

4  
Name: \_\_\_\_\_ ( )

Class: Primary 6 \_\_\_\_\_

## CHIJ ST NICHOLAS GIRLS' SCHOOL



**Primary 6**  
**Continual Assessment 1 – 2016**  
**SCIENCE**  
**BOOKLET A**  
**3 March 2016**

**Total Time for Booklets A and B: 1 hour 45 minutes**

**30 questions**  
**60 marks**

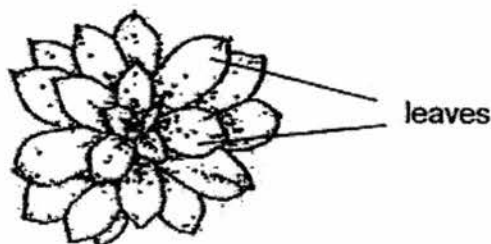
**Do not open this booklet until you are told to do so.**  
**Follow all instructions carefully.**  
**Answer all questions.**

***This booklet consists of 24 printed pages.***

**Section A (30 x 2 marks = 60 marks)**

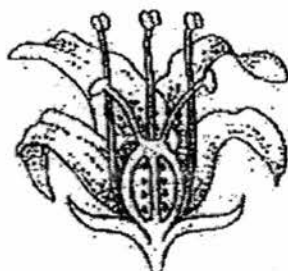
For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet provided.

1. The diagram below shows the top view of a plant.

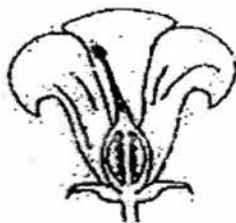


How does the arrangement of the leaves help the plant to survive?

- (1) It helps the plant to get more sunlight.
  - (2) It helps the plant to collect more water.
  - (3) It helps to prevent water loss through the leaves.
  - (4) It helps the plant to attract more insects to pollinate its flowers.
2. The diagrams below show the cross-sections of two different types of flowers, W and X.



flower W



flower X

Which of the following statements are true about flowers, W and X?

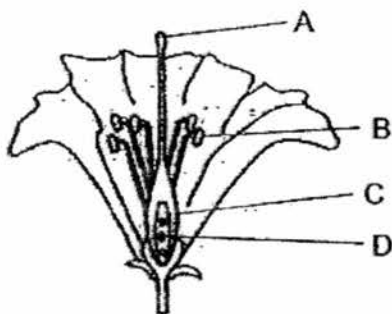
- A Both flowers can be pollinated by insects.
  - B Both flowers produce fruits with many seeds.
  - C Pollination can take place in flower W but not in flower X.
  - D Flower X can develop into a fruit as it can receive pollen grains from flower W.
- (1) A and B only
  - (2) B and C only
  - (3) A and C only
  - (4) A, B and D only

3. Bobby carried out an experiment to find out how the temperature of the surroundings affects the germination of seeds. He planted the same number of seeds of the same type in five identical pots of soil. The pots were exposed to different temperatures. He counted the number of seedlings over a period of 5 days and recorded his results in the table below.

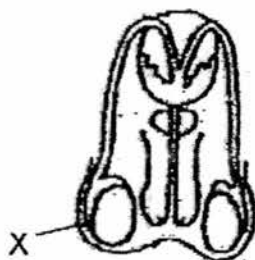
| Pot | Temperature (°C) | Total number of seedlings in the pot |       |       |       |       |
|-----|------------------|--------------------------------------|-------|-------|-------|-------|
|     |                  | Day 1                                | Day 2 | Day 3 | Day 4 | Day 5 |
| A   | 0                | 0                                    | 0     | 0     | 0     | 0     |
| B   | 10               | 0                                    | 0     | 0     | 1     | 4     |
| C   | 20               | 0                                    | 2     | 4     | 9     | 12    |
| D   | 30               | 0                                    | 6     | 13    | 16    | 19    |
| E   | 40               | 0                                    | 0     | 0     | 0     | 0     |

Based on the information in the table above, which one of the following statements is correct?

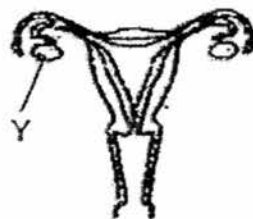
- (1) All the seeds died at 0°C.
  - (2) Most seeds germinated at 30°C.
  - (3) All the seeds in Pot D germinated.
  - (4) The number of seeds germinated increases as the surrounding temperature increases from 10°C to 40°C.
4. The diagram below shows the reproductive systems of a plant, a man and a woman.



Reproductive system of a flower



Reproductive system of a man

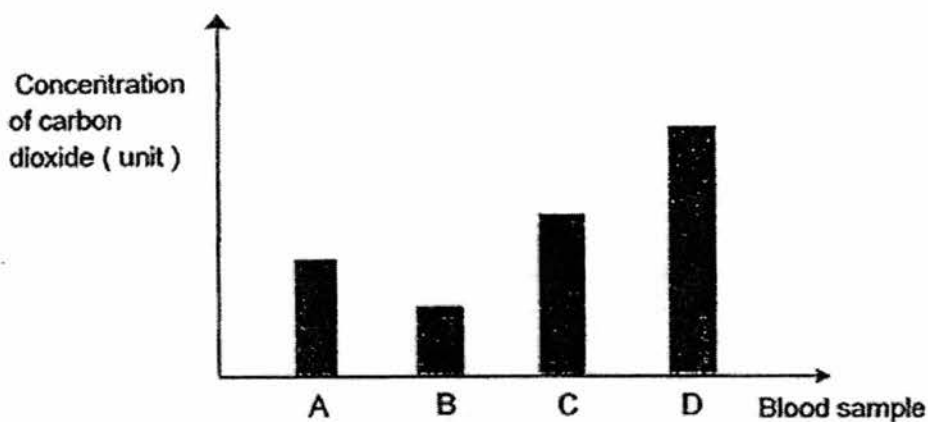


Reproductive system of a woman

Which one of the following represents the parts of the flower which have the same functions as X and Y respectively?

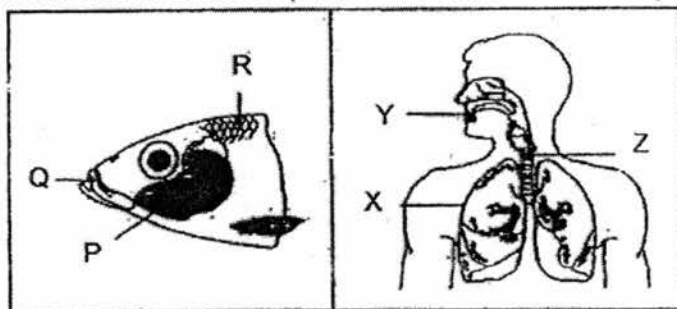
|     | Part X | Part Y |
|-----|--------|--------|
| (1) | A      | D      |
| (2) | B      | D      |
| (3) | B      | C      |
| (4) | C      | A      |

5. The graph below shows the concentration of carbon dioxide in 4 blood samples taken from different blood vessels in the human circulatory system.



Which sample is most likely to be taken from the blood vessel which carries blood from the heart to the lungs?

- (1) A  
 (2) B  
 (3) C  
 (4) D
6. The diagrams below shows different parts of fish and human respiratory systems.

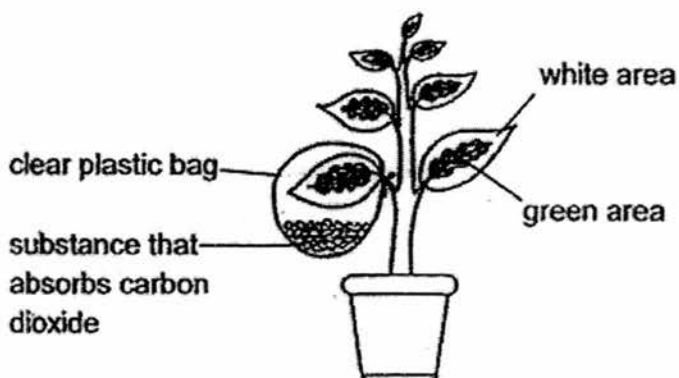


Which of the following correctly matches parts of the fish and human respiratory system that perform similar function?

|   | Fish respiratory system | Human respiratory system |
|---|-------------------------|--------------------------|
| A | P                       | X                        |
| B | Q                       | Y                        |
| C | R                       | Z                        |
| D | P                       | Z                        |

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

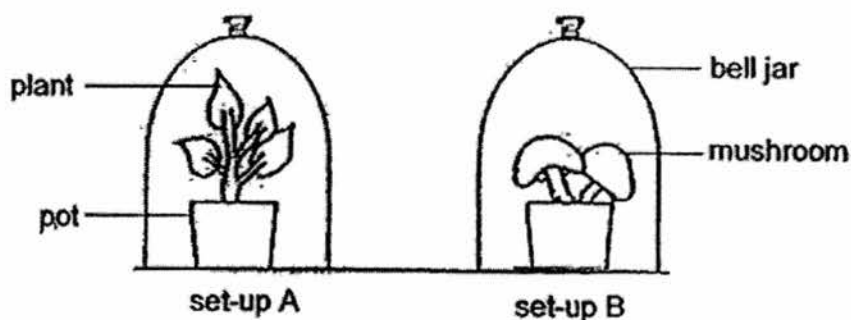
7. Elaine set up an experiment to investigate the conditions needed for photosynthesis to take place. She used a plant which had leaves with green areas in the middle and white areas round the edges as shown below. She placed the set-up in a sunny place.



