



**NAN HUA PRIMARY SCHOOL  
SEMESTRAL ASSESSMENT 1 – 2014  
PRIMARY 4**

**SCIENCE**

**BOOKLET A**

**30 Multiple Choice Questions (60 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**

<b>Booklet A</b>		<b>/ 60</b>
<b>Booklet B</b>		<b>/ 40</b>
<b>Total</b>		<b>/ 100</b>

**Name:** \_\_\_\_\_ (      )

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

**Date : 16 May 2014**

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**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.

1. Which of the following is/are source(s) of light?  
A: Fire  
B: Wood  
C: Lightning  
  
(1) C only  
(2) A and B only  
(3) A and C only  
(4) A, B and C
  
2. Which of the following sentence(s) is/are true?  
A: All objects reflect light.  
B: Black surfaces do not reflect light.  
C: Rough surfaces reflect more light than smooth surfaces.  
  
(1) A only  
(2) A and B only  
(3) B and C only  
(4) A, B and C
  
3. A builder wants to build a building that uses natural lighting to cut down on the use of energy. Which one of the following materials should he use for the walls of the building?  
  
(1) Steel  
(2) Glass  
(3) Concrete  
(4) Aluminium
  
4. Which one of the following statements about shadows is correct?  
  
(1) Only solid objects cast shadows.  
(2) Shadows are neither matter nor energy.  
(3) Shadows are formed in the absence of light.  
(4) The shape of shadows is not affected by the position of the light source.

5. Which one of the following groups is classified correctly?

	<b>Matter</b>	<b>Non-matter</b>
(1)	oil, water, heat	butter, light, cream
(2)	jelly, sound, paper	ice, iron, rain
(3)	butter, oxygen, fire	wind, shadow, wax
(4)	air bubbles, toothpaste, ice	light, thunder, heat

6. Specimen X was brought back from the Moon. After some tests scientists conclude that Specimen X is a matter. Which of the following statement about Specimen X must be true?

- (1) Specimen X is weightless.
- (2) Specimen X takes up space.
- (3) Specimen X can be compressed.
- (4) Specimen X has a definite shape.

7. Some air was pumped into an inflated ball shown below.



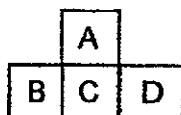
Why did the size of the ball remain the same after more air is pumped in?

- (1) Air occupies space.
- (2) Air has no fixed volume.
- (3) Solid has definite shape.
- (4) The mass of the ball stays the same.

8. Which one of the following statements about temperature is correct?

- (1) It is a measure of the degree of hotness.
- (2) It is a measure of the amount of hotness.
- (3) It is a measure of the degree of coldness.
- (4) It is a measure of the amount of coldness.

9. Four pieces of metal were placed together as shown in the diagram below.



The table below shows the temperature of each metal piece at the beginning of the investigation.

Metal	Temperature (°C)
A	80
B	70
C	50
D	60

If the surrounding temperature is kept at a constant 25 °C, what would Metal C's temperature be after six hours?

- (1) 20 °C
  - (2) 25 °C
  - (3) 50 °C
  - (4) 65 °C
10. An iron rod at 130 °C was left to cool naturally in a classroom. Which one of the following is true?
- (1) The surroundings will lose heat.
  - (2) The iron rod will become lighter after cooling.
  - (3) The iron rod will become slightly shorter after cooling.
  - (4) The temperature of the classroom will increase to 130°C.
11. John held a plastic spoon in his left hand and a metal spoon in his right hand. The metal spoon felt colder than the plastic spoon. Which one of the following statements explains the observation?
- (1) The plastic spoon traps heat from John's hand.
  - (2) John's hands were not sensitive enough to tell the temperature.
  - (3) John's left hand was at a higher temperature than his right hand.
  - (4) The metal spoon conducts heat away from John's hand faster than the plastic spoon.

12. Which of the following statement(s) about living things is/are true?

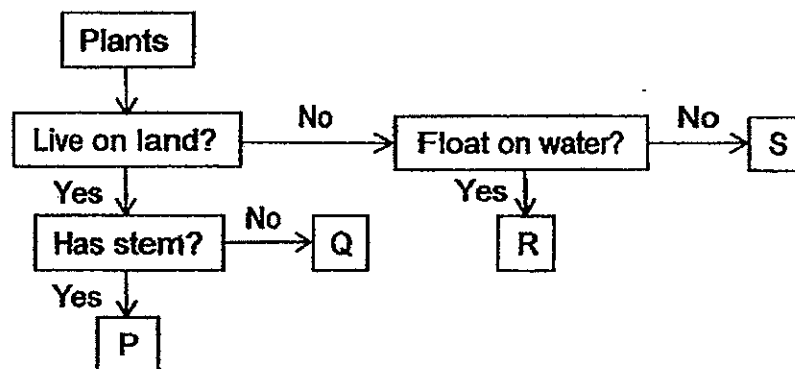
A: All living things can reproduce.

B: All living things need air, food and sunlight to survive.

C: All living things respond to changes in the environment.

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

13. Study the chart below carefully.

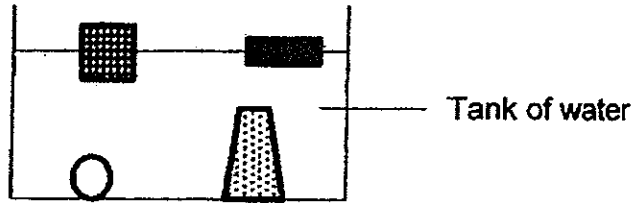


Which letter in the classification chart above best represents the plant shown below?



