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## CHIJ ST NICHOLAS GIRLS' SCHOOL



# Primary 6 <br> Continual Assessment 1-2014 <br> SCIENCE 

BOOKLET A
6 March 2014

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.
Shade your answers in the Optical Answer Sheet (OAS) provided.
This paper consists of $\underline{20}$ printed pages.

## Section A: $(30 \times 2$ 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 characteristics of all living things is/ are true?

A They need air, water and food.
B They can move around freely from place to place.
C They only reproduce by giving birth to young alive.
D They can respond to changes in their environment.
(1) A and D only
(2) B and C only
(3) B, C and D only
(4) A, B and D only.
2. Which one of the following is correct?

|  | Organ involved in digestion <br> of food | Organ involved in absorption <br> of food |
| :---: | :---: | :---: |
| $(1)$ | Mouth | Stomach |
| $(2)$ | Small intestine | Small intestine |
| $(3)$ | Stomach | Large intestine |
| $(4)$ | Large intestine | Small intestine |

3. Wen Pei classified the following animals according to their outer body coverings.


Which one of the following animals is placed in the wrong group?
(1) seal
(2) guppy
(3) dolphin
(4) penguin
4. Rayna kept a potted plant in the dark for 48 hours before using it for an experiment. In her experiment, she covered a leaf from the plant as shown below. The red parts of the leaf contain some green pigment.


After 5 hours in the Sun, the leaf was removed from the plant and tested for starch. Which one of the following diagrams show how the test result would look like?
(1)

(2)

(3)

(4)

5. The diagram below shows the difference in the appearance of a leaf within a day.

Before


After


Which one of the following stages of the life cycle of the butterfly could have caused the change in the appearance of the leaf?
(1) egg
(2) larval
(3) pupal
(4) adult
6. Seeds were placed in 4 identical wooden containers as shown in set-ups, $P, Q, R$ and S below.


It is observed that only the seeds in Set-ups, Q and $S$, germinated after 4 days. Which of the following conditions resulted in only the seeds from Set-up Q and S germinating?

A Presence of air
B Presence of water
C Amount of sunlight
D Temperature of the surrounding
(1) Bonly
(2) $A$ and $B$ only
(3) A, B and C only
(4) A, B, C and D
7. Which of the following statements about the human systems are true?
A. The lungs remove carbon dioxide from the body.

B The nose, mouth and gullet are parts of the human respiratory system.
C Vigorous exercise makes the blood vessels pump more blood to the rest of the body.
D The skeletal system works together with the muscular system to enable body movement.
(1) A and D only
(2) B and C only
(3) $A_{i}, C$ and $D$ only
(4) A, B, C and D
8. Study the two cells below.


Based on observations of the cells above, which of the following statements are definitely true?

A They can both reproduce.
B They are likely to be plant cells.
C Cell A can move while Cell B cannot.
D Cell A can make food while Cell B cannot.
(1) A and B only
(2) C and D only
(3) A, B and D only
(4) B, C and D only
9. The diagram below shows the roots of two plants.


Roots of Plant $A$


Roots of Plant $B$

Roots of Plant B can $\qquad$ than that of Plant $A$.

A produce more mineral salts
B hold the plant more firmly to the ground
C absorb more water from a greater area of soil
D transport more food to the other parts of the plant
(1) C anly
(2) B and C only
(3) A, B and D only.
(4) A, B, C and D
10. Belinda wanted to find out if the presence of light would affect the rate of photosynthesis. Which two set-ups should she use for her experiment?

(1) A and B
(2) A and D
(3) B and C
(4) B and D
11. Which of the following statements about photosynthesis is/are true?

A Photosynthesis can only occur in plants.
B Light energy is needed for photosynthesis to occur.
C Plants produce starch and oxygen during photosynthesis.
D Plants get water and carbon dioxide through the stomata of leaves.
(1) B only
(2) A and B only.
(3) C and D only
(4) A, B and C only

12: Three plants, $F, G$ and $H$, were planted on Island $X$. The diagram below shows their locations on Istand $X$.


After a few years, the young plants of $F, G$ and $H$ were found growing on Island $Y$. These are represented on the above diagram by $f_{1} g$ and $h$ respectively.

Based on the information provided above, which of the following statements are definitely true?

A Plant F's fruits have a fibrous husk.
B Plant H's fruits have a wing-like structure.
C Plant G's fruits are most likely fleshy and juicy.
D Plant H's fruits are most likely dispersed by water.
(1) A and B only
(2) A and D only
(3) C and D only
(4) A, B and C only
13. The diagrams below show the parts of a human male and female reproductive system.


