

**SEMESTRAL ASSESSMENT 1 –  
2017 PRIMARY 4**

**SCIENCE**

**BOOKLET A**

**28 Multiple Choice Questions (56 marks)**

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

**INSTRUCTIONS TO CANDIDATES**

1. Write your name and index number in the space provided.
2. Do not turn over the page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answers in the Optical Answer Sheet (OAS) provided.

**Marks Obtained**

|           |  |       |
|-----------|--|-------|
| Booklet A |  | / 56  |
| Booklet B |  | / 44  |
| Total     |  | / 100 |

Name: \_\_\_\_\_ (      )

Class: P 4 \_\_\_\_\_

Date : 8 May 2017

Parent's Signature: \_\_\_\_\_

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**Section A: (28 x 2 marks = 56 marks)**

For each question from 1 to 28, 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.

1. Which of the following is/are a source(s) of light?



Balloon



Fire



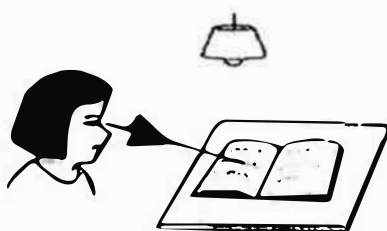
Moon



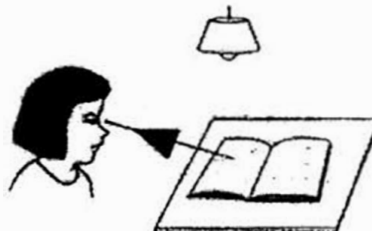
Fan

- (1) Fan only
- (2) Fire only
- (3) Balloon only
- (4) Fire and Moon only

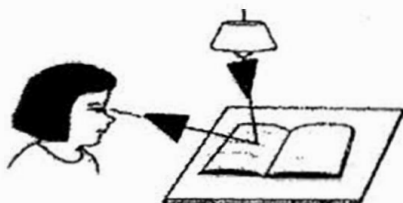
2. Which diagram below shows the correct path of light that enabled Sally to read a book?



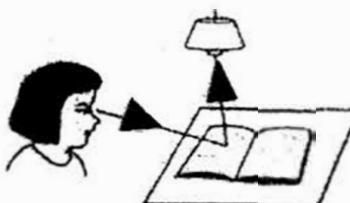
(1)



(2)



(3)

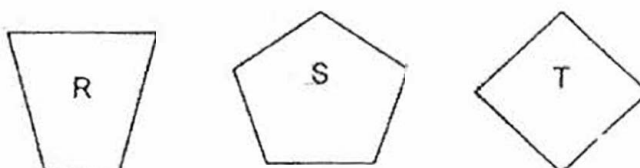


(4)

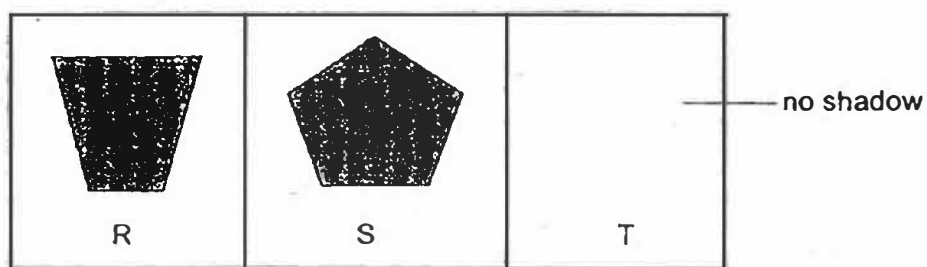
3. Study the set-up below.



Objects R, S and T were placed in between the light source and white screen one at a time.



The following shadows were formed on the screen.



Based on the observations above, which of the following statements are correct?

- A R blocked the most light.
- B T allowed light to pass through.
- C S is placed furthest away from the light source.
- D The path of light is blocked by at least one of the objects.

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

4. Which one of the following is a matter?

(1)



feather from a peacock

(2)



sound made by a bell

(3)



heat from a campfire

(4)



light from a torch

5. The table below shows the properties of four matters.

| Object | Definite volume? | Definite shape? | Can be compressed? |
|--------|------------------|-----------------|--------------------|
| Air    | No               | Yes             | Yes                |
| Milk   | Yes              | No              | No                 |
| Sugar  | Yes              | Yes             | Yes                |
| Table  | Yes              | No              | No                 |

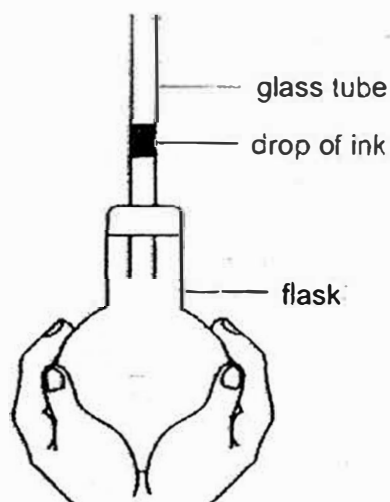
Which one of the following matters has its properties described correctly?

- (1) Air
- (2) Milk
- (3) Sugar
- (4) Table

6. Which one of the following objects produces useful heat to do work?

- (1) Toaster
- (2) Television
- (3) Car engine
- (4) Street lamp

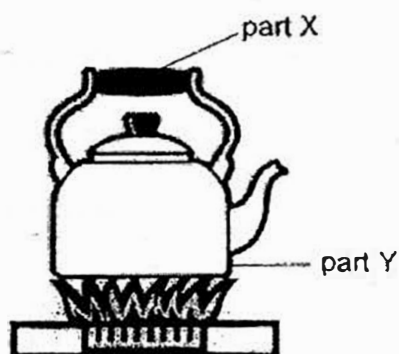
7. Mary fitted a flask with a glass tube. The glass tube contained a drop of ink. The ink moved up the tube slightly when Mary wrapped her hands around the flask.



Which one of the following statements is the correct explanation for her observation?

- (1) The heat from the flask caused the ink to contract.
- (2) The heat from her hands caused the ink to expand.
- (3) The heat from the flask caused the air in the flask to contract.
- (4) The heat from her hands caused the air in the flask to expand.

8. The diagram below shows a kettle.



What properties of the materials are suitable for making part X and part Y of the kettle?

|     | Part X                 | Part Y                 |
|-----|------------------------|------------------------|
| (1) | good conductor of heat | good conductor of heat |
| (2) | poor conductor of heat | good conductor of heat |
| (3) | good conductor of heat | poor conductor of heat |
| (4) | poor conductor of heat | poor conductor of heat |

9. Jane wants to make a raincoat to keep her body dry on rainy days.



Which of the following property/properties must she consider when choosing the material?