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

14. The diagram shows 4 objects made of 4 different materials in a tank of water.

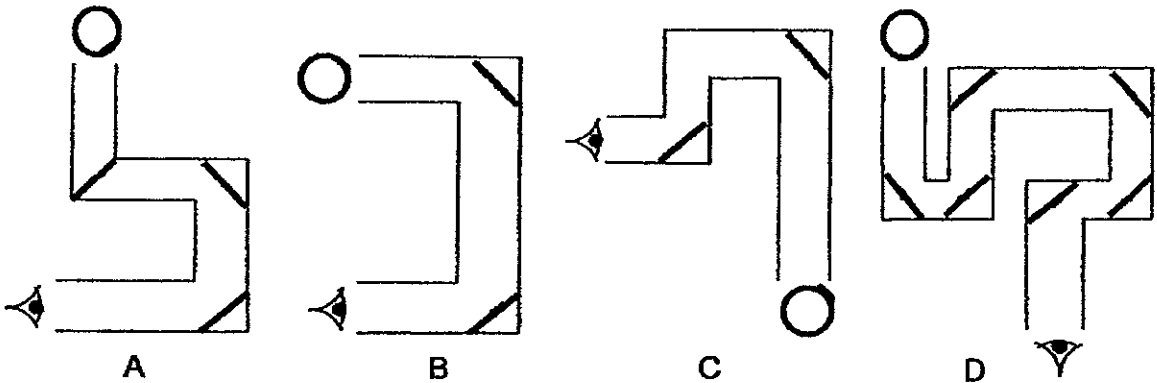


Based on the diagram, which of the following properties can Mary use to classify the above objects?

- A: Strength
- B: Hardness
- C: Ability to float on water
- D: Degree of transparency

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

15. Shawn made 4 telescopes as shown below.

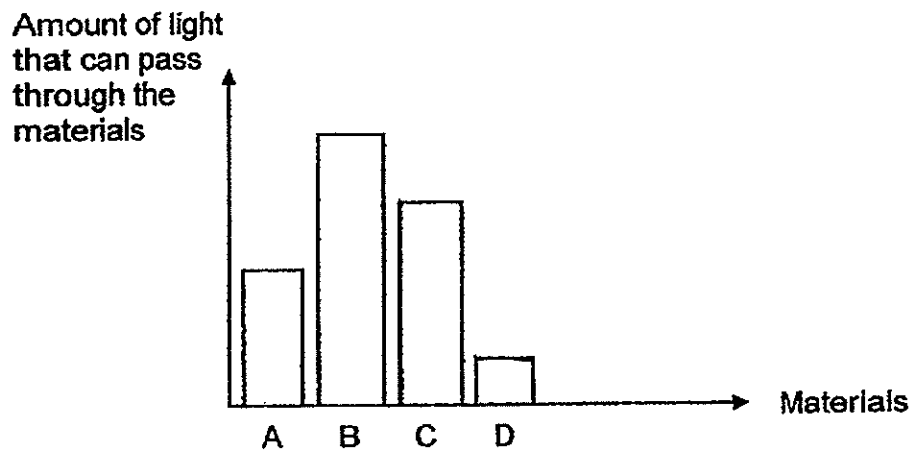


- : ball
- ◊ : eye
- ↘ : mirror

In which of the telescope(s) would he be able to see the ball?

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

16. Kevin conducted an experiment to measure the amount of light that can pass through four different materials. He used a datalogger to do so and wrote the results in the table below.

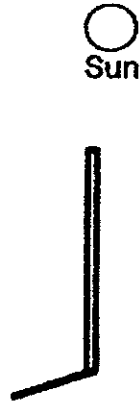


Based on the results given in the bar chart above, which of the following statement is true?

- (1) Material B does not allow light to pass through.
- (2) Material A has a lighter shadow than Material B.
- (3) Material D allows the most light to pass through.
- (4) Material C allows more light to pass through than Material A.

17. A pole was placed in the middle of a field. Which one of the following diagrams correctly shows the shadow cast by the pole at the stated time?