What is/are the possible aim(s) of this experiment?

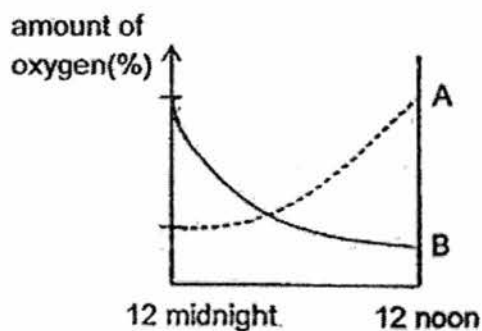
- A Whether water is needed for photosynthesis to take place
  - B Whether sunlight is needed for photosynthesis to take place
  - C Whether chlorophyll is needed for photosynthesis to take place
  - D Whether carbon dioxide is needed for photosynthesis to take place
- (1) D only  
(2) C and D only  
(3) A, B and C only  
(4) B, C and D only

8. John carried out an experiment with a potted plant and a pot of mushrooms as shown in the diagram below. Both bell jars were left in the open from 12 midnight to 12 noon. All other variables were kept the same.

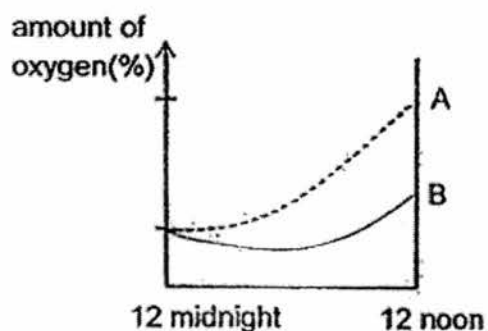


Which one of the following graphs correctly shows the oxygen content of air in set-ups A and B from 12 midnight to 12 noon?

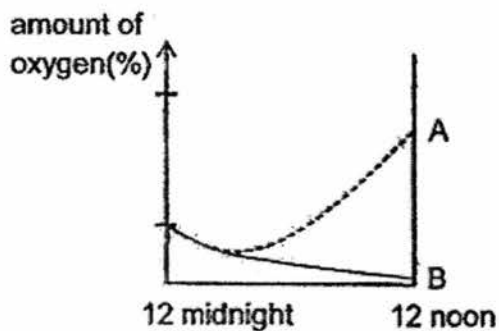
(1)



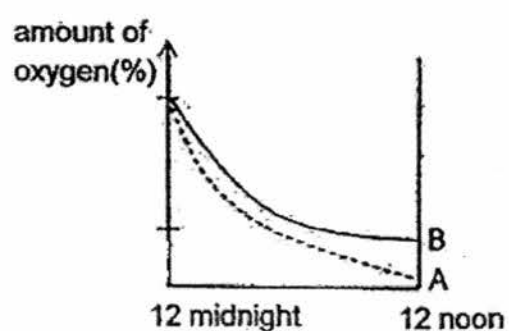
(2)



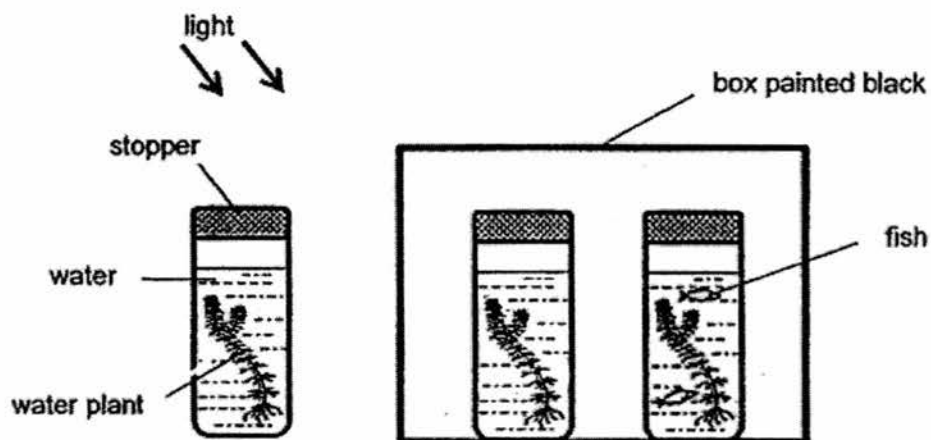
(3)



(4)



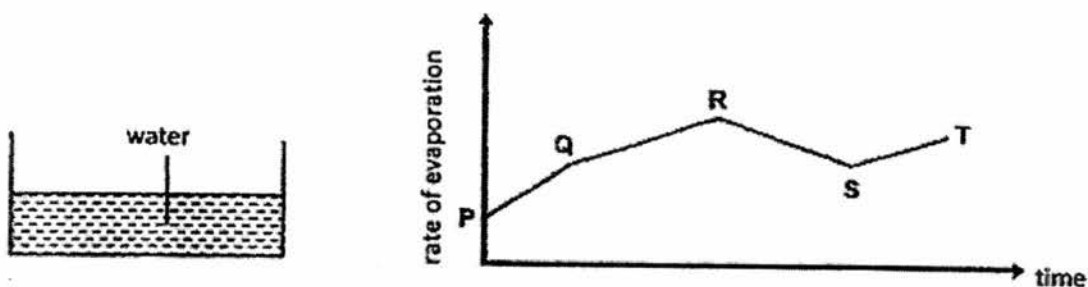
9. Ray conducted an experiment using the following set-ups.



What would be the likely change in the amount of carbon dioxide after a few hours?

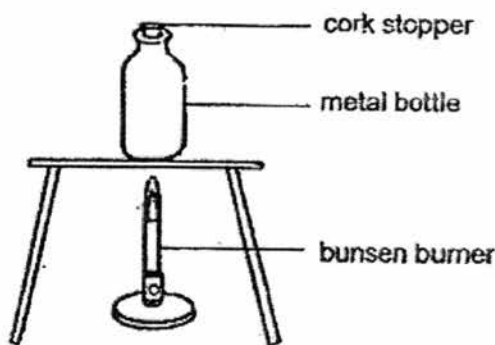
| Amount of carbon dioxide in the set-up |          |           |           |
|--|----------|-----------|-----------|
|  | A        | B         | C         |
| (1)                                    | increase | increase  | no change |
| (2)                                    | decrease | no change | no change |
| (3)                                    | increase | no change | increase  |
| (4)                                    | decrease | increase  | increase  |

10. The graph below shows the rate of evaporation of water in the container over a period of time.



Which of the following are possible reasons for the changes in the rate of evaporation as shown in the graph?

- A During PQ, the volume of water was the highest.
  - B During ST, there was an increase in the speed of wind.
  - C During QR, there was an increase in the exposed surface area of water.
  - D During RS, there was a decrease in the temperature of the surrounding air.
- (1) A and B only  
(2) B and D only  
(3) A, C and D only  
(4) B, C and D only
11. The diagram below shows a metal bottle with a cork stopper being heated over a fire. The bottle was completely filled with water. After a while, the cork stopper popped out of the metal bottle.

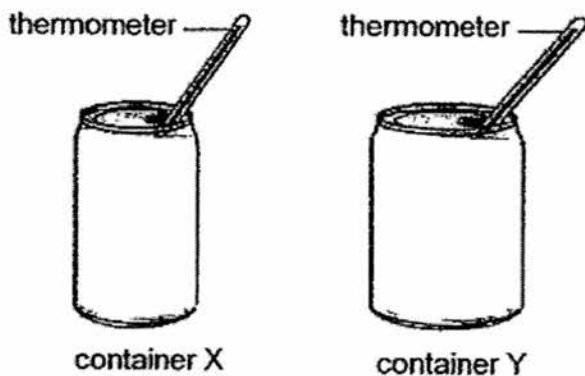


Which one of the following statements explains why the stopper popped out of the metal bottle?

- (1) The stopper gained heat and expanded.
- (2) The metal bottle gained heat and expanded.
- (3) The heat from the burner forced the stopper out.
- (4) The water in the bottle gained heat and expanded.