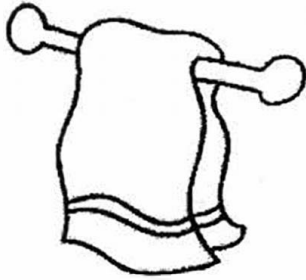
- A It is flexible.
- B It is waterproof.
- C It floats on water.

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

10. Which of the following statement about magnet is **not** true?

- (1) Like poles repel.
- (2) Unlike poles attract.
- (3) Every magnet has a north pole and a south pole.
- (4) Some magnets have two south poles and no north pole.

11. Which one of the following objects is made of magnetic material?



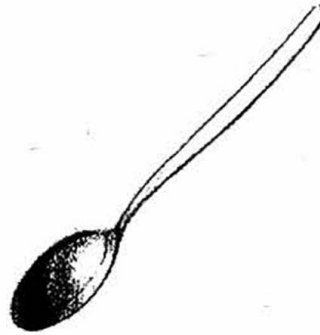
(1) cotton towel



(2) plastic bottle

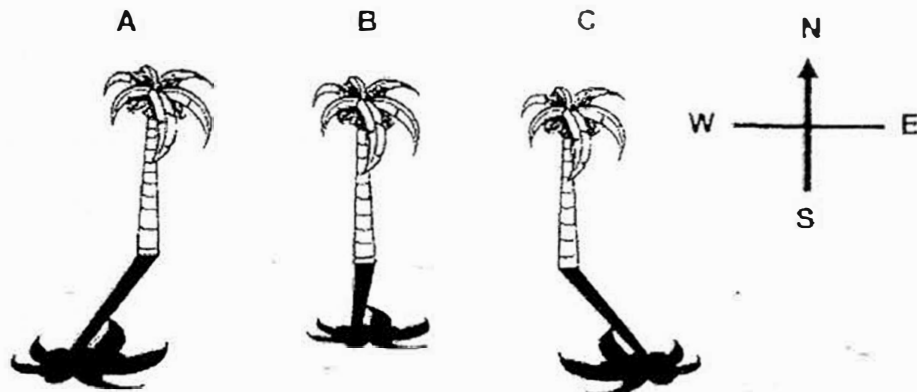


(3) copper mirror frame



(4) steel spoon

12. Study the diagram shown below.



Sara knows that the Sun rises in the East and sets in the West. She observed and recorded the timings of the shadows formed by a coconut tree at different times of the day.

Which one of the following shows the correct timings when the shadows are formed?

|     | A       | B       | C      |
|-----|---------|---------|--------|
| (1) | 9 p.m.  | 12 noon | 4 a.m. |
| (2) | 10 a.m. | 12 noon | 2 p.m. |
| (3) | 10 a.m. | 12 a.m. | 5 p.m. |
| (4) | 10 p.m. | 1 p.m.  | 5 a.m. |

13. Mei Ling shone a torch at a ceramic cup below to form different shadows of the cup.



cup

Which one of the following shadows cannot be formed by the cup?



(1)



(2)

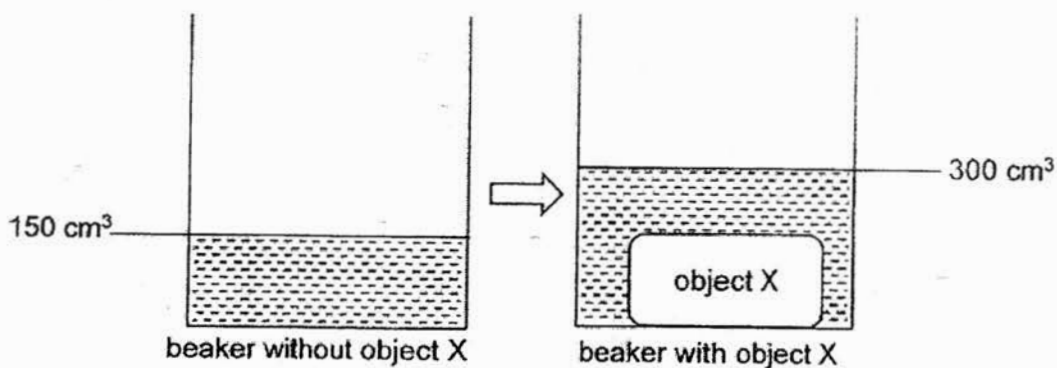


(3)

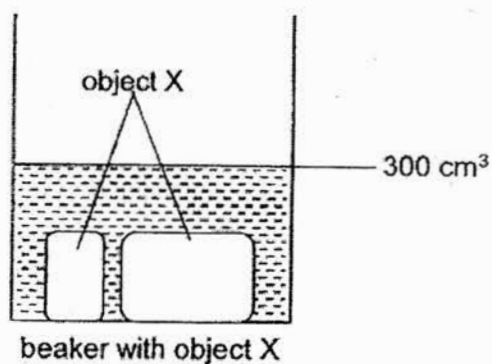


(4)

14. Julie placed a block of object X in a beaker that was filled with  $150 \text{ cm}^3$  of water and the water level rose to  $300 \text{ cm}^3$ .



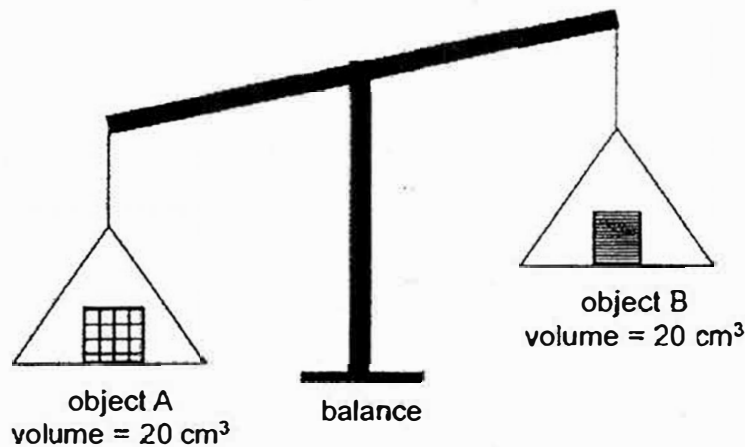
She removed the object and cut it into two pieces. The diagram below shows the water level when she placed the two cut pieces of object X back into the beaker.



From the above activity carried out by Julie, we can conclude that object X

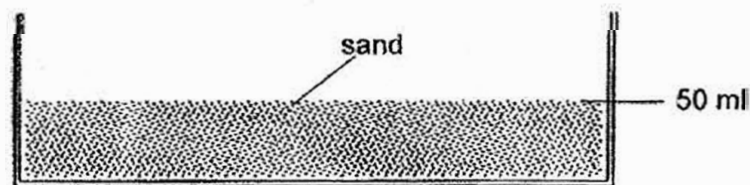
- (1) has mass
- (2) can be compressed
- (3) has a definite volume
- (4) has no definite volume

15. Study the diagram below.



Which of the following statement(s) about objects A and B is/are correct?