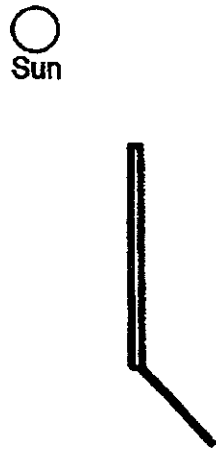
(1) 8 am



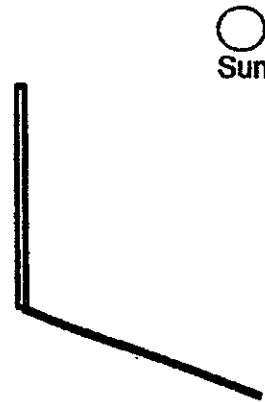
(2) 3 pm



(3) 2 pm

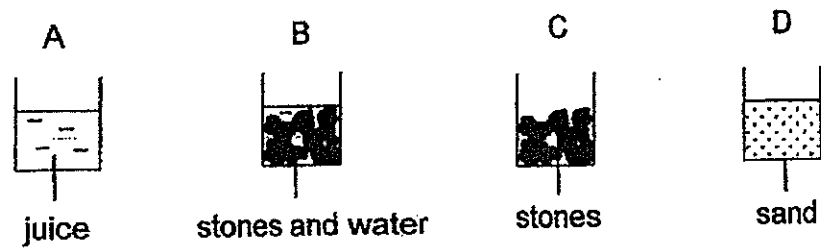


(4) 7 am



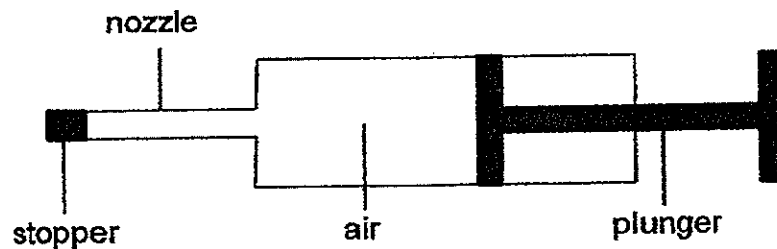


18. Four identical beakers A, B, C and D were filled up to the same level with different substances as shown in the diagram below.



Water is then poured into each of the beakers to fill them to the brim. Which beaker will require the most amount of water?

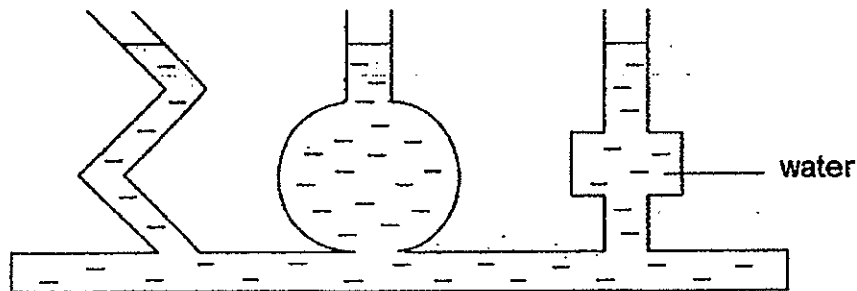
- (1) Beaker A
  - (2) Beaker B
  - (3) Beaker C
  - (4) Beaker D
19. The diagram below shows some air trapped inside a syringe fitted with a stopper at its nozzle.



When the plunger was pushed, it moved a short distance into the syringe and could not be moved in anymore. Which of the following statement(s) best explain(s) this observation?

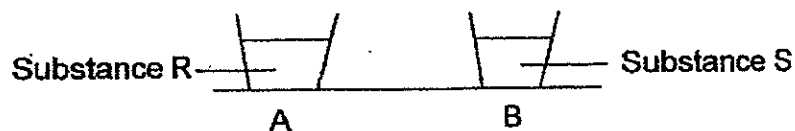
- A Air has mass.
  - B Air occupies space.
  - C Air can be compressed.
  - D Air has no definite shape.
- (1) B only
  - (2) A and B only
  - (3) B and C only
  - (4) C and D only

20. When water was poured into a container the following was observed.

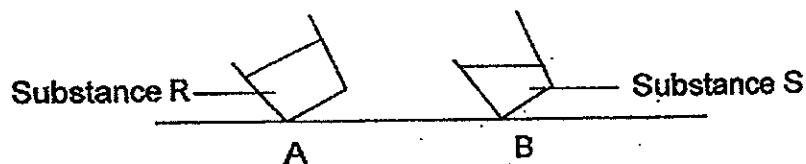


Which one of the following statements best explains this observation?

- (1) Liquids occupy space.
  - (2) Liquids have definite volume.
  - (3) Liquids have no definite shape.
  - (4) Liquids cannot be compressed.
21. An equal amount of two substances R and S was placed in two identical containers A and B as shown in the diagram below.



The diagram below shows what happens when both containers were tilted at the same angle.



What can be concluded from this investigation?

- (1) Substance R has a greater mass than Substance S.
- (2) Substance R has a greater volume than Substance S.
- (3) Substance R has fixed shape but Substance S does not.
- (4) Substance R has fixed volume but Substance S does not.

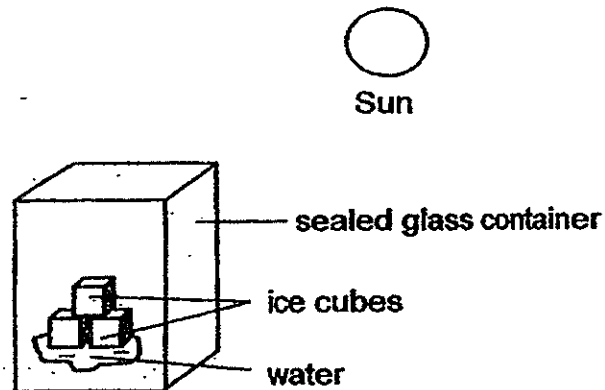
22. 2 identical balls made of Metals J and K were heated up to 80 °C and then left to cool for five minutes. The table below shows the size of the balls before and after cooling.

Ball made of Metal	Size before cooling (units)	Size after cooling (units)
J	7	3
K	5	3

Which one of the following sentences is true?

- (1) Metal J is stronger than Metal K.
- (2) Ball K contracts less than Ball J on cooling.
- (3) Ball J weighs more than Ball K after heating.
- (4) Metal K is a poorer conductor of heat than Metal J.

- 23.



Three identical ice cubes were placed inside a sealed glass container under the hot Sun for 5 minutes as shown in the diagram above. Which one of the following sentences cannot be true at the end of the 5 minutes?