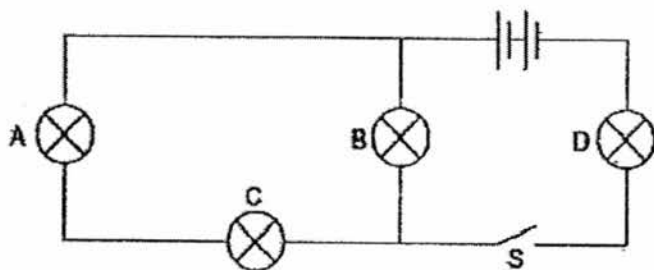
12. Same amount of boiling water was poured into two containers, X and Y, of similar shape, material and colour. The containers were placed in a room with a temperature of  $29^{\circ}\text{C}$ . The water in container X took 30 minutes to cool down to the room temperature while the water in container Y took 22 minutes.



Why did the water in container Y take a shorter time to cool down to room temperature?

- (1) Container Y can hold more water than container X.
- (2) Container Y is a better conductor of heat than container X.
- (3) Container Y loses heat faster as it has a bigger surface area than X.
- (4) The boiling water in Y has a lower temperature than the boiling water in X.

13. Musa set up the circuit below.

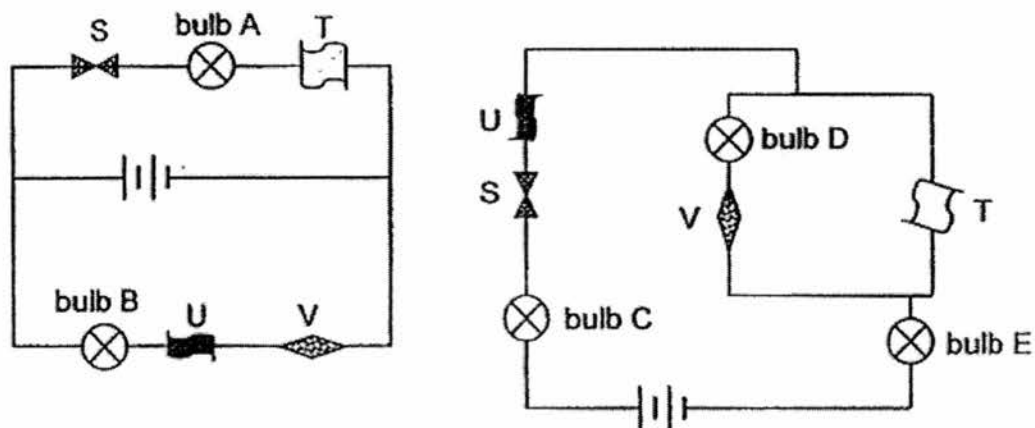


When he closed switch S, all the bulbs lighted up. Then he removed one of the bulbs and all the bulbs did not light up.

Which bulb did he remove?

- (1) Bulb A
- (2) Bulb B
- (3) Bulb C
- (4) Bulb D

14. Ah Seng set up the following electrical circuits to find out if materials, S, T, U and V, could conduct electricity.



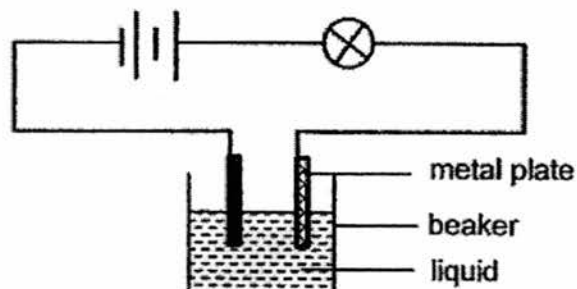
He recorded his observations in the table below.

| Bulb | Did the bulb light up? |
|------|------------------------|
| A    | Yes                    |
| B    | No                     |
| C    | Yes                    |
| D    | No                     |
| E    | Yes                    |

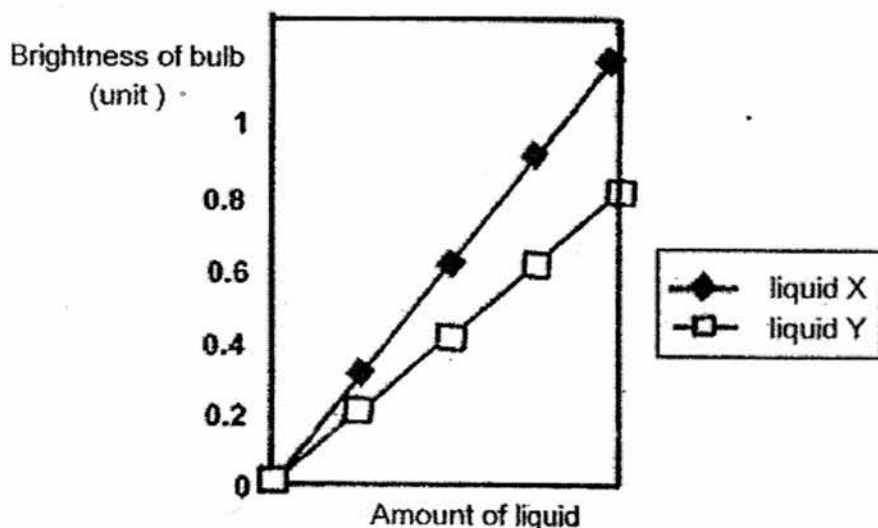
From the observations, which one of the following groupings is correct?

|     | Electrical conductors | Electrical insulators |
|-----|-----------------------|-----------------------|
| (1) | S, T                  | U, V                  |
| (2) | V                     | S, T, U               |
| (3) | S, T, U               | V                     |
| (4) | T                     | S, U, V               |

15. Steven set up the circuit below to find out how the amount of liquid in the beaker affects the brightness of the bulb.



He poured different amounts of liquid X into the beaker and measured the brightness of the light bulb using a light sensor. He repeated the experiment with liquid Y. He recorded his results in the graph below.

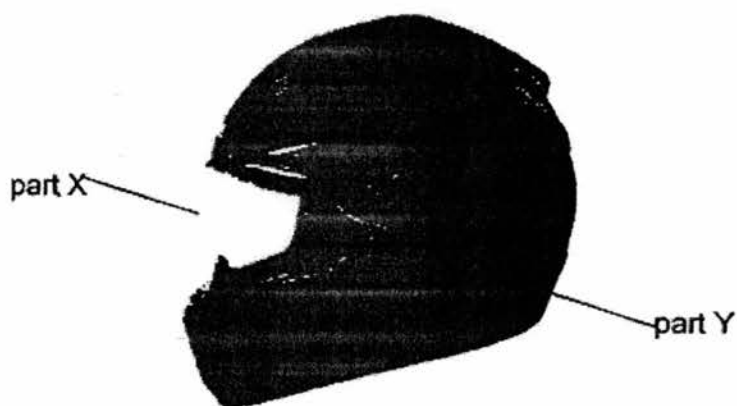


Based on the results of his experiment, which of the following statements is/are correct?

- A Both liquids are conductors of electricity.
  - B Liquid X conducts electricity faster than Liquid Y.
  - C Liquid X conducts more electricity than the same amount of Liquid Y.
  - D More of Liquid X than Liquid Y is needed to produce the same brightness in the bulb.
- (1) A only  
(2) A and C only  
(3) B and D only  
(4) A, B and C only

16. The properties of materials, A, B, C and D, are shown in the table below. A tick (✓) indicates the presence of the property.

| Material | Flexible | Waterproof | Does not break easily | Does not allow light to pass through |
|----------|----------|------------|-----------------------|--------------------------------------|
| A        |          | ✓          | ✓                     | ✓                                    |
| B        |          | ✓          |                       |                                      |
| C        | ✓        |            |                       | ✓                                    |
| D        |          | ✓          | ✓                     |                                      |

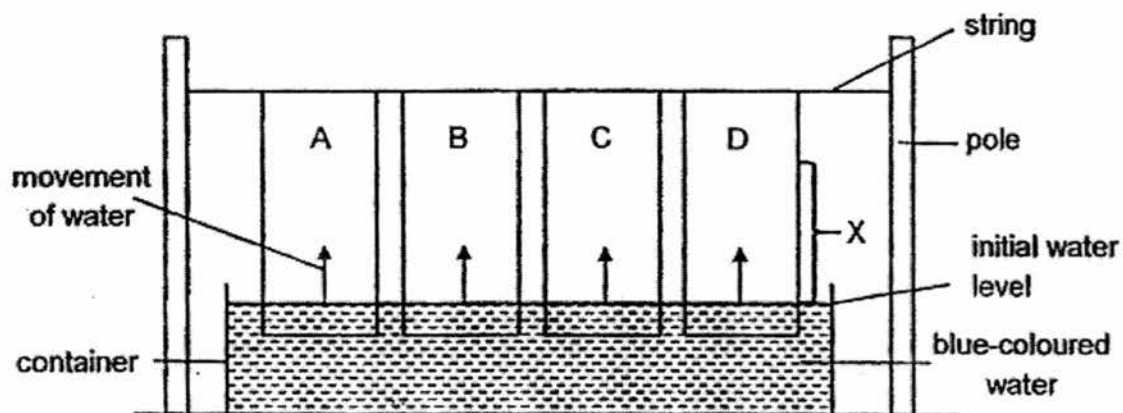


The helmet shown above is used by motorcyclists to protect their heads from any injuries.