- A Both objects have the same mass.
  - B Both objects have different amount of matter.
  - C Object A takes up more space than Object B.
- (1) A only
  - (2) B only
  - (3) B and C only
  - (4) A, B and C
16. Ali placed some sand in a fish tank up to the 50 ml mark as shown in the diagram below. There are air spaces among the sand particles.



The next day, he poured 30 ml of water into the tank containing the sand and noted that the water level was below 80 ml.

Why was the water level below 80 ml?

- (1) The water can be compressed.
- (2) The water and sand have no definite volume.
- (3) The air trapped between the sand particles was compressed.
- (4) Some water occupied the air spaces in between the sand particles.

17. Mrs. Teo carried out an experiment with three different blocks, A, B and C. The blocks have the same colour but different shapes.



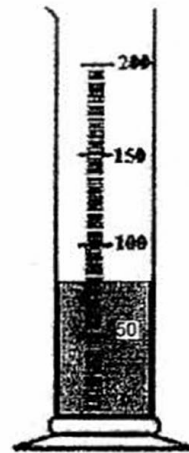
block A



block B



block C



measuring cylinder

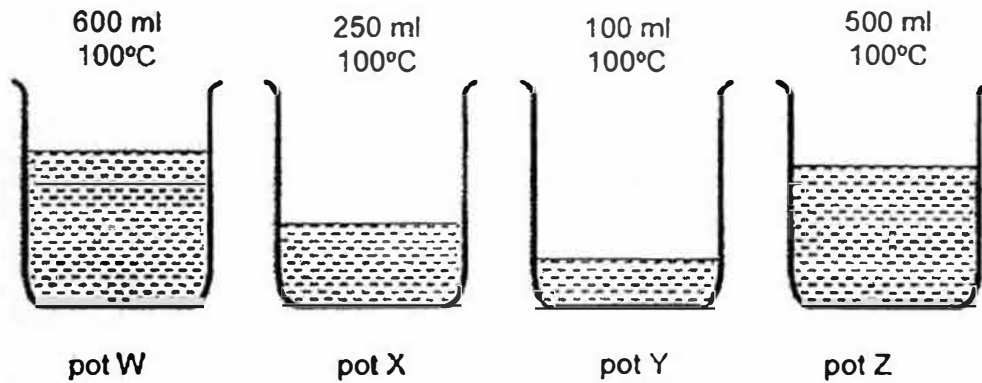
She placed the three different blocks into a measuring cylinder containing 80 ml of water one at a time and measured the volume of each block.

What was she trying to find out from her experiment?

She was trying to find out if \_\_\_\_\_

- (1) the colour of the block affect its mass
- (2) the shape of the block affect its mass
- (3) the colour of the block affect its volume
- (4) the shape of the block affect its volume

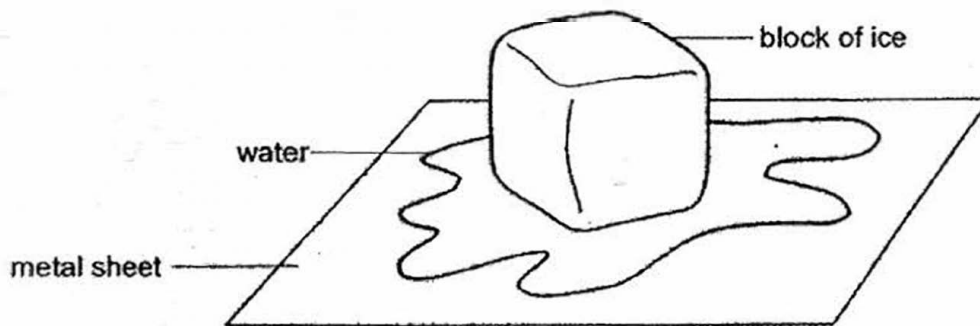
18. Maggie wants to cook a packet of instant noodle using one of the four pots filled with different amount of water at the same starting temperature.



Which pot should Maggie choose to enable her to take the least amount of time to cook the instant noodle?

- (1) W
- (2) X
- (3) Y
- (4) Z

19. Study the diagram below.

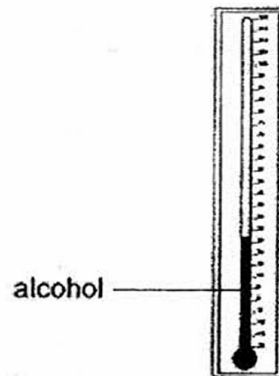


What will happen if the block of ice on a metal sheet is left in a room of 20°C for 5 minutes?

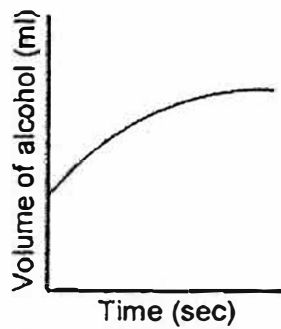
- A The water will change to solid state.
- B The temperature of the metal sheet will decrease.
- C The block of ice will gain heat from the surrounding air.

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

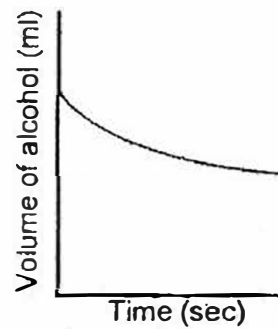
20. The picture below shows a thermometer which contains alcohol.



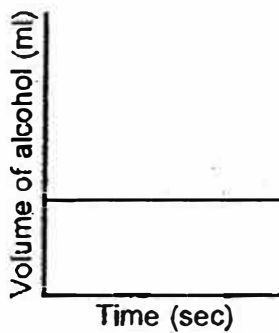
Which of the following graph shows what happens to the volume of the alcohol as soon as the thermometer is placed in a basin of iced water?