- (1) The three ice cubes became smaller.
- (2) The three ice cubes disappeared completely.
- (3) The amount of water in the container increased.
- (4) The water in the container has changed into ice.



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**SCIENCE**

**BOOKLET B**

**14 Open-ended questions (40 marks)**

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

**INSTRUCTIONS TO CANDIDATES**

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5. Write your answers in this booklet.

**Marks Obtained**

<b>Section B</b>		<b>/40</b>
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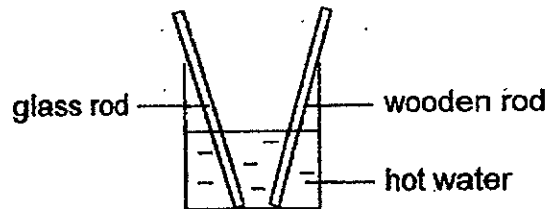
**Name:** \_\_\_\_\_ (     )     **Class: P 4** \_\_\_\_\_

**Date : 16 May 2014**

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

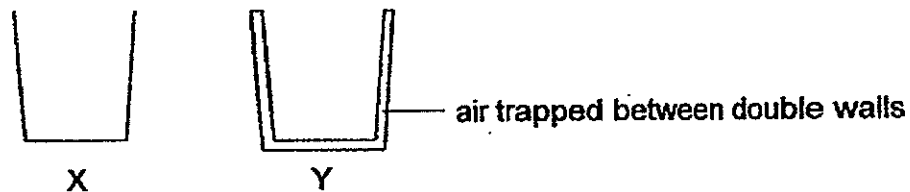
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24. A glass rod and a wooden rod were heated in a hot water bath as shown in the diagram below.



When Shane touched the wooden rod, his finger did not get burnt. However, his finger got burnt when he touched the glass rod. Which one of the following explains what happened?

- (1) Only hard objects cause burns.
  - (2) Shane loses heat to the glass rod.
  - (3) Glass is a better conductor of heat than wood.
  - (4) The temperature of the wooden rod in water is lower than that of the glass rod in water.
25. The diagram below shows two types of water containers, X and Y. Both containers were made of the same material.



Which of the following statements are true?

- A: Hot coffee gets cold faster in Container X than in Container Y.  
B: Container Y can keep cold water cold longer than Container X.  
C: Ice cubes take longer to melt in Container Y than in Container X.

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

26. May collected an equal amount of water from 4 ponds L, M, N and O. She placed the pond water in 4 separate containers and 20 Organism X in each container. The following table shows the number of Organism X left in each container after 1 week.

Container with water from	Number of Organism X left after 1 week
Pond L	12
Pond M	7
Pond N	20
Pond O	15

Which one of the following statements is most likely true?

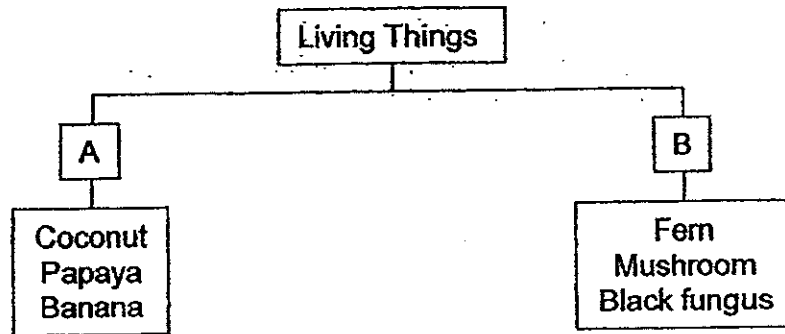
- (1) Organism X does not need food to survive.
  - (2) Organism X does not survive well in pond water.
  - (3) Food for Organism X can be found in the water of Pond N.
  - (4) Water from Pond L is more suitable for Organism X than water from Pond O.
27. The table below provides some information on P and Q.

Things	Able to move on its own?	Able to reproduce?	Able to make its own food?
P	Yes	Yes	No
Q	No	Yes	Yes

Which one of the following statements is true about P and Q?

- (1) Both P and Q are living things.
- (2) Both P and Q are non-living things.
- (3) P is a living thing and Q is a non-living thing.
- (4) P is a non-living thing and Q is a living thing.

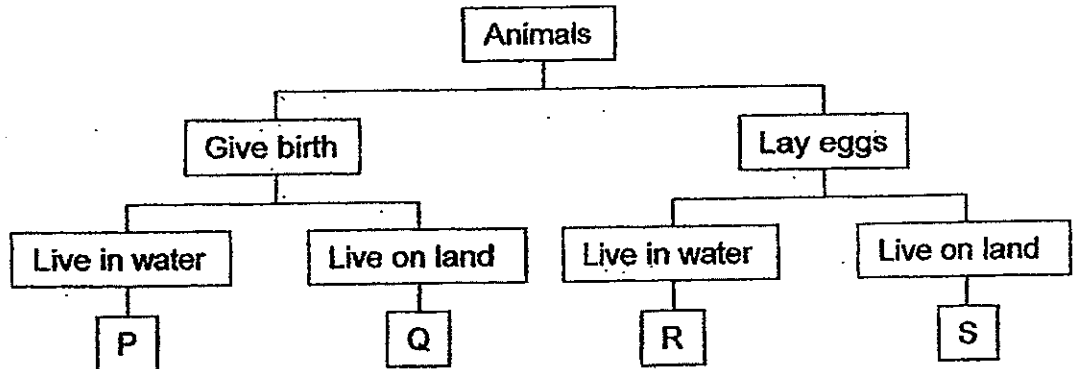
28. Study the classification chart below carefully.