Which of the following shows the most suitable materials for making parts X and Y of the helmet?

|     | Part X | Part Y |
|-----|--------|--------|
| (1) | B      | A      |
| (2) | D      | A      |
| (3) | C      | B      |
| (4) | D      | C      |

17. Janice wanted to find out which material, A, B, C or D, is the most suitable material for a towel. She conducted an experiment as shown below.



After 5 minutes, Janice measured the distance X, which the water had travelled up each material.

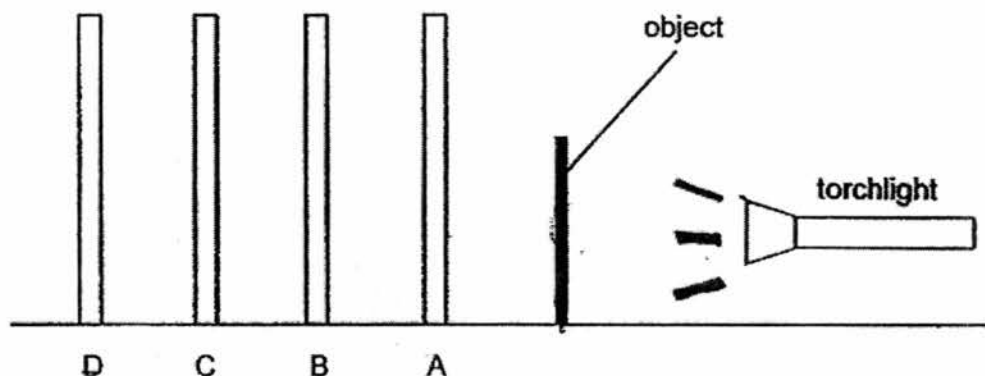
| Material | Distance X (cm) |
|----------|-----------------|
| A        | 9               |
| B        | 12              |
| C        | 6               |
| D        | 4               |

Which one of the materials is the most suitable for making a towel?

- (1) A
- (2) B
- (3) C
- (4) D

18. Julian carried out the following experiment in a dark room. Cardboards, A, B, C and D, were arranged in a straight line as shown below.

Side view



The front view of the object is shown below.



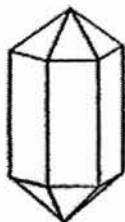
The properties of the materials of the cardboards are shown below.

| Allows light to pass through | Does not allow light to pass through |
|------------------------------|--------------------------------------|
| A                            | C                                    |
| B                            | D                                    |

When the torch was switched on, a triangular shadow was cast. On which one of the following cardboards was the shadow casted?

- (1) A
- (2) B
- (3) C
- (4) D

19. Different shadows could be formed when a torch is shone on the object below from different positions.



Which of the following could possibly be the shadows of the object?



A



B



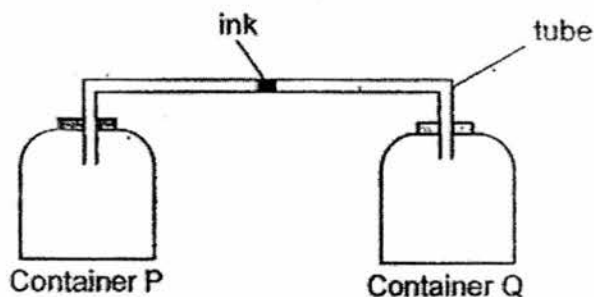
C



D

- (1) A and C only
- (2) A and D only
- (3) B and C only
- (4) B and D only

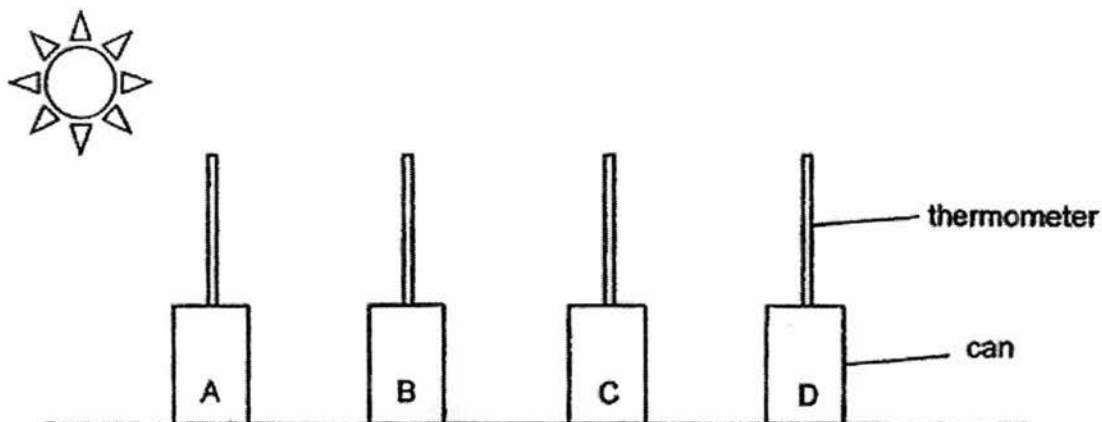
20. Two metal containers are connected by a tube as shown below.



When a hot towel is wrapped around container P, the drop of ink in the glass tube will \_\_\_\_\_.

- (1) evaporate
- (2) remain stationary
- (3) move towards container P
- (4) move towards container Q

21. Alan wanted to find out the effect of the Sun's heat on different materials. He used 4 similar cans made of different materials, A, B, C and D, for the set-ups shown below.



He recorded the temperature in the cans over time, as shown in the table below.

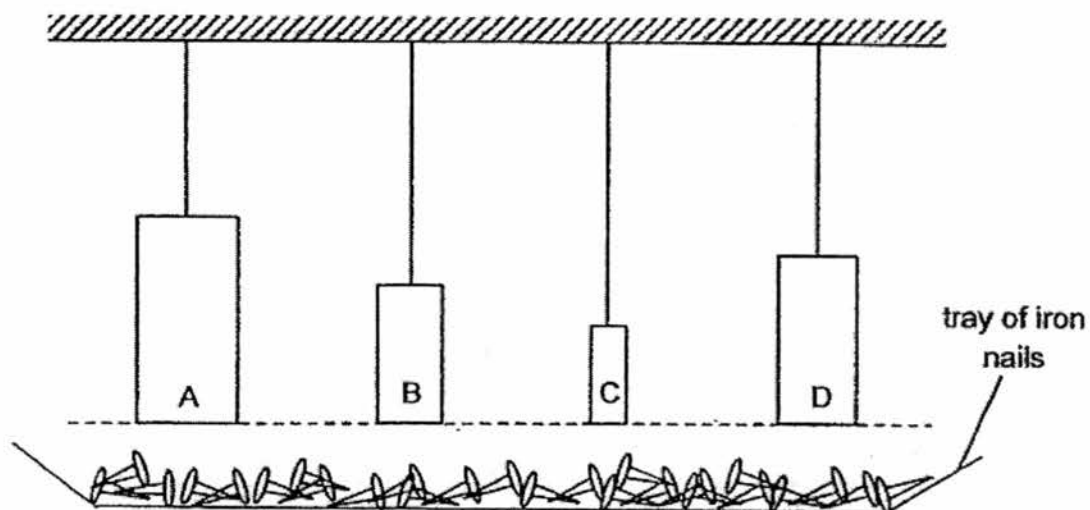
| Time (min) | Temperature in the cans ( $^{\circ}\text{C}$ ) |    |    |    |
|------------|--|----|----|----|
|            | A  | B  | C  | D  |
| 0          | 28   | 28 | 28 | 28 |
| 5          | 32   | 34 | 31 | 33 |
| 10         | 34   | 39 | 33 | 36 |
| 15         | 37   | 47 | 34 | 39 |

Based on his results, which one of the following materials is the most suitable for making a lunch box to keep hot food warm for a longer time?

- (1) A
- (2) B
- (3) C
- (4) D



22. The magnets, A, B, C and D, are placed at an equal distance above a tray of iron nails.



The table below shows the number of nails attracted by each magnet.

| Magnet                    | A | B | C | D  |
|---------------------------|---|---|---|----|
| Number of nails attracted | 7 | 3 | 6 | 10 |

Which of the following conclusions can be drawn from the results obtained?

- A Magnet D has the strongest magnetic strength.
  - B Magnet B has a stronger magnetic strength than magnet A.
  - C The magnetic strength does not depend on the magnet's size.
  - D The poles of the magnets have the strongest magnetic strength.
- (1) A and C  
(2) A and D  
(3) B and C  
(4) B and D

23. Zena pushed a toy, which was attached to a spring, into a box and closed the lid as shown in Diagram 1. When she opened the lid, the toy jumped up as shown in Diagram 2.