Human male reproductive system


Human female
reproductive system

Which one of the following statements is true?
(1) Part $A$ and $X$ store the eggs.
(2) The embryo develops in part $Z$.
(3) The sperms leave the male reproductive system through part $B$.
(4) The sperms swim downwards from part $Y$ to part $Z$ and out of the body if they are unable to fertilise the egg.
14. Rashini used the set-up below to investigate if the presence of water plants wor affect the amount of carbon dioxide in water at different times of the day.


The set-up was placed near the window and a few drops of liquid $W$ were athe to the water. Liquid $W$ changes colour as shown below.

| Amount of cabon dioxide | Colour of water with liquid $W$ |
| :---: | :---: |
| less than normal | purple |
| normal | red |
| higher than normal | yellow |

What colour would the water with liquid $W$ be at noon and at midnight?
(1)

| At hoon | At midnight |
| :---: | :---: |
| purple | red |
| purple | yellow |
| red | yellow |
| yellow | red |

15. Megan placed four matenals, $A, B, C$ and $D$ of the same size into similar measuring cylinders containing the same amount of water as shown below.


She removed the materials after 5 minutes and noticed the change in the water level in each measuring cylinder.


Based on the results of Megan's experiment, which one of the materials, $A, B, C$ or $D$, is most suitableformaking part $X$ of the tent as shown above?
(1) Material A
(2) Material B
(3) Material C
(4) Material D
16. Alina carried out the following experiments on two objects, $X$ and $Y$, of the same size.

Experiment 1


## Experiment 2



Based on the results above, Alina can conclude that $\qquad$ $\ldots$
(1) Object $Y$ is heavier than object $X$
(2) Objects $X$ and $Y$ have the same mass
(3) Objects $X$ and $Y$ have the same volume
(4) Objects $X$ and $Y$ are made of the same material
17. Yong Mei wanted to make a temporary magnet out of a nail by stroking the magnet on the nail as shown below.


She recorded the number of paper clips the temporary magnet could attract and plotted a graph.

Which one of the graphs below best represents the relationship between the number of strokes made and the number of paper clips the temporary magnet could attract?
(1)
(2)

(3)


Number of strokes
(4)



Number of strokes
18. Jamilah used a light sensor connected to a data logger to detect the marms. light passing through three different materials, $X, Y$ and $Z$. The readimy data logger are shown in the graph below.

| $\begin{array}{l}\text { Amount of } \\ \text { light (lux) }\end{array}$ |
| :--- |

Based on the results in the graph, which one of the following best repress. materials $X, Y$ and $Z$ ?

|  | $X$ | $Y$ | $Z$ |
| :---: | :---: | :---: | :---: |
| (1) | red cellophane sheet | cardboard | tracing pak |
| (2) | writing paper | red cellophane sheet | clear glas |
| (3) | Cardboard | clear plastic | tracing paya |
| (4) | clear plastic | tracing paper | cardboarl |

19. Four rods of the same length, $\mathrm{S}, \mathrm{T}, \mathrm{U}$ and V , made of different marala inserted into a container of hot water. 4 similar thumbtacks were then : the ends of each rod using hardened wax as shown below.


The time taken for each thumbtack to fall off from the rods was taken. What wos the aim of the experiment?
(1) To find out the direction of heat flow.
(2) To find out if water could conduct heat
(3) To find out the heat conductivity of the rods.
(4) To find out the rate at which the wax melts.
20. Ayden places a wooden block at positions, $P, Q, R$ and $S$ as shown in the diagram below. At each position, he measures and records the height of the shadow cast on the screen and plotted a graph with the data collected.


Which one of the following graphs shows how the height of the shadow of the wooden block changes when it is placed at the different positions, $P, Q, R$ and $S$ ?