Which one of the following are suitable headings for A and B?

	A	B
(1)	Fruit	Vegetable
(2)	Edible	Inedible
(3)	Makes own food	Does not make own food
(4)	Reproduce by seeds	Reproduce by spores

29. Study the classification chart below carefully.



What animals can P, Q, R and S be?

	P	Q	R	S
(1)	platypus	salmon	penguin	cow
(2)	shark	chicken	dolphin	platypus
(3)	dolphin	elephant	salmon	chicken
(4)	penguin	cow	shark	elephant





30. Mark wants to use a material to make a model of a tall building. He wants the model to be stable and has parts that stay intact, so that it does not collapse when he places his figurines on it. What property or properties must the material possess?

- A: Strength
- B: Hardness
- C: Flexibility
- D: Waterproof

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



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**SCIENCE**

**BOOKLET B**

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**Marks Obtained**

**Section B**

	<b>/40</b>
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**Name:** \_\_\_\_\_ (     )     **Class: P 4** \_\_\_\_\_

**Date : 16 May 2014**

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

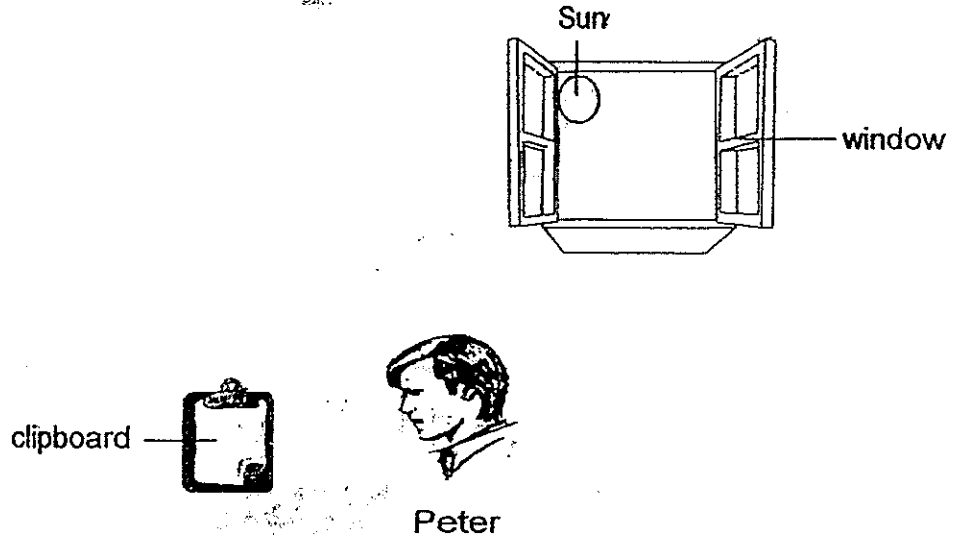
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**Section B: (40 marks)**

Write your answers to questions 31 to 44.

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

31. Peter was writing on a clipboard in his living room in the afternoon.



(a) Draw the path of light in the above diagram to show how Peter is able to see what he is writing on his clipboard. [1]

(b) Later in the night, Peter went into his bedroom to work on his laptop. As his wife was sleeping, he did not switch on any room lights. Draw the path of light in the diagram below to show how Peter is able to see what he is typing on his laptop. [1]



(c) Two hours later Peter switched off his laptop and went to sleep. Explain how he can find his way to his bed with no light in his room. [1]

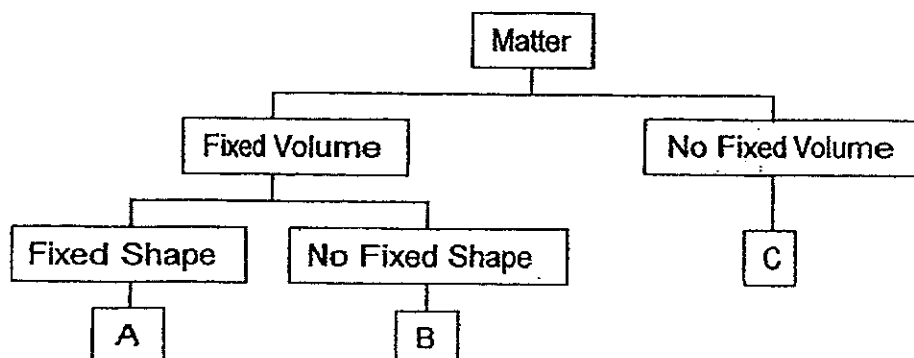
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Score	3
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32. Study the classification chart below carefully.



(a) List the properties of B. [1]

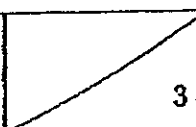
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(b) Xenon is a substance that can be compressed and it takes the shape of its container. Which one of the above letters (A, B or C) represents Xenon? [1]

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(c) Which letter above represents a rice grain? [1]

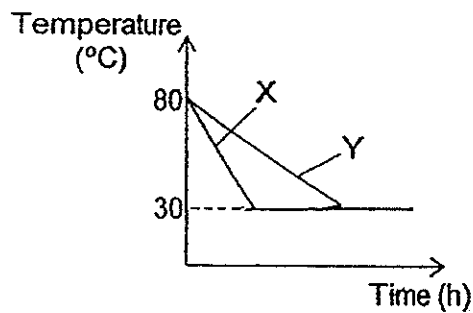
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Score	
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33. John heated two metal solids X and Y to a temperature of 80 °C before leaving them to cool on a table as shown in the diagram below.