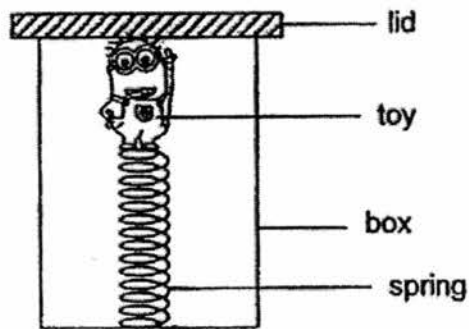


Diagram 1

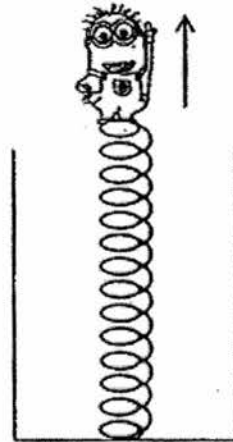
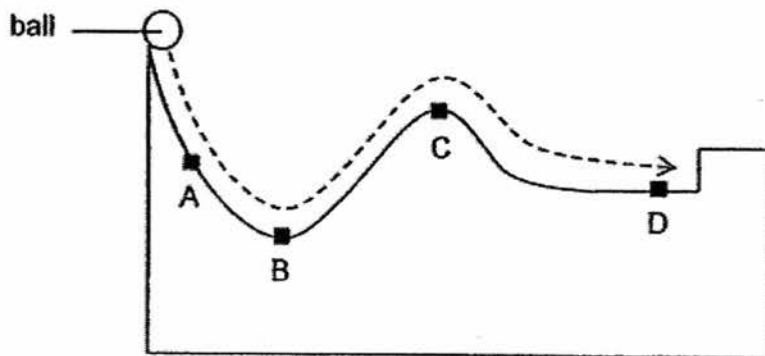


Diagram 2

What could she do to make the toy jump higher?

- A Use a taller box
  - B Use a lighter toy
  - C Use a shorter box
  - D Use oil to coat the spring
- (1) A and B  
(2) A and D  
(3) B and C  
(4) C and D

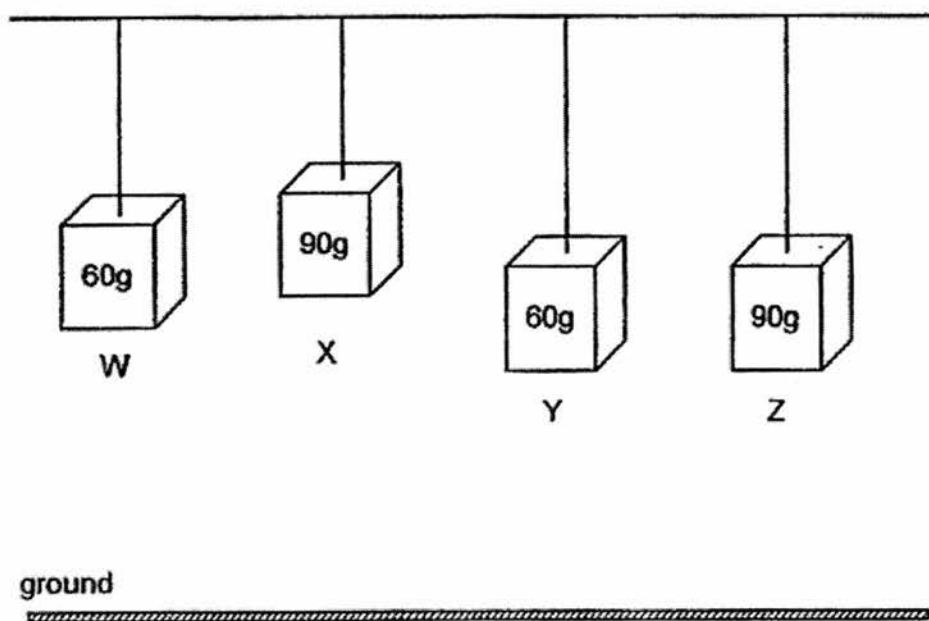
24. Kelvin released a ball and it rolled from point A to point D as shown in the diagram below.



At which point on the slope does the ball have the greatest amount of kinetic energy?

- (1) A
- (2) B
- (3) C
- (4) D

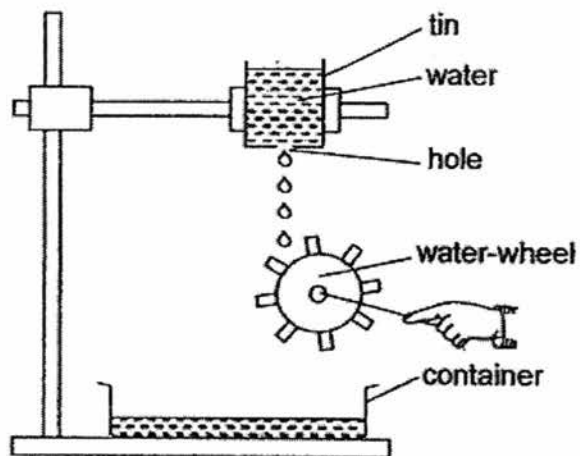
25. The diagram below shows 4 objects which are hung from the ceiling.



Which of the following statements is/are true?

- A Object X has more gravitational potential energy than Object Z.
  - B Object Z has more gravitational potential energy than Object Y.
  - C Object W and Object Y have the same amount of gravitational potential energy.
  - D When the strings are cut and all the objects fall onto the ground, all the gravitational potential energy of the objects will change into kinetic energy.
- (1) B only  
(2) A and B only  
(3) A and D only  
(4) C and D only

26. Study the diagram below.



Which one of the following can turn the water-wheel faster?

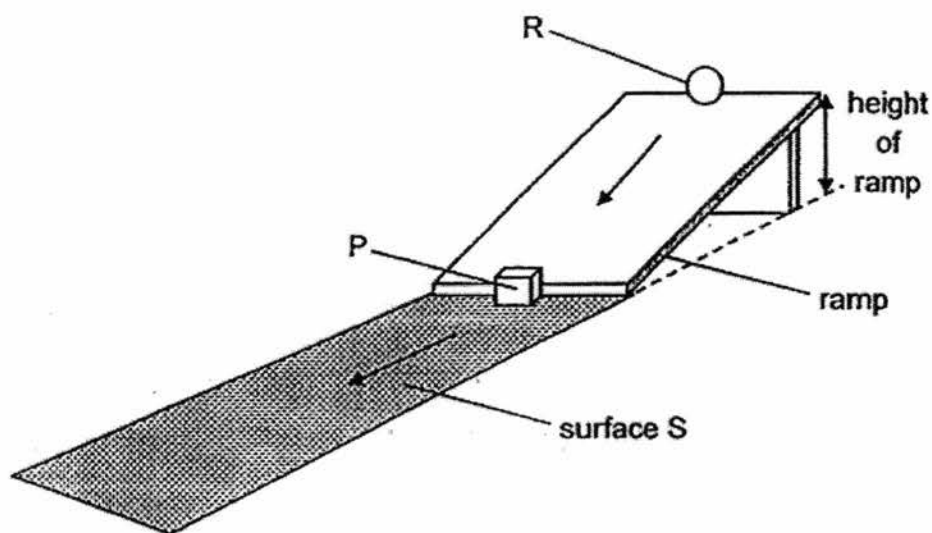
- (1) Use a bigger water wheel.
  - (2) Make the hole in the tin smaller.
  - (3) Move the tin nearer to the water-wheel.
  - (4) Move the tin further away from the water-wheel.
27. Jane was jumping on the trampoline and was pulled down by force X. When she landed on the trampoline, she was pushed upwards by force Y.



Which one of the following correctly represents forces, X and Y?

|     | Force X              | Force Y              |
|-----|----------------------|----------------------|
| (1) | Gravitational force  | Elastic spring force |
| (2) | Gravitational force  | Gravitational force  |
| (3) | Elastic spring force | Elastic spring force |
| (4) | Elastic spring force | Gravitational force  |

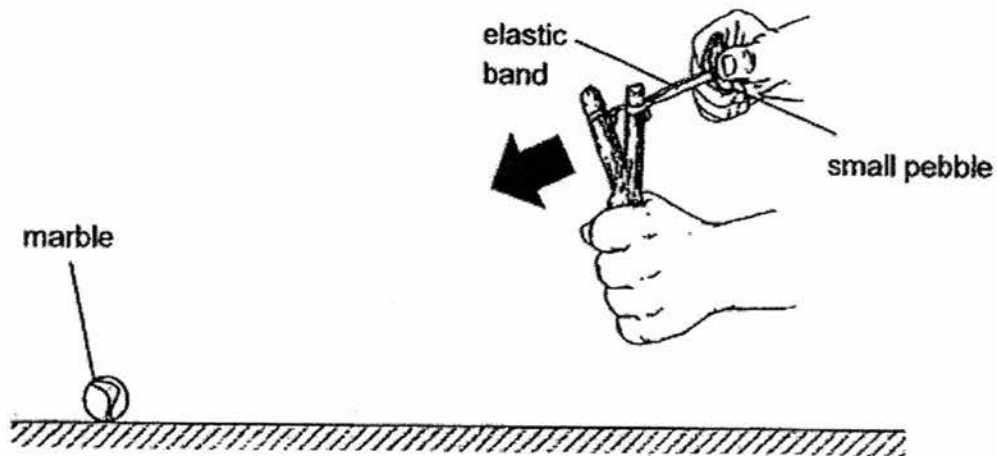
28. Study the diagram below. When ball R is released from the top of the ramp, it rolled down the ramp, hit and pushed cube P along surface S.