21. Study the circuits shown below.


Circuit Q


Circuit S


Circuit R


Circuit T

Which of the circuits above would have the same number of bubs remaining lit when bulb $M$ fuses?
(1) $Q$ and $R$
(2) $Q$ and $T$
(3) $R$ and $S$
(4) $S$ arid $T$
22. Sin Ling needs substances, $W \mathcal{W}, X$ and $Y$, to be in the states shown in the table below in order for her to carry out an experiment.

| substance | required state |
| :---: | :---: |
| $W$ | liquid |
| $X$ | solid |
| $Y$ | liquid |

The table below shows the freezing point and boiling points of the fhree substances.

| substance | freezing point | boiling point |
| :---: | :---: | :---: |
| $W$ | $-4^{\circ} \mathrm{C}$ | $62^{\circ} \mathrm{C}$ |
| $X$ | $48^{\circ} \mathrm{C}$ | $200^{\circ} \mathrm{C}$ |
| $Y$ | $23^{\circ} \mathrm{C}$ | $114^{\circ} \mathrm{C}$ |

At which temperature should Sin Ling carry out her experiment?
(1) $14^{\circ} \mathrm{C}$
(2) $35^{\circ} \mathrm{C}$
(3) $52^{\circ} \mathrm{C}$
(4) $71^{\circ} \mathrm{C}$
23. John suspended 6 identical metal balls, $S, T, U, V, W$ and $X$, on a rod as shown in the diagram below. The strings used to hang the metal balls were made of the same material but of different lengths.


John then cut all six strings and the balls fell into the sand pit. Which of the following statements are faise?

A $\quad X$ has more gravitational potential energy than $W$.
B $\quad V$ made the deepest depression in the sand pit when the string was cut.
C $T$ made a shallower depression in the sand pit than $S$ when the string was cut.
D All the balls possessed the same amount of gravitational potential energy since they have the same mass.
(1) A and D only
(2) B and C only
(3) A, C and D only.
(4) B, C and D only
24. Wei Qiang wanted to find out which type of lubricant, $A$ or $B$, would reduce the amount of time taken for a toy car to travel down a slope when it is released from the top of the slope. Which of the following variables must he keep constant io ensure a fair test?

A The toy car
B Point of release
C Amount of lubricant used
D The amount of pushing force
(1) A and B only
(2) C and D only
(3) A, B and C only
(4) A, B, C and D
25. Javier held onto a ball that had been hung from the ceiling of a room as shown below.
ceiling


Which one of the following positions would the ball reach after Javier released his grip on the ball?
(1) K
(2) L
(3) $M$
(4) N
26. The diagram below shows a ball being released from the top of a track. The ball rolled along the track before it was stopped at the end of the track by a wooden block.


Which one of the following statement is correct?
(1) The ball had more kinetic energy at $Y$ than at $Z$
(2) The ball lost its kinetic energy when it was stopped by the wooden block.
(3) All of the ball's kinetic energy was converted to gravitational potential energy as the ball rolled upwards to $Z$
(4) The conversion of the balls kinetic energy to heat and sound energy takes place only when the ball hits the block.
27. The diagram below shows an air-tight container filled with $40 \mathrm{~cm}^{3}$ of water and $30 \mathrm{~cm}^{3}$ of air. A syringe was used to draw out $20 \mathrm{~cm}^{3}$ of air from the container.


What is the volume of air left in the container?
(1) $10 \mathrm{~cm}^{3}$
(2) $20 \mathrm{~cm}^{3}$
(3) $30 \mathrm{~cm}^{3}$
(4) $40 \mathrm{~cm}^{3}$
28. Which of the following actions involve both a push and a pull?

A Wringing the clothes
B Pumping air to inflate a ball
C Raising a flag on a flag pole
D Dragging a heavy bag across the floor
(1) A and B only
(2) B and C only
(3) C and D only:
(4) A, B and C only
29. Thiru conducted an experiment using a wooden block, $R$, and a wooden plank, ST , as shown in Figure 1.


Figure 1
He raised end $T$ of the plank slightly and noted that the wooden block did not slide down as shown in Figure 2.


Figure 2
However, when end $T$ was raised high enough, the wooden block slid down the plank towards end $S$ as shown in Figure 3.


Figure 3
Which of the following statements are true?
A No frictional force acts on the block in Figure 1 and 2.
B Frictional force acts on the block as it slides down the plank in Figure 3.
C No gravitational force is acting on the block when it is resting on the plank in Figure 1.
D Gravitational force is greater than frictional force causing the block to slide down the plank in Figure 3.
(1) A and C only
(2) $B$ and D only
(3) $A_{i}, B$ and $B$ only
(4) A, B, C and D
30. Larry was given a spring that was 3 cm long. He hung a 10 g mass on it and measured the length of the spring. He then repeated his experiment with masses of $20 \mathrm{~g}, 30 \mathrm{~g}$ and 40 g and recorded his results in the table below. He then plotted his results on a graph.

| Mass hung on spring (g) | 10 | 20 | $30 \ldots$ | 40 |
| :--- | :---: | :---: | :---: | :---: |
| Length of spring (cm) | 5 | 7 | 9 | 11 |

Which one of the following graphs best represents Larry's results?