The temperature of both solids were measured and the results were plotted in the graph below.



- (a) Based on the results, which metal is a better conductor of heat? Give a reason for your answer. [1]

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- (b) Why did the temperature of both metals not fall below 30 °C? [1]

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- (c) Suggest one thing that John can do to make metal X cool down slower. [1]

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Score	3
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34. Ali went to Auckland Harbour Bridge in New Zealand and noticed gaps along the whole length of the bridge as shown in the diagram below.



- (a) Why is the bridge made up of segments separated by gaps? [1]

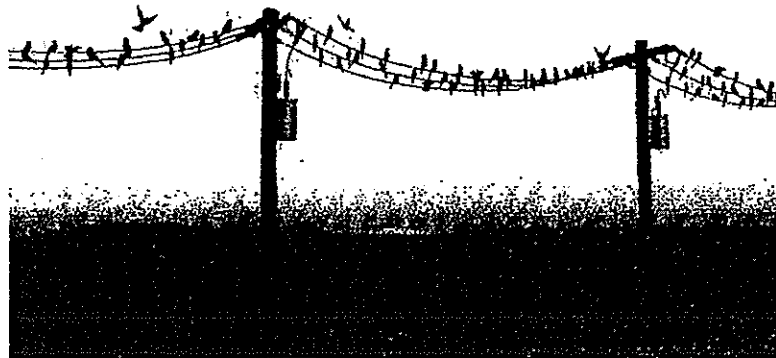
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- (b) On the way back to his hotel from the bridge, Ali saw some birds perching on electrical wires that were loosely hung between poles as shown in the diagram below. Why were the wires hung loosely? [1]

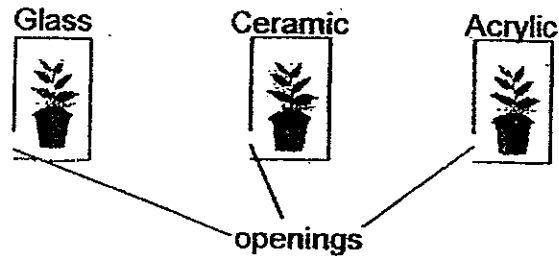
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Score	
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35. Three identical potted plants were placed in three containers made of different materials as shown below.



They were given same amount of water each day and were placed next to the window for one month.

- (a) At the end of one month the plant in the ceramic container withered. Give a reason for this observation. [1]

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- (b) The plants in the glass and acrylic containers grew taller at the end of the month. Based on this observation, state one property of acrylic. [1]

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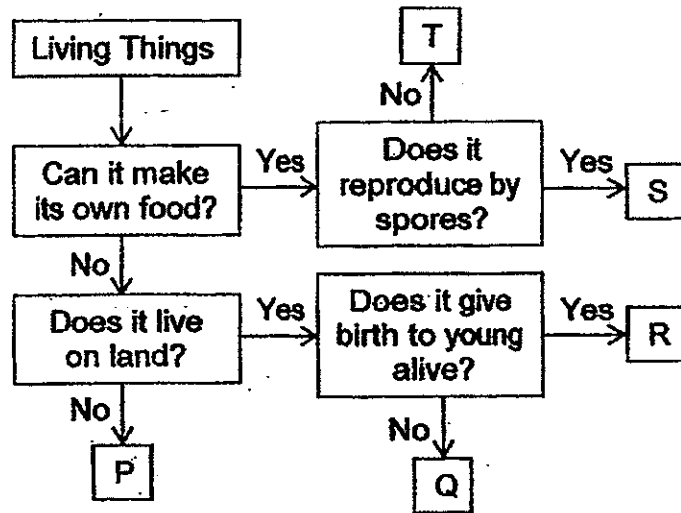
- (c) Why is there an opening at the lower left of each container? [1]

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Score	
	3



36. Study the flow chart below.



(a) Which letter represents a spiny anteater? Explain your answer. [1]

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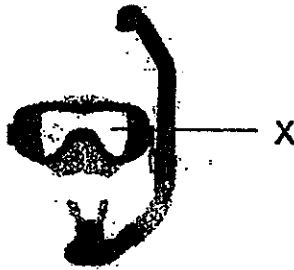
(b) Based on the flow chart, state 2 similarities between Q and R. [2]

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Score	3
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37. The picture below shows a snorkeling mask.



(a) What property must the material used to make Part X have? [1]

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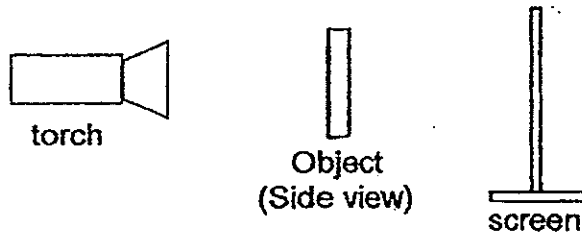
(b) When Ruth went snorkeling with the above mask, she found tiny water droplets forming on the inner surface of the mask after some time in the water and she could not see clearly through the mask anymore. Explain how the tiny water droplets prevented Ruth from seeing clearly through the mask. [1]

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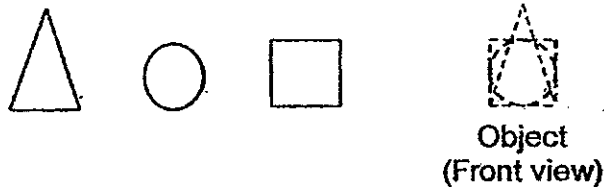
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Score	2
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38. The following set-up is used to study shadows formed by various objects.