Which one of the following changes will not increase the distance moved by P along surface S?

- A Increase the mass of R.
  - B Increase the length of S.
  - C Increase the roughness of S.
  - D Increase the height of the slope.
- (1) A and B  
(2) A and D  
(3) B and C  
(4) C and D

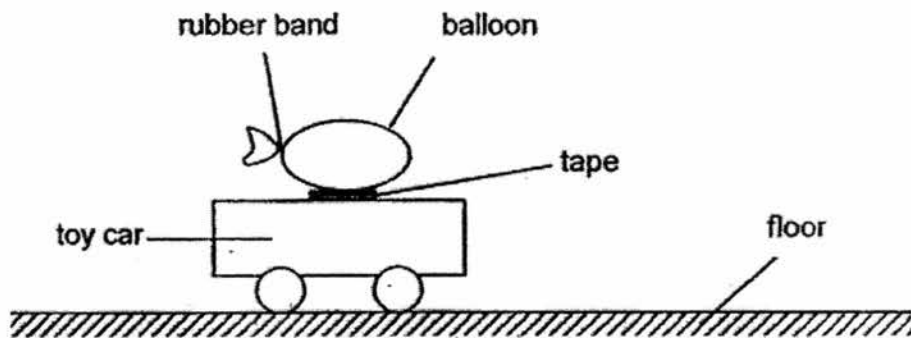
29. A catapult was used to shoot a marble over a distance as shown in the diagram below.



Which of the following will affect the distance moved by the marble after it had been hit by the pebble?

- A The thickness of the stick.
  - B The size and mass of the marble
  - C The thickness of the elastic band
  - D The distance the elastic band is stretched
- (1) A and B only  
(2) C and D only  
(3) A, B and D only  
(4) B, C and D only

30. Jovie attached an inflated balloon to a toy car as shown below. When the rubber band was removed, air rushed out of the balloon, producing a force. However, the toy car did not move.



Which of the following statements best explains Jovie's observation?

The toy car did not move as the force of rushing air from the balloon was smaller than \_\_\_\_\_

- A the weight of the toy car and balloon
  - B friction between the balloon and the tape
  - C friction between the wheels of toy car and the floor
- (1) B only  
(2) A and C only  
(3) B and C only  
(4) A, B and C

- End of paper -



Name : \_\_\_\_\_ ( )

Class : Primary 6 \_\_\_\_\_

## CHIJ ST NICHOLAS GIRLS' SCHOOL



Primary 6  
Continual Assessment 1 – 2016  
**SCIENCE**  
BOOKLET B  
3 March 2016

Total Time for Booklets A and B: 1 hour 45 minutes

14 questions  
40 marks

Do not open this booklet until you are told to do so.  
Follow all instructions carefully.  
Answer all questions.

*This booklet consists of 13 printed pages.*

|           |     |
|-----------|-----|
| Booklet A | 60  |
| Booklet B | 40  |
| Total     | 100 |

\_\_\_\_\_  
Parent's Signature/Date

**Section B: 40 marks**

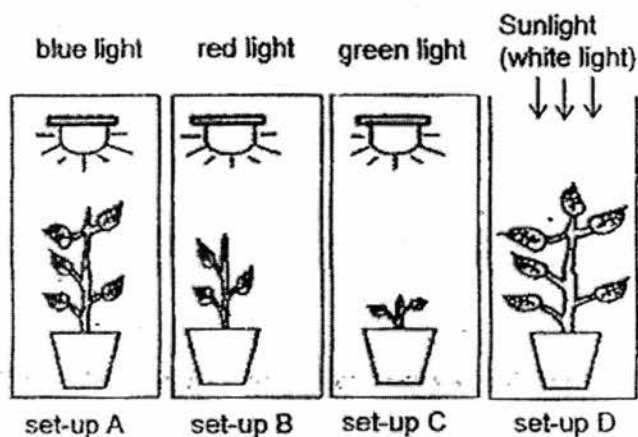
For questions 31 to 44, write your answers in this booklet.

The number of marks available is shown in the brackets [ ] at the end of each question or part question.

31. John learnt that white light is made up of 7 colours. When white light falls on a red opaque object, the object will reflect the red light while absorbing all the rest of the coloured lights.

Based on the above information, he carried out an experiment to find out the effect of different lights on plant growth. He used four similar seedlings and placed them into four similar boxes with different coloured lights.

The diagram below shows the results of his investigation after 4 weeks.



- (a) The plant exposed to green light grew the least. Explain why. [2]

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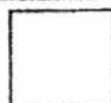
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- (b) What is the purpose of set-up D?

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32. Ken carried out an experiment with 4 similar pots of seedlings of height 6cm. He watered each pot of seedling with different amounts of water daily. He measured the height of each seedling at the end of 10 days and recorded the results in the table below.

| Pot | Daily amount of water (ml) | Height of seedling after 10 days (cm) |
|-----|----------------------------|---------------------------------------|
| A   | 10                         | 10                                    |
| B   | 15                         | 16                                    |
| C   | 20                         | 18                                    |
| D   | 25                         | 20                                    |

- (a) What was the aim of Ken's experiment? [1]

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- (b) If a healthy seedling of the same type grows by 8cm at the end of the first 10 days, based on the results above, what should be the least amount of water given to the seedlings every day to ensure that they grow healthily? [1]

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33. The diagram below shows a balsam plant and a bird's nest fern.



balsam plant



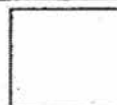
bird's nest fern

- (a) How are they different in their methods of reproduction? [1]

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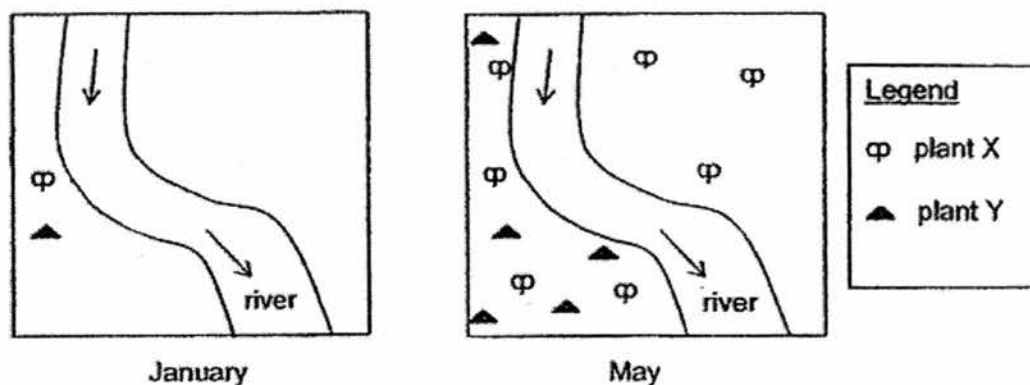
- (b) Name another group of organisms that reproduces in the same way as the bird's nest fern. [1]

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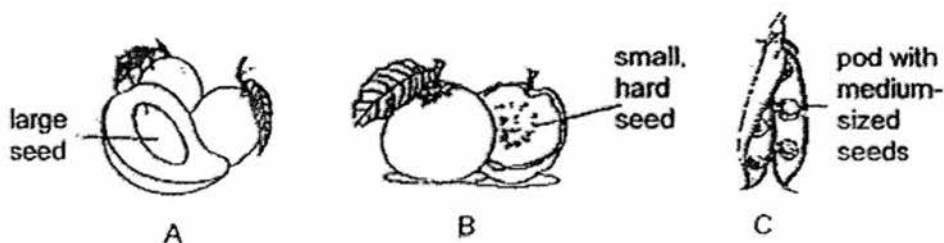


34. The map below shows the changes in the number of plant X and plant Y in a field from January to May.

Many birds feed on the fruits from plants X and Y.



The diagrams below show the characteristics of three fruits, A, B and C.



- (a) Which one of the above is likely to be the fruit of plant X? Explain your answer. [2]

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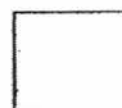
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- (b) The plant part below has stiff hairs.