(3)


(4)

$\qquad$ ( )

Class : Primary 6 $\qquad$

## CHIJ ST NICHOLAS GIRLS' SCHOOL



Primary 6
Continual Assessment 1-2014
SCIENCE

BOOKLET B

6 March 2014

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.

| Booklet A |  |
| :--- | :---: |
| Booklet B | 60 |
| Total | 40 |
|  |  | Follow all instructions carefully.

Answer all questions.
This paper consists of 15 printed pages.

## 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. Salleh set up an experiment using 4 similar containers as shown below.

(a) In which set-up would the caterpillar survive the longest? Explain your answer
$\qquad$
$\qquad$
(b) Salleh wants to find out if living things need air to survive. Which two setups should he use for his experiment?
$\qquad$

32. Study the flow chart below.

(a) Which letters, $A, B, C$ or $D$, could represent a 'butterfly'?
$\qquad$
(b) Based on the flowchart, which group of animals would Animal A belong to?
$\qquad$

33. The diagram below shows a terrarium (bottle garden) which is a miniature garden of small plants growing in an enclosed glass container.


In the making of the terrarium, plants are placed in the container and watered before the container is sealed with a stopper. The plants in the terrarium only need to be watered once a month.
(a) Based on the information above, explain why the plants in the terrarium need not be watered frequently.
$\qquad$
$\qquad$
$\qquad$
$\qquad$
$\qquad$
(b) Where should the terrarium be placed to ensure healthy plant growth?
$\qquad$
$\qquad$
$\qquad$

34. Germaine counted the number of two different types of young plants, $P$ and $Q$, at various distances from their parent plants in the eco-garden. The results are shown in the graph below.


In relation to the graph, which of the following best represents the fruit of plant P? Put a tick in the box to indicate your choice.


Explain your answer.
$\qquad$
$\qquad$
$\qquad$
$\qquad$
35. Sean set up an experiment using identical beakers of water containing baking soda and similar-sized leaf discs punched from freshly plucked leaves of the same plant left in the sun for 6 hours. Baking soda increases the amount of dissolved carbon dioxide in the water.


He made sure that all the leaf discs had sunk to the bottom of the beakers before he started his experiment. The leaf discs would float to the top of the beaker if photosynthesis had occurred. He recorded the number of leaf discs that floated to the top of the beakers after 20 minutes and tabulated his results in the bar graph below.

(a) What was the aimof Sean's experiment?
$\qquad$
(b) Sean observed that the floating leaf discs had bubbles of gas $X$ on them. What could gas $X$ be?
$\qquad$
(c) What could he conclude from the results of his experiment?
36. Benjamin bought two similar seedlings, $P$ and $Q$, from a nursery as shown below.


Pot $P$

$\operatorname{Pot} \mathbf{Q}$

He watered Pot $P$ with 125 ml of salt solution and Pot $Q$ with 125 ml of water. He measured the height of the two plants each day for 2 weeks and plotted his results in the graph below.

(a) Based on the results shown in the graph above, what can Beniamin conclude about the effect of salt on plant growth?
(b) In his experiment, Benjamin placed the two pots of plants in the same area of his garden. State two variables that he was trying to keep constant by doing so.
(i)
(ii) $\qquad$
(c) Benjamin investigated the effect of salt solution on the growth of plant R by measuring the height of the plants in the two pots, $P$ and $Q$. Other than the height of the plants, what else could he measure to determine the growth of the plant?
37. Lyna conducted an experiment with four different materials, $\mathrm{S}, \mathrm{T}, \mathrm{U}$ and V .

She clamped a strip of material $S$ onto the edge of the table before taping a 50 g weight to the end of the strip, causing the strip to bend as shown below. She measured the distance ' $d$ ', which was the extent to which the material bent before it broke. She repeated her experiment with stips of materials, $T, U$ and $V$, one at a time, and recorded her results in the table below.

(a) What is the aim of the experiment?
(b) Based on the results of the above experiment, which material, $\mathrm{S}, \mathrm{T}, \mathrm{U}$ and V , is most suitable for making a paper clip?
$\qquad$
(c) In order for the experiment to be fair, state one other variable that must be kept constant.
$\qquad$
$\qquad$

38. Wei Wei found two glasses, $A$ and $B$, stuck together as shown below.


She put them in a basin of hot water and poured hot water into glass $A$ in an attempt to separate the glasses as shown in the diagram below.