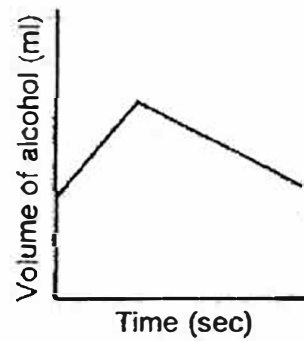
(1)



(2)



(3)



(4)

21. Mrs. Siva made four similar boxes using different materials, P, Q, R and S. The temperature of the air inside the box at the beginning of the experiment is  $30^{\circ}\text{C}$ . She then left the boxes under the Sun for 20 minutes and recorded the temperature of the air inside each box in the table as shown below.



material P



material Q



material R



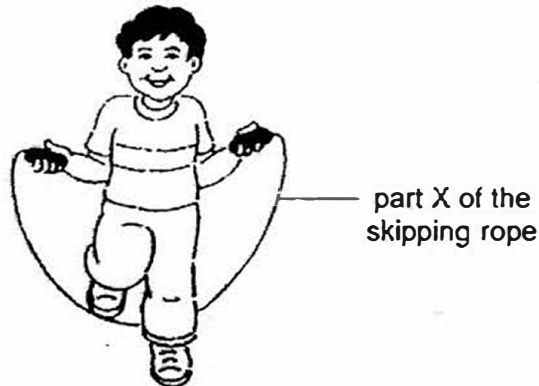
material S

| Material used | Temperature ( $^{\circ}\text{C}$ ) of air inside the boxes<br>after 20 minutes |
|---------------|--------------------------------------------------------------------------------|
| P             | 40                                                                             |
| Q             | 33                                                                             |
| R             | 38                                                                             |
| S             | 45                                                                             |

Which box should she choose to put packets of cold drinks so that they will remain cold for the longest period of time?

- (1) P
- (2) Q
- (3) R
- (4) S

22. Study the picture below.



What property/properties must the material of part X has/have to make the skipping rope?

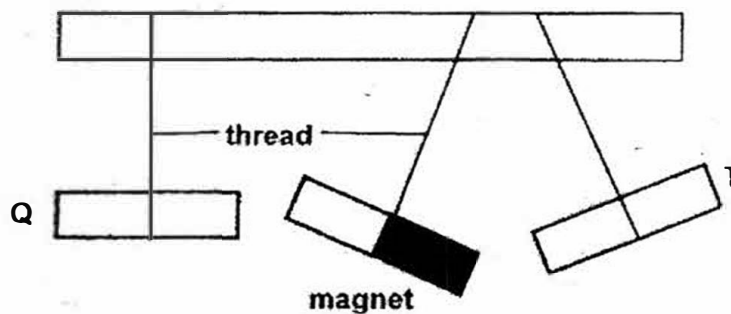
- A shiny
  - B flexible
  - C strong
  - D waterproof
- (1) A only
  - (2) B and D only
  - (3) B and C only
  - (4) A, C and D only
23. The table below shows the least weight of a load that caused the three different materials, A, B, and C, to break.

| Material | Weight of load that caused material to break (kg) |
|----------|---------------------------------------------------|
| A        | 15                                                |
| B        | 2                                                 |
| C        | 10                                                |

Which of the following statements about materials A, B and C is/are true?

- A Material A is the strongest.
  - B Material C is weaker than material B.
  - C Material A is more flexible than material C.
- (1) A only
  - (2) B only
  - (3) A and C only
  - (4) B and C only

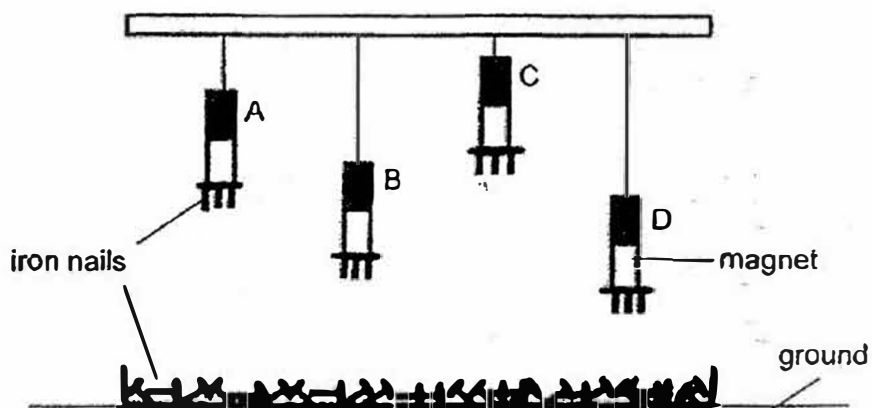
24. The diagram below shows two objects, Q and T, which are hung together with a bar magnet.



What could objects Q and T be?

|     | Q         | T         |
|-----|-----------|-----------|
| (1) | Glass rod | Steel rod |
| (2) | Glass rod | Magnet    |
| (3) | Iron rod  | Steel rod |
| (4) | Iron rod  | Magnet    |

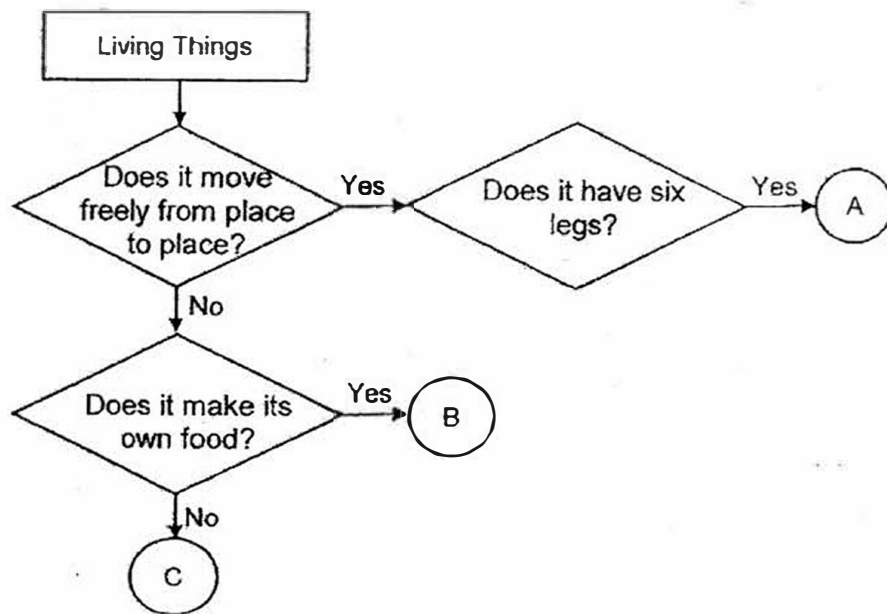
25. Four bar magnets were hung at different heights



Based on the diagram, which magnet has the strongest magnetism?

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

26. Study the flow chart below.



What could A, B and C be?

|     | A        | B        | C        |
|-----|----------|----------|----------|
| (1) | Frog     | Mushroom | Fern     |
| (2) | Ant      | Grass    | Mushroom |
| (3) | Mushroom | Fern     | Ant      |
| (4) | Ant      | Grass    | Frog     |

27. The pictures below show two living things.



toadstool



bird's nest fern

Which one of the following statements correctly describes both living things?