How do the stiff hairs help in its dispersal? [1]

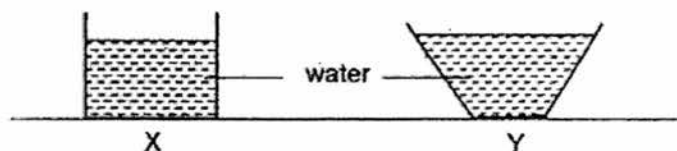
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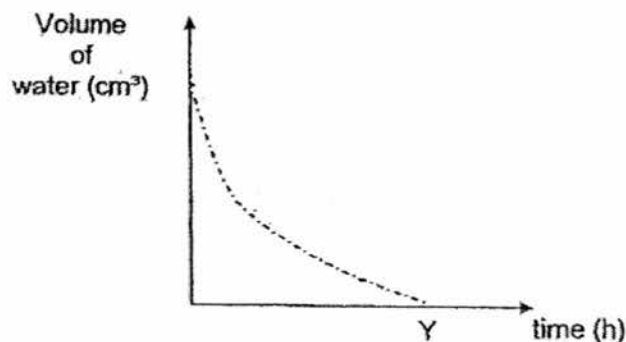
35. Sexual reproduction in plants and animals involve male cells and female cells. Complete the table below with the correct word(s). [2]

|                     | In plants           | In animals |
|---------------------|---------------------|------------|
| Male sex cell       |                     |            |
| Female sex cell     |                     | egg        |
| After fertilisation | Develop into a seed |            |

36. Hussein carried out an experiment to find out how the shape of the container would affect the rate of evaporation of water. He filled two glass containers, X and Y, with  $100\text{cm}^3$  of water each. He placed both containers on a table in his room.



He plotted a graph to show the amount of water left in container Y over a period of time.



- (a) Using the same grid above, draw a line graph to show the amount of water left in container X. [1]  
 (b) Explain your graph in (a) above. [2]

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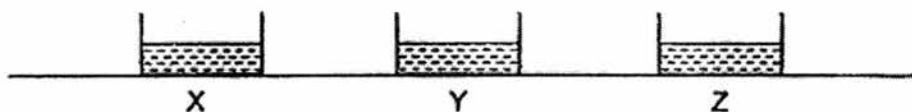
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37. Bala wanted to find out how the boiling point of a liquid affects its rate of evaporation at room temperature. He poured an equal volume of liquids, X, Y and Z, in three identical containers as shown below and placed the dishes in the same location in the open.



He recorded the volume of the liquid remaining in each of the containers after 10 minutes in the table below.

| Liquid   | X   | Y   | Z   |
|--|-----|-----|-----|
| Boiling point (°C)                               | 80  | 120 | 100 |
| Volume of liquid at the start of experiment (ml) | 100 | 100 | 100 |
| Volume of liquid at the end of experiment (ml)   | 70  | 92  | 85  |

- (a) Based on the results, which liquid has the lowest rate of evaporation? [1]

\_\_\_\_\_

- (b) Based on the results, describe the relationship between the boiling point of a liquid and its rate of evaporation. [1]

\_\_\_\_\_  
\_\_\_\_\_

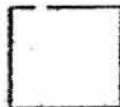
- (c) Describe how placing the three containers at the same location helps to make the experiment a fair test. Give two reasons. [2]

Reason 1: \_\_\_\_\_

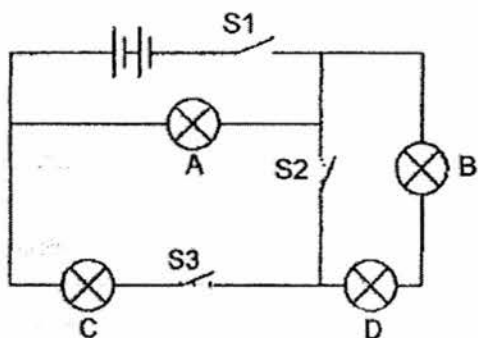
\_\_\_\_\_

Reason 2: \_\_\_\_\_

\_\_\_\_\_



38. All the bulbs in the circuit below are identical.

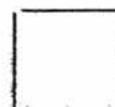


- (a) Complete the table below by writing on or off for each bulb. One has been done for you. [3]

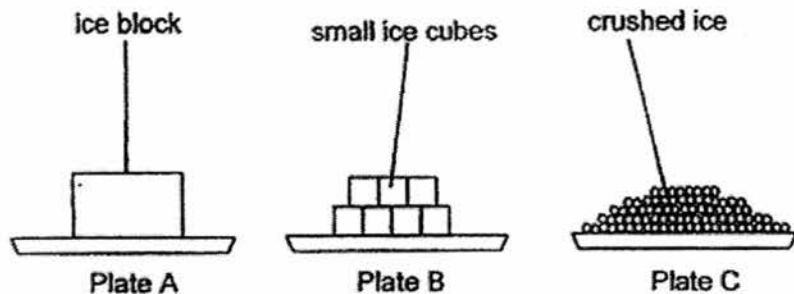
| Switch |        |        | Bulb |     |     |     |
|--------|--------|--------|------|-----|-----|-----|
| S1     | S2     | S3     | A    | B   | C   | D   |
| open   | open   | open   | off  | off | off | off |
| open   | closed | closed |      |     |     |     |
| closed | open   | open   |      |     |     |     |
| closed | open   | closed |      |     |     |     |

- (b) If all the switches are closed, what will be the difference between the brightness of bulb A and bulb B? [1]

\_\_\_\_\_



39. Equal volumes of ice were placed on 3 similar plates as shown below.



Using a stopwatch, the time taken for the ice in each plate to melt completely was measured.

(a) Fill in the boxes below with A, B or C, to show the correct order of decreasing rate of melting of the ice on the plates. [1]

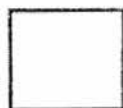
fastest melting  $\longrightarrow$  slowest melting  
Plate , Plate , Plate

(b) Explain your answer in (a). [1]

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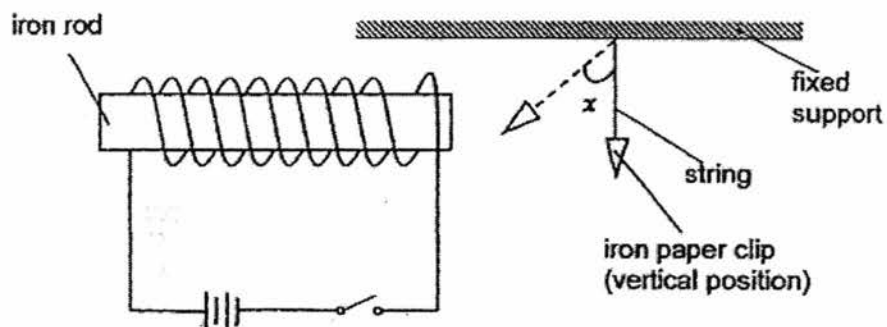
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40. Yun set up an experiment as shown in the diagram below.



She measured the angle  $x$ , by which the iron paper clip moved from the vertical position when she closed the switch. She repeated the experiment by increasing the number of batteries in the circuit. The results are recorded in the table below.

| Number of batteries      | 0 | 1  | 2  | 3  | 4  |
|--------------------------|---|----|----|----|----|
| Angle $x$ ( $^{\circ}$ ) | Y | 12 | 25 | 32 | 40 |

- (a) What is the value of Y? Explain your answer. [1]

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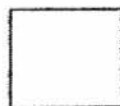
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- (b) Other than increasing the number of batteries, suggest 2 ways to increase the size of angle  $x$ . [2]

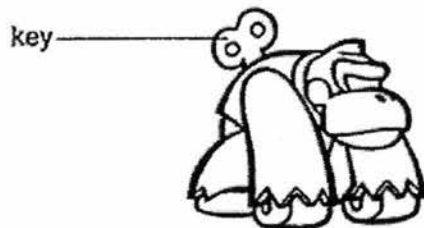
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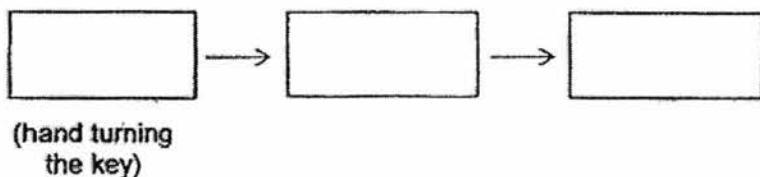
41. Jane conducted an experiment with a wound-up toy as shown below. She wanted to find out if the number of turns of the key would affect the distance moved by the toy.