(a) Wei Wei found that the glasses could not be separated. Explain why this is so.
$\qquad$
$\qquad$
(b) Suggest'a change to Wei Wei's method that would enable her to separate the glasses.
$\qquad$
$\qquad$
$\qquad$
39. William conducted an experiment by heating three similar rods made of metals $A$, $B$ and $C$ for 20 minutes. He recorded the length of each rod before and after the heating in the table below.

| Metal | Length before heating (mm) | Length after 20 min of heating (mim) |
| :---: | :---: | :---: |
| A | 200 | 207 |
| B | 200 | 210 |
| C | 200 | 204 |

(a) Based on the results of his experiment, what could William conclude about the effect of heating different metals?
$\qquad$
(b) In another experiment, William heated a thicker rod made of metal B of length 200 mm for 20 minutes.

Would the length of this rod after the heating be less than, equal to, or more than 210 mm ? Give reason for your answer.
$\qquad$
$\qquad$
$\qquad$
$\qquad$
$\qquad$
40. A factory uses a specially designed conveyor belt to separate iron scraps from wood chips. The diagram below shows how the conveyor belt works.

(a) What would be collected in container, $V$ and $W$ ?
(i) Container V: $\qquad$
(ii) Container W: $\qquad$
(b) Explain clearly how the contents were collected in Container V.
$\qquad$
$\qquad$
$\qquad$
$\qquad$
$\qquad$

41. (a) In the circuits, $P$ and $Q$, below, all the bulbs are lit.


Circuit P


Circuit Q

In the table below, write down the number of bulbs that would remain lit when one of the bulbs in each circuit is blown.

|  | Circuit $P$ | Circuit $Q$ |
| :--- | :--- | :--- |
| Number of bulbs remaining lit |  |  |

(b) In circuit R below, all bulbs, $\mathrm{B} 1, \mathrm{~B} 2, \mathrm{~B} 3$ and B 4 , are lit.


Write down the minimum and the maximum number of bulbs that would remain lit when one of the bulbs in circuit $R$ is blown. Give a reason for your answer.
(i) Minimum number of bulbs remaining lit: $\qquad$
Reason:
(ii) Maximum number of bulbs remaining lit: $\qquad$ Reason:
42. Thalia made a toy out of a balloon and an open top cardboard box as shown below.


After she had inflated the balloon with air, she twisted the open end of the balloon and held it between her fingers. She then placed the toy on the floor and released her grip on the balloon. Immediately, the toy moved a distance away from her.

(a) What caused the toy to move?
$\qquad$
$\qquad$

She inflated the balloon again. This time, instead of placing her toy on the floor, she placed it on some straws.

(b) Would the toy move a shorter or longer distance than before? Give a reason for your answer.
$\qquad$
$\qquad$
$\qquad$

43. The diagram below is a simplified illustration of how a simple steam train engine uses the burning of coal to produce energy to enable the train to move. The heating of water produces steam which helps to move the piston that tums the wheels of the train.

(a) Study the diagram above carefully and complete the main energy conversion of the steam train below.

(b) What would happen if more coal is added into the burner? Explain your .answer.
$\qquad$
$\qquad$
$\qquad$
(c) State another way to make the train move faster.
$\qquad$
$\qquad$
$\qquad$
$\square$
44. Ali wanted to find out if the size of a sail would affect the distance travelled by a boat. He placed the toy sailboat at the starting line, switched on the fan and recorded the distance ' $X$ ' travelled by the toy.


He repeated the experiment by varying the size of the sail and recorded his results in the table below.

| size of sail $\left(\mathrm{cm}^{2}\right)$ | distance $X(\mathrm{~cm})$ |
| :---: | :---: |
| 100 | 8 |
| 225 | 20 |
| 400 | 50 |
| 625 | 75 |

(a) Based on the results shown in the above table, what can he conclude from his experiment?
(b) Without changing any of the materials above, what can Ali do to improve the reliability of the results of his experiment?
$\qquad$
$\qquad$
(c) For his experiment, Ali made sure to place the toy sailboat at the starting line each time and that the strength of the wind from the fan is the same. State one other variable that Ali should keep constant to make his experiment a fair test.

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## EXAM PAPER 2014

LEVEL : PRIMARY 6
SCHOOL : ST. NICHOLAS
SUBJECT : SCIENCE
TERM : CA1

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


| Q31 | (a) | Set-up W. There are fresh leaves in the container showing that there are both food and water presence as fresh leaves