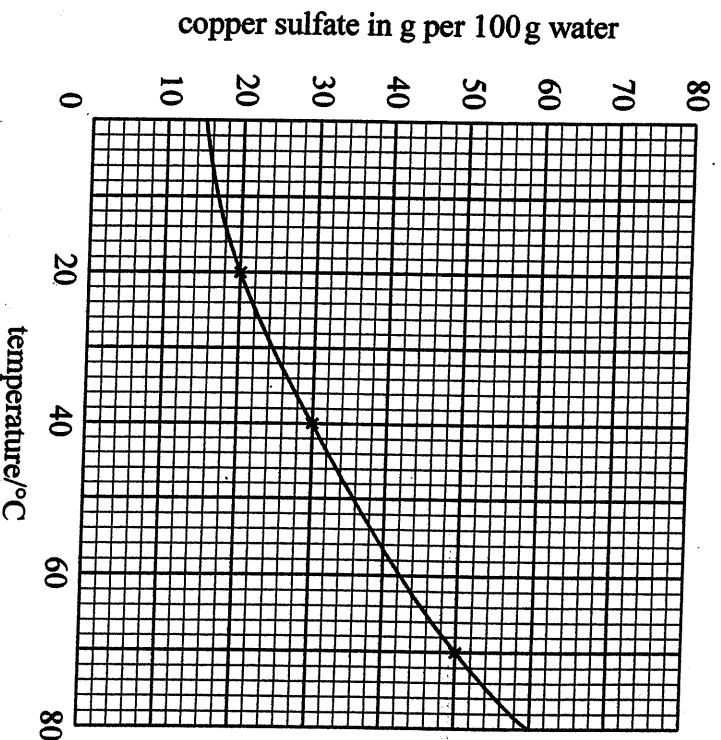
Which of the diagrams shows the path of a ray of light as it passes through a glass block?



49.

Copper sulfate is added to water of different temperatures to find out how much dissolves at that temperature.

The results are shown in the graph.



How much copper sulfate dissolves at 50°C?

- A. 30 g
- B. 33 g
- C. 36 g
- D. 40 g