Shannon has 3 wooden blocks as shown below. She stacks them together and placed them as the object in the set-up above. The dotted figure on the right shows the object formed by stacking the blocks together.



- (a) The triangular block was placed nearest to the torch, followed by the square and then the circle. Circle the shadow formed below. [1]



- (b) The circular block is then placed nearest to the torch, followed by the square and then the triangle. Circle the shadow formed below. [1]



- (c) Shannon then replaced the square block with a similar square block made of glass and arranged the blocks in the same order as (b). Circle the shadow formed below. [1]

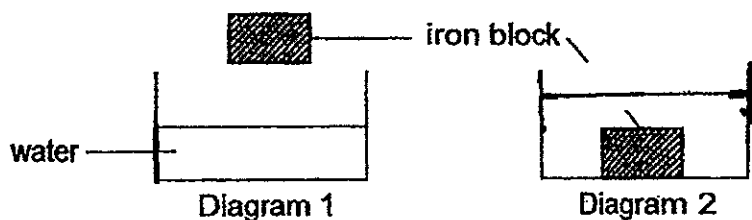


- (d) Which property of light is shown in this investigation? [1]

Score	4
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39. Diagram 1 below shows an iron block held above a beaker of water. Diagram 2 below shows the same iron block resting inside the same beaker.



(a) Draw the water level in Diagram 2. [1]

(b) What property of matter does this investigation show? [1]

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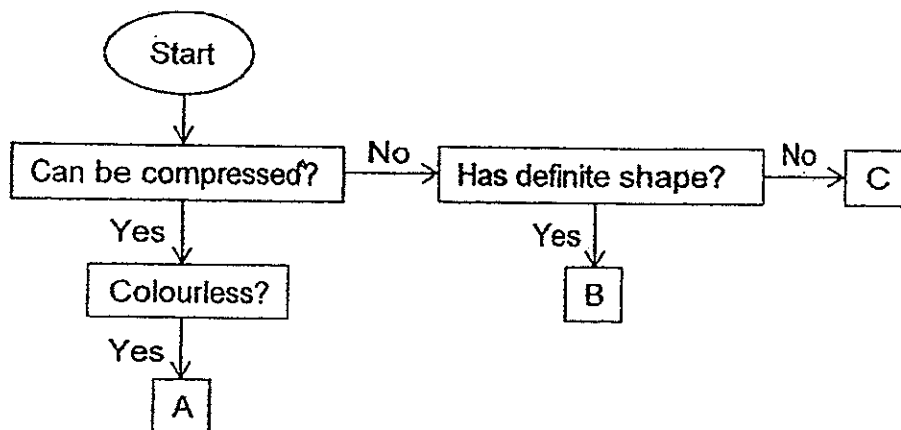
(c) He then repeated the investigation with a wooden block of the same size. Would the water level be higher, lower, or the same as in (a) above? Explain your answer. [1]

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Score	3
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40. The flow chart below shows the properties of some objects at 30 °C.



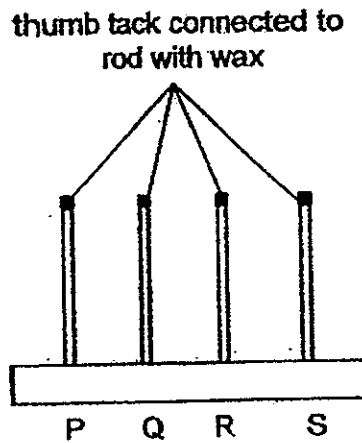
(a) Based on the flow chart, what state(s) of matter can B be? [1]

(b) Match the following substances with the letters A, B or C. [2]

Substance	Letter
Honey	
Oxygen	
Plasticine	
Coffee Bean	

Score	3
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41. Charles wanted to compare how well four different metals P, Q, R and S conduct heat. He set up the apparatus as shown below.



He placed the apparatus in a hot water bath and measures the time taken for the thumb tack to fall off (due to the wax melting).

- (a) State the dependent variable in this investigation. [1]

- (b) Identify the independent and constant variables needed for a fair test by putting a tick (✓) in the respective columns. [2]

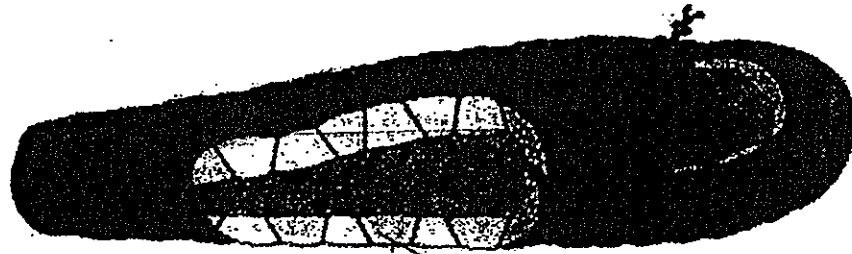
Variables	Independent Variable	Constant Variable
Length of rod		
Type of metal		
Amount of wax		
Temperature of hot water bath		

Score	3
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42. The night temperature of Nepal can be as low as 10 °C. Visitors to Nepal usually sleep in sleeping bags stuffed with goose feathers to keep warm.



sleeping bag stuffed with  
goose feathers

Explain how the goose feathers in the sleeping bags help to keep the visitors warm. [2]

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Score	2
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43. The table below shows the characteristics of four animals A, B, C and D. Some of the information about the animals is missing.