- (1) Both are flowering plants.
- (2) Both reproduce from spores.
- (3) Both can make their own food.
- (4) Both can move freely from one place to another.

28. The pictures below show a zebra and a dog.



zebra



dog

They are similar because they \_\_\_\_\_.

- (1) lay eggs
- (2) have feelers
- (3) are covered with feathers
- (4) feed their young with milk

**SEMESTRAL ASSESSMENT 1 – 2017  
PRIMARY 4**

**SCIENCE**

**BOOKLET B**

**12 Open-ended questions (44 marks)**

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

**INSTRUCTIONS TO CANDIDATES**

1. Write your name and index number in the space provided.
2. Do not turn over the page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Write your answers in this booklet.

**Marks Obtained**

**Section B**

|  |             |
|--|-------------|
|  | <b>/ 44</b> |
|--|-------------|

**Name:** \_\_\_\_\_ (     )     **Class: P 4** \_\_\_\_\_

**Date : 8 May 2017**

**Parent's Signature:** \_\_\_\_\_

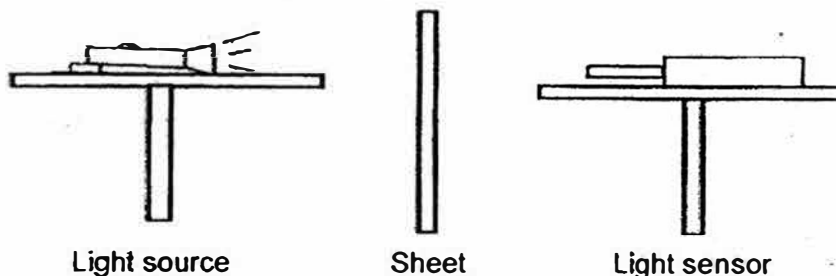
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**Section B: (44 marks)**

Write your answers to questions 29 to 40.

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

29. Sheryl wanted to find out the degree of transparency of three different materials, R, S and T. She placed each material, one at a time, between the light source and the light sensor in a dark room as shown below.



The results of her experiment are shown in the table below.

| Material | Amount of light detected by the light sensor (units) |
|----------|------------------------------------------------------|
| R        | 350                                                  |
| S        | 5                                                    |
| T        | 100                                                  |

- (a) What is the dependent (measured) variable? [1]

- (b) Arrange the materials according to their degree of transparency by filling in the boxes with the correct letters, R, S and T. [1]



Allows the least  
amount of light to  
pass through it

Allows the most  
amount of light to  
pass through it

- (c) A new material, U, is discovered. It allows more light to pass through than material T but allows less light to pass through than material R.

What is the likely amount of light that will be detected by the light sensor when material U is placed in between the torch and the light sensor? [1]

30 (a) State two common properties of all matter?

[2]

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The table below shows the properties of four specimens, A, B, C and D.

| Properties                    | A   | B   | C   | D   |
|-------------------------------|-----|-----|-----|-----|
| Can it be seen?               | No  | Yes | Yes | Yes |
| Does it have mass?            | Yes | Yes | No  | Yes |
| Is it a non-living thing?     | Yes | No  | Yes | Yes |
| Does it have definite volume? | No  | Yes | No  | Yes |

(b) Which of the following specimen(s), A, B, C or D, is/are matter?

[1]

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(c) Based on the properties given in the table, give an example of specimen A.

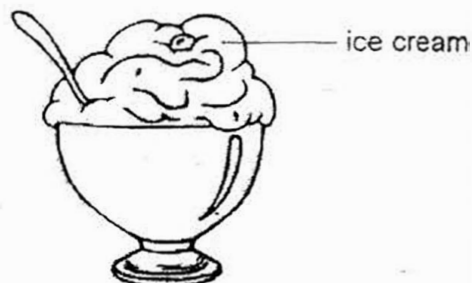
[1]

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31. The two set-ups below are placed in a room at 30°C.



Set-up A



Set-up B

- (a) Put a tick (✓) in the correct box to indicate whether each of the labelled items gains heat or loses heat. [2]

| Items     | Gains heat | Loses heat |
|-----------|------------|------------|
| hot tea   |            |            |
| ice cream |            |            |

- (b) Based on your answers in (a), state the property of heat. [1]

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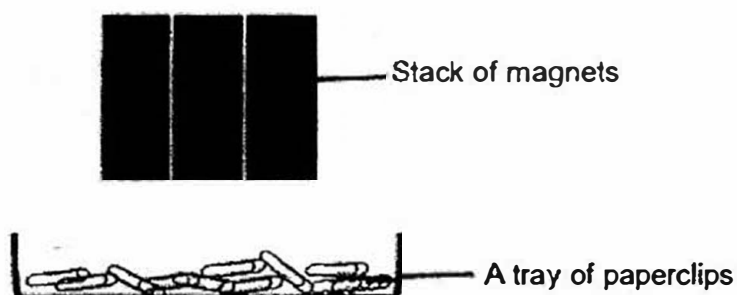
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- (c) What is the likely temperature of Set-up A and Set-up after 2 hours? [1]

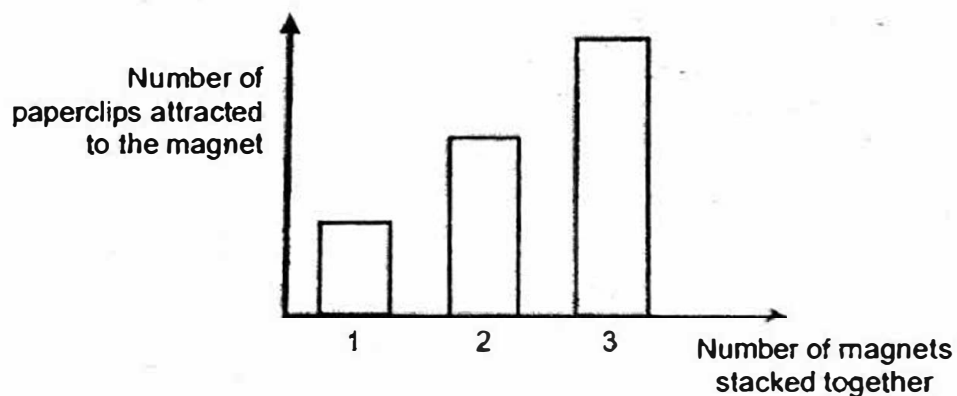
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|       |   |
|-------|---|
| Score | 4 |
|-------|---|

32. Peter carried out an experiment to find out how the number of similar magnets stacked together will affect the number of paperclips attracted to the magnets at a fixed distance.

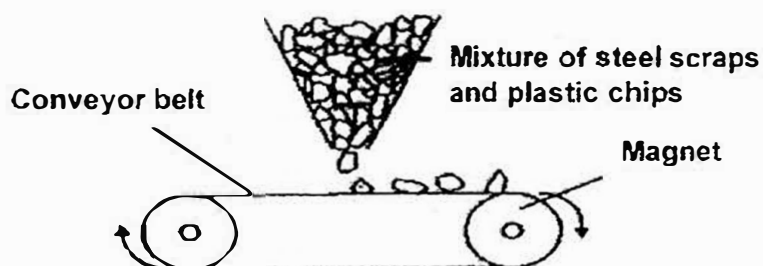


The graph below shows the results of his experiment.



- (a) What is the relationship between the number of magnets stacked together and the number of paperclips attracted to the magnets? [1]

A researcher carried out an experiment using a specially designed conveyor belt to separate steel scraps from plastic chip as shown in the diagram below.



- (b) Which of the contents, steel scraps and plastic chips, are most likely to be found in the respective container? [1]

(i) Container A: \_\_\_\_\_

(ii) Container B: \_\_\_\_\_

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

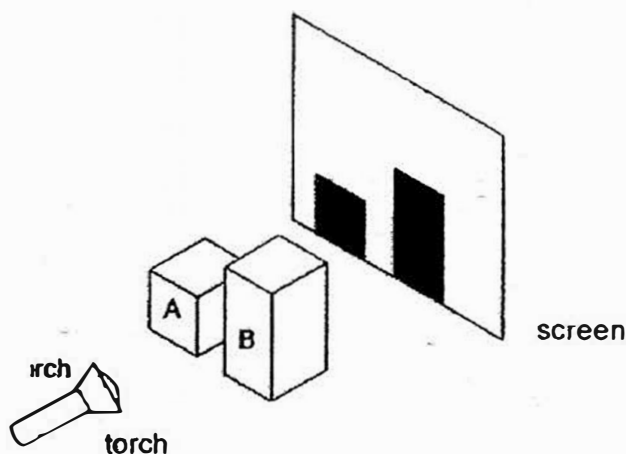
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|       |             |
|-------|-------------|
| Score | <div></div> |
|       | 3           |

33. Lewis placed two wooden boxes of different heights in front of a screen and shone a torch on them.



- (a) Explain how the shadows are formed on the screen. {1}

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- (b) Moving only Box A, suggest how to make the height of the shadow of Box A greater than the height of the shadow of Box B. [1]

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- (c) Lewis replaced the wooden boxes with new boxes made of a different material. He noticed that a lighter shadow was formed. What is a possible material used to make the new boxes? Explain your answer. [2]

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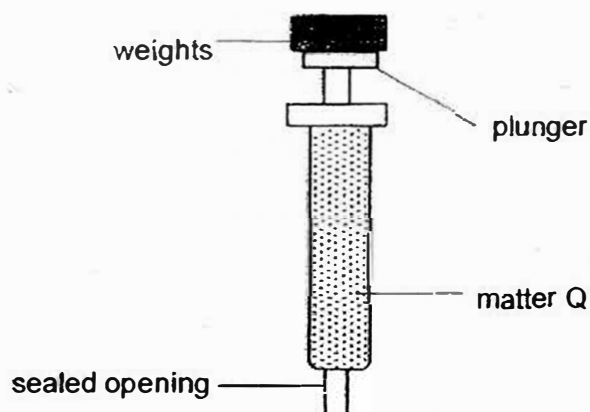
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|       |                                                                                                                                                         |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Score | <div style="border: 1px solid black; width: 100px; height: 100px; position: relative;"><div style="position: absolute; top: 0; right: 0;">4</div></div> |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------|

34. Tom sealed the opening of a syringe before filling the syringe completely with Matter Q. He then put weights on the plunger of the syringe.



He recorded the volume of Matter Q in the table below for every weight he added on the plunger.

| Weight added (g) | Volume of Matter Q (cm <sup>3</sup> ) |
|------------------|---------------------------------------|
| 0                | 100                                   |
| 1                | 90                                    |
| 2                | 82                                    |
| 3                | 75                                    |

- (a) What is the volume of matter Q at first before the weights were added? [1]

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- (b) What happened to the volume of matter Q when the number of weights added increased? [1]

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- (c) Based on the activity above, what can Tom conclude about the property of matter Q? [1]

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- (d) Give a reason why Tom needed to seal the opening of the syringe before conducting the activity? [1]

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35. Calvin conducted an experiment in a research lab by heating three rods, A, B and C, made of different materials. He recorded the lengths of each rod before and after heating in the table below.

| Material | Length (mm)<br>before heating | Length (mm)<br>after heating |
|----------|-------------------------------|------------------------------|
| A        | 100                           | 103                          |
| B        | 100                           | 106                          |
| C        | 100                           | 105                          |

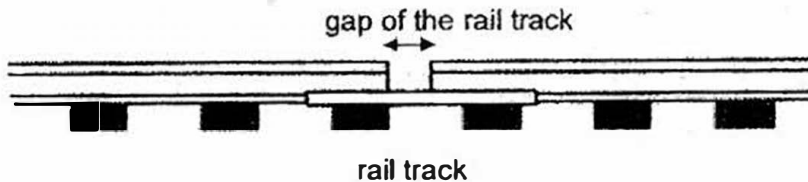
- (a) What is the independent (changed) variable in Calvin's experiment? [1]

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- (b) Based on the results in the table, which material expanded the most? [1]

---

- (c) The diagram below shows part of a rail track. Calvin wants to ensure that the gap of the rail track will not be narrowed too much on a hot day as it may damage the track.



Which materials, A, B or C, should Calvin choose to make the rail track? Explain your answer. [2]