She recorded the results of her experiment in the table below.

| Number of turns of the key | Distance travelled (cm) |
|----------------------------|-------------------------|
| 3                          | 15                      |
| 5                          | 25                      |
| 7                          | 35                      |
| 9                          | 45                      |
| 11                         | 50                      |

- (a) Write down the main energy conversion in the toy from the time Jane winds the key to the time the toy stopped moving. [1]



- (b) What is the relationship between the number of turns of the key and the distance moved by the toy? [1]

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- (c) When does the toy have the greatest potential energy? [1]

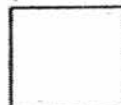
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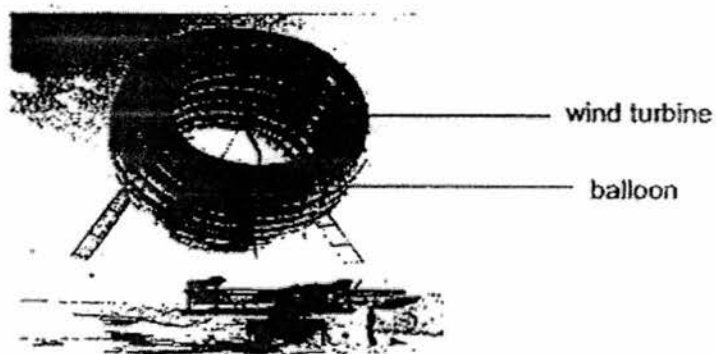
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42. The diagram below shows conventional wind turbines erected on a piece of land to generate electricity.



Advancement in technology has enabled scientists to design a modern airborne wind turbine. A lightweight wind turbine is mounted in the center of a helium balloon and flown to about 300m above ground. The airborne wind turbine is launched from a specially designed trailer, driven around by a heavy-duty vehicle.



- (a) Give 2 advantages of the airborne wind turbine over the conventional wind turbine. [2]

Advantage 1: \_\_\_\_\_

\_\_\_\_\_

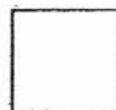
Advantage 2: \_\_\_\_\_

\_\_\_\_\_

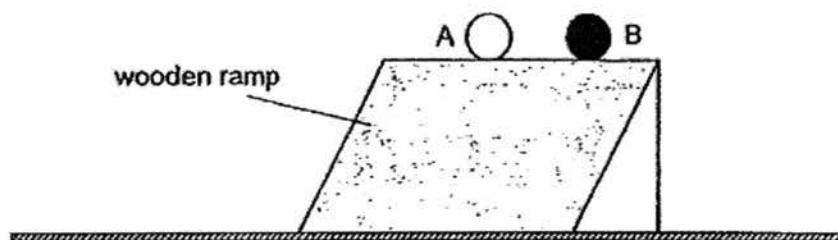
- (b) Suggest a benefit for using the conventional wind turbine compared to a traditional power station which burns fossil fuels to generate energy. [1]

\_\_\_\_\_

\_\_\_\_\_



43. Two balls of the same weight and size but of different surface texture, were released from the top of a wooden ramp as shown in the diagram below. Ball A moved a greater distance along the ground than Ball B.



- (a) What could be inferred about the surface texture of the two balls? [1]

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- (b) How would raising the height of the ramp affect the distance moved by the two balls along the ground? [1]

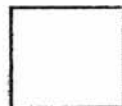
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- (c) Explain your answer in part (b). [1]

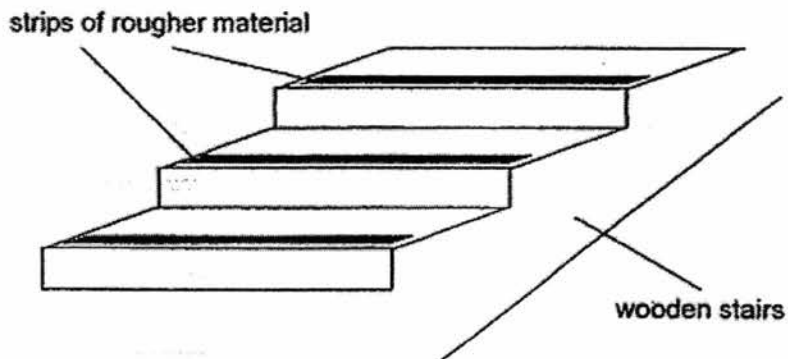
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44. Julie's new house has a flight of wooden stairs. On every step, there is a strip of material pasted near the edge of the step. The strips felt much rougher than the wood used to make the stairs.



- (a) What purpose does the strip of rougher material serve? Explain your answer. [2]

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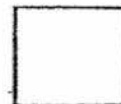
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- (b) After a few years of use, Julie noticed that the strips were not as rough as before. Give one reason for her observation. [1]

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- End of paper -

SCIENCE Booklet A

|   |   |    |   |    |   |    |   |    |   |    |   |
|---|---|----|---|----|---|----|---|----|---|----|---|
| 1 | 1 | 6  | 1 | 11 | 4 | 16 | 2 | 21 | 3 | 26 | 4 |
| 2 | 1 | 7  | 2 | 12 | 3 | 17 | 2 | 22 | 1 | 27 | 1 |
| 3 | 2 | 8  | 3 | 13 | 4 | 18 | 3 | 23 | 3 | 28 | 3 |
| 4 | 3 | 9  | 4 | 14 | 3 | 19 | 1 | 24 | 2 | 29 | 4 |
| 5 | 4 | 10 | 2 | 15 | 2 | 20 | 4 | 25 | 2 | 30 | 2 |

SCIENCE Booklet B

31(a) Green light is being reflected by the leaves of the plant and hence no light is being absorbed by the leaves to carry out photosynthesis. As a result, there is no food produced for the plant to grow.

31(b) It is used as a control set-up to show that the difference in plant growth due to the different types of colored lights.

32(a) To find out how if the amount of water will affect the height of seedling after 10 days.

32(b) Since initial = 8cm, 15ml is needed. (8+8)

33(a) Balsam plant grows from seeds while the bird's nest fern grows from spores.

33(b) Fungi

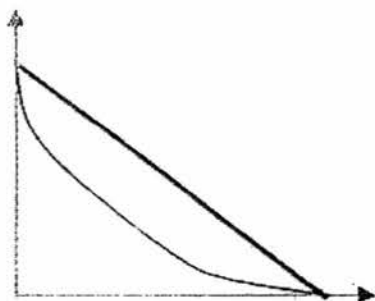
34(a) B. The fruit has small seeds which can be swallowed by birds and pass out together with its droppings at the opposite side of the river. (Plant X is very dispersed compared to Plant Y)

34(b) The stiff hairs will allow the plant part to be hooked on fur of passing animals so the fruit can be carried away from parent plant and be dispersed elsewhere.

35)

|                     | In Plants           | In Animals            |
|---------------------|---------------------|-----------------------|
| Male sex cells      | Pollen grains       | Sperm                 |
| Female sex cells    | Ovules              | Egg                   |
| After fertilization | Develop into a seed | Develop into a foetus |

36(a)



36(b) Container X has a constant surface area exposure whereas container Y do not have a constant surface are of exposure. Container Y larger surface exposure at the start will allow the water to be evaporate quickly at the start.

37(a) Liquid Y

37(b) The boiling point of liquid and rate of evaporation has an inverse relationship. The higher the temperature, the lower the rate of evaporation. Evaporation happens faster below boiling point.

37(c) Reason 1: The temperature will be the same for all liquid.

Reason 2: External conditions that affects evaporation such as wind will be the same for all liquid.

38(a)

| Switch |        |        | Bulb |     |     |     |
|--------|--------|--------|------|-----|-----|-----|
| S1     | S2     | S3     | A    | B   | C   | D   |
| Open   | Open   | Open   | off  | off | off | off |
| Open   | Closed | Closed | off  | off | off | off |
| Closed | Open   | Open   | On   | off | off | off |
| Closed | Open   | Closed | On   | On  | On  | On  |

38(b) Bulb A will be brighter than B.

39(a) C,B,A

39(b) Since crushed ice is made up of smaller pieces, it has the biggest surface area compared to the ice block and small ice cubes. In comparison, crushed ice has the biggest surface area, followed by the ice cube and lastly the ice block. The bigger the surface area, the faster the melting rate.

40(a) The electromagnet does not work as there is no battery to provide electric current for the iron rod to become a electromagnet.

40(b)(1) Increase the number of coils around the iron rod.

(2) Bring the electromagnet nearer to the paper clip.

41(a) Kinetic energy  $\rightarrow$  Elastic Potential Energy  $\rightarrow$  Kinetic Energy

41(b) As the number of turns of the key increases, the distance travelled by the toy increases

41(c) It has the greatest potential energy when the key has the maximum number of turns before the toy is released.

42(a) It is portable so it can provide electricity for rural areas. It can fly higher to catch more wind as it will not be blocked.

42(b) The conventional wind turbine makes use of renewable energy compared to fossil fuel which is a non-renewable and will run out eventually.

43(a) A has a smoother surface area than B.

43(b) The two balls will move a longer distance.

43(c) At a greater height, the balls will have more gravitational potential energy which is converted to more kinetic energy when the ball is released to travel a longer distance.

44(a) It reduces the chance of slipping as the rough strip increases friction between shoes/feet and stairs.

44(b) The strip become smoother due to wear and tear.