Characteristic	A	B	C	D
Outer body covering	hair	feathers	-	-
Reproduction	-	lays eggs	lays eggs	lays eggs
Movement	swims	runs	flies	swims
Special	mothers produce milk for young	-	3 body parts	Breathes through gills

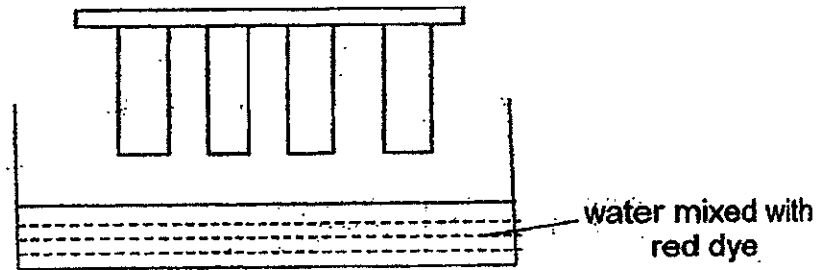
- (a) Based on the information given in the table above, match the animals, A, B, C and D, to the correct animal group below. [2]

Fish	
Bird	
Insect	
Mammal	

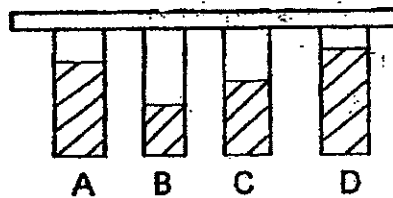
- (b) State 1 more characteristic of Animal C. [1]
- 

Score	3
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44. Samuel dipped 4 strips of different material into a beaker of water mixed with red dye as shown in the diagram below.



The result of the investigation is shown in the diagram below.



- (a) List 2 variables which must be kept the same in this investigation. [2]

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- (b) Which material (A, B, C or D) is most suitable for making a kitchen towel? Give a reason for your answer. [1]

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End of paper

Score	3
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**Year: 2014**

**Level: Primary 4**

**School: Nan Hua Primary School**

**Subject: Science**

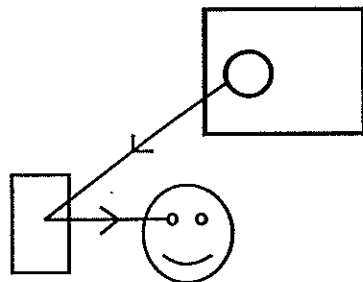
**Semester: SA1**

**Booklet A/ Section A:**

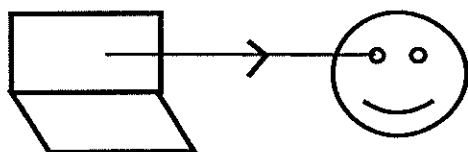
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
3	1	2	2	4	2	2	1	2	3
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
4	2	4	1	3	4	3	3	3	3
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
3	2	4	3	4	3	1	4	3	1

**Booklet B/ Section B:**

**Q31) a)**



**b)**



**c) Light from the surroundings fall on his bed and is reflected into his eyes.**

**Q32) a) B is a matter that has a fixed volume but no fixed shape.**

**b) C**

**c) A**

**Q33) a) X. X cooled down faster than Y.**

b) 30°C is likely the temperature of the surroundings so there is no heat gained or heat lost.

c) Wrap metal X with a poor conductor.

Q34) a) It is to provide space for the bridge to gain heat to expand so that it will not buckle.

b) To allow the wires to lose heat and contract so that the wires will not snap.

Q35) a) Ceramic is opaque so it does not let light to pass through. The plant is unable to get sunlight to make food so it withered.

b) Acrylic is transparent.

c) To provide air for the plant to survive.

Q36) a) Q. A spiny anteater can't make its own food, lives on land and lays eggs.

b) They both can't make its own food and live on land.

Q37) a) It must be transparent.

b) The tiny water droplets allowed less light into Ruth's eyes through the mask.

Q38) a)



b)

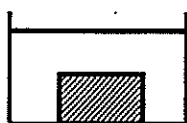


c)



d) Light travels in a straight line.

Q39) a)



b) Matter occupies space.

c) The water level will be lower. This is because the wooden block will float on the water.

Q40) a) Solid

b)

Substance	Letter
Honey	C
Oxygen	A
Plasticine	B
Coffee Bean	B

Q41) a) It is the time taken for the thumbtack to fall off.

b)

Variables	Independent variable	Constant variable
Length of rod		✓
Type of metal	✓	-
Amount of wax		✓
Temperature of hot water bath		✓

Q42) The goose feathers traps air inside the sleeping bag. Air is a very poor conductor of heat. It slows down heat loss from the visitors' bodies to the surrounding air.

Q43) a)

Fish	D
Bird	B
Insect	C
Mammal	A

b) It has an exoskeleton.

Q44) a) The length of the strips and thickness of the strips.

b) D. D is the most water absorbent.