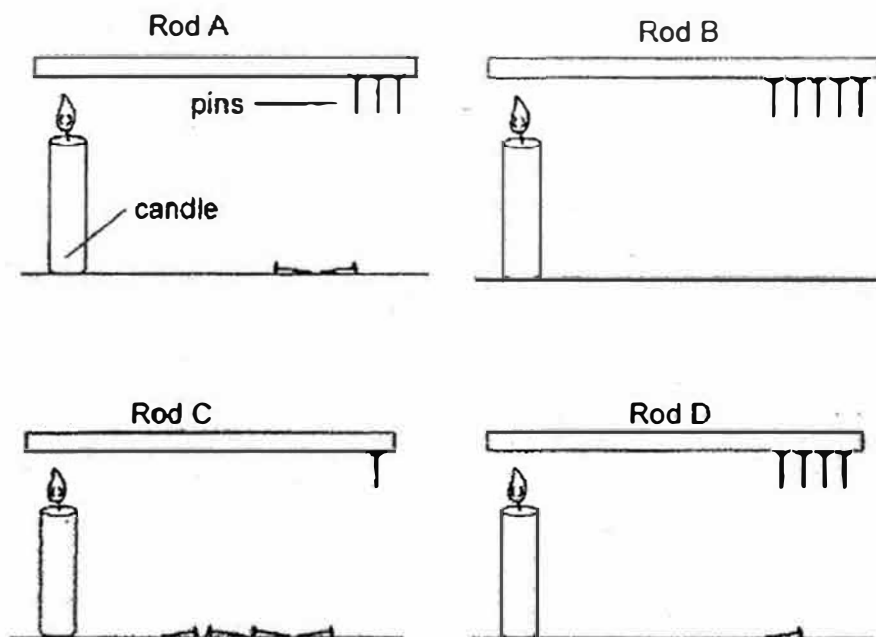
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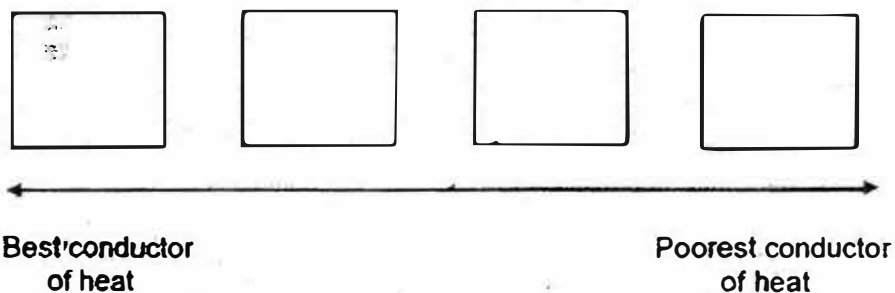
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|       |                                                                                                                                                         |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Score | <div style="border: 1px solid black; width: 100px; height: 100px; position: relative;"><div style="position: absolute; top: 0; right: 0;">4</div></div> |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------|

36. Cindy conducted an experiment to find out the heat conductivity of four rods, A, B, C and D. The diagram below shows the results of her experiment after 10 minutes.



- (a) Arrange the rods, A, B, C and D, starting with the best conductor of heat to the poorest conductor of heat. [1]



- (b) List two variables in this experiment that must be kept the same to ensure a fair test. [2]

---

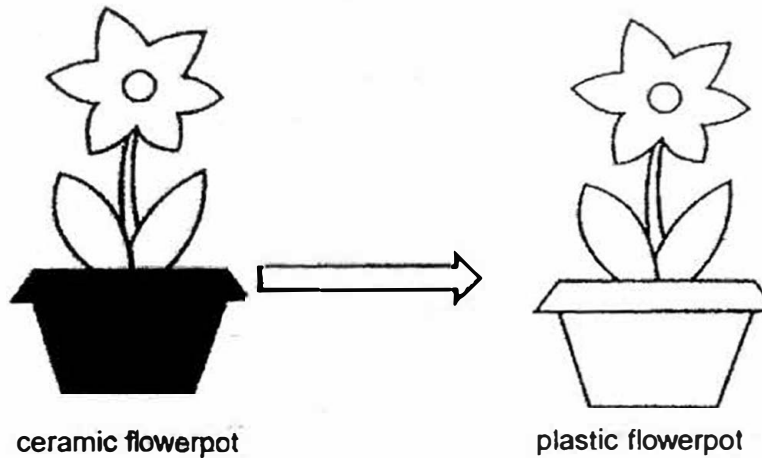


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- (c) Using the same rods and the pins, suggest a method to make the pins fall faster from the rods. [1]

---

37. ABC Nursery plans to replace the ceramic flowerpots with plastic flowerpots so that they are easier for handling and transportation.

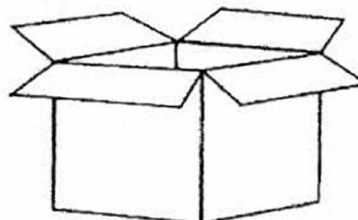


- (a) What are the two properties of plastic that made it easier for the workers to carry and transport it? [2]

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---

Muthu, a delivery man from the nursery, wants to deliver 3 kg of soil to a customer. He plans to pack the soil into a cardboard box as shown below.



cardboard box

He then decides to wrap the soil with a wrapper before placing it into the box so that the soil will not get wet when it rains.

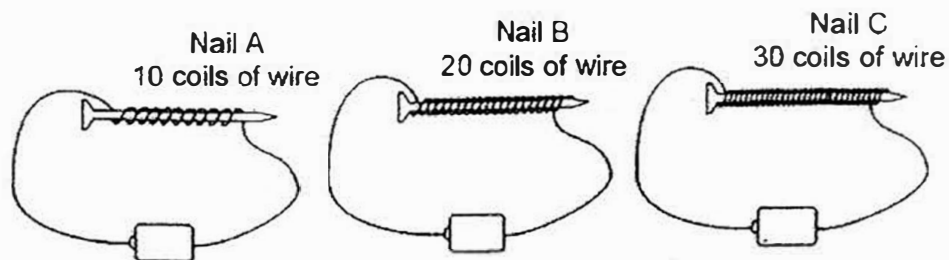
- (b) What material should the wrapper be made of? Explain your answer. [2]

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|       |                                                                                                                                                         |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Score | <div style="border: 1px solid black; width: 100px; height: 100px; position: relative;"><div style="position: absolute; top: 0; right: 0;">4</div></div> |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------|

38. Three identical iron nails were each connected to a battery and coiled with wires as shown in the diagram below. The batteries were of the same type and brand.



Each iron nail was brought near a dish of similar thumbtacks and the number of thumbtacks it attracted was recorded in the table below.

- (a) Based on the number of thumbtacks attracted by each iron nail, write the letters **A**, **B** and **C** in the correct box in the table below. [1]

| Nail | Number of thumbtacks attracted |
|------|--------------------------------|
|      | 5                              |
|      | 19                             |
|      | 7                              |

- (b) Explain your answer for Nail C. [2]

---



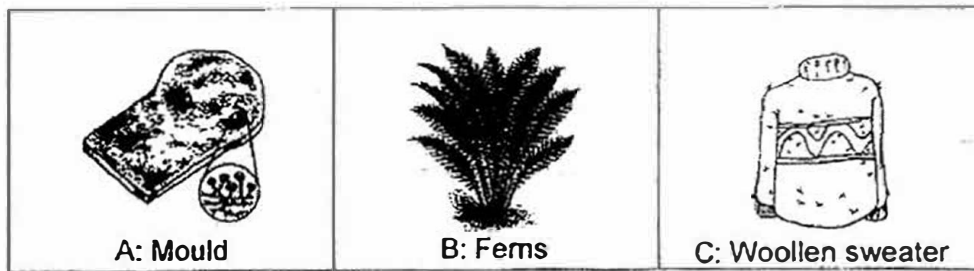
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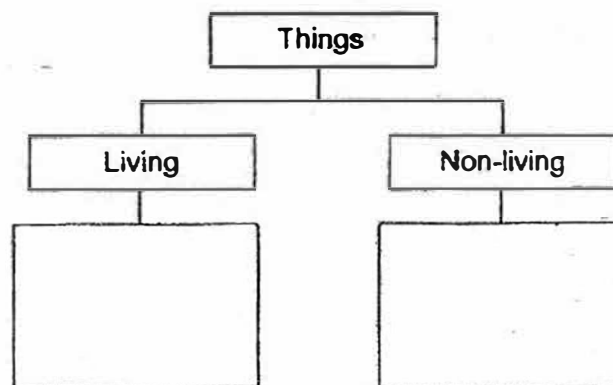
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|       |   |
|-------|---|
| Score | 3 |
|-------|---|

39. The diagram below shows three things.



(a) Classify the things, A, B and C, into the classification chart below. [1]



(b) Explain why mould cannot be classified as a plant. [1]

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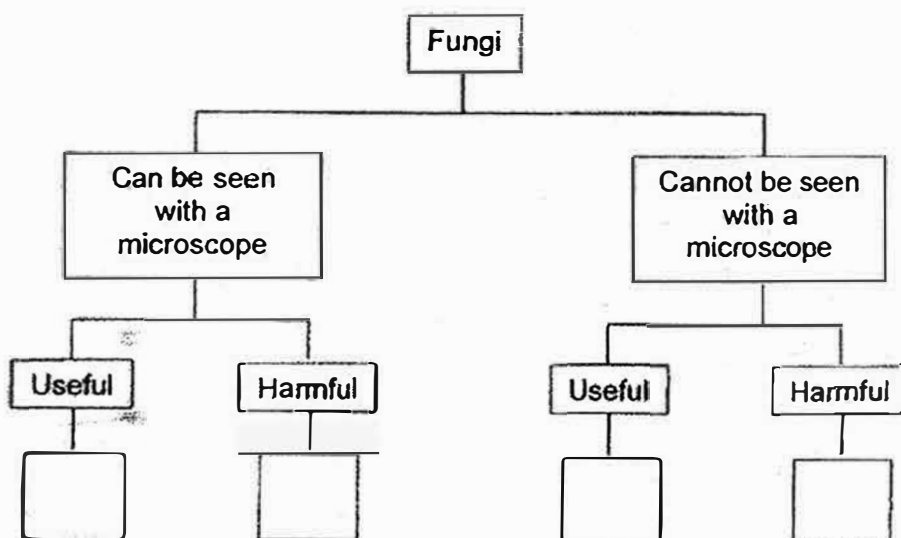
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- (c) The table below shows the characteristics of two different types of living things, R and S. A tick ( ✓ ) shows that the living thing has the characteristic.

| Characteristic                   | R | S |
|----------------------------------|---|---|
| Can only be seen with microscope |   | ✓ |
| Useful                           | ✓ | ✓ |

From the information above, where do living things, R and S belong in the following classification table? Write R and S in the correct boxes below. [1]



|       |   |
|-------|---|
| Score | 3 |
|-------|---|

40. The pictures below show two animals, E and F.



Animal E



Animal F

- (a) Identify the animal group that Animal E and Animal F belong to. [1]

Animal E: \_\_\_\_\_

Animal F: \_\_\_\_\_

- (b) How do Animal E and Animal F differ in their outer-covering and the way they reproduce? [2]

|                        | Animal E | Animal F |
|------------------------|----------|----------|
| Outer covering         |          |          |
| The way they reproduce |          |          |

- (c) Based on what you can observe from the pictures, state one other difference between animal E and animal F. (Do not compare their body shape, size and colour.) [1]

\_\_\_\_\_

\_\_\_\_\_

End of Paper

|       |   |
|-------|---|
| Score | 4 |
|-------|---|

**EXAM PAPER 2017 (P4)**

**SCHOOL : Nan Hua**

**SUBJECT : SCIENCE**

**TERM : SA1**

**ORDER CALL :**

|     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Q1  | Q2  | Q3  | Q4  | Q5  | Q6  | Q7  | Q8  | Q9  | Q10 |
| 2   | 3   | 2   | 1   | 2   | 1   | 4   | 2   | 3   | 4   |
| Q11 | Q12 | Q13 | Q14 | Q15 | Q16 | Q17 | Q18 | Q19 | Q20 |
| 4   | 2   | 1   | 3   | 2   | 4   | 4   | 1   | 3   | 2   |
| Q21 | Q22 | Q23 | Q24 | Q25 | Q26 | Q27 | Q28 | Q29 | Q30 |
| 2   | 3   | 1   | 2   | 3   | 2   | 2   | 4   |     |     |

**29)a)The amount of light detected by the light sensor.**

**b)S , T , R**

**c)240**

**30)a)They have mass and takes up space**

**b)Specimens A , B and D**

**c)Air**

**31)a)hot tea – Loses heat**

**Ice cream – Gains heat**

**b)Heat travels from a hotter object to a colder object.**

c)30.C

32)a)The more number of magnets stacked together,the more number of paperclips it could attract.

b)i)Steel scraps

ii)Plastic chips

c)Plastic chips are non-magnetic and it cannot be attracted by the magnet,hence it will drop into container B.

33)a)The shadow are formed when the light from torch is blocked by the boxes.

b)Move Box A nearer to the torch.

c)Frosted glass.The frosted glass allows some light to pass through hence a lighter shadow is formed.

34)a)100cm<sup>3</sup>

b)The volume of Matter Q decreased

c)It cannot compressed

d)Matter Q cannot escape from the opening.

35)a)The type of materials

b)Material B

c)Material A.The increase in length after heating was the least,so the material will gain heat from the sun and expand the least.

36)a)C , A , D , B

b)The length of rods

The thickness of the rods.

c)Use more candles instead of one

37)a)Plastic is light and does not break easily.

b)Plastic so that it can be fold in to the cardboard if it is too big and it is also waterproof so that it would not get wet when it rains.

38)a)A

C

B

b)Nail C has the most number of coils of wire around the iron nail.Hence it has the strongest magnetism and attracted the most number of thumbtacks.

39)a)Living – B , A

Non-living – C

b)The mould cannot make its own food.

c)Can be seen with a microscope

Useful – S

Cannot be seen with a microscope

Useful – R

40)a)Animal E:Bird

Animal F:Mammal

b)

|                        | Animal E | Animal F            |
|------------------------|----------|---------------------|
| Outer covering         | Feather  | Hair                |
| The way they reproduce | Lay eggs | Give birth to young |

c)Animal E only have two legs but animal F have four limbs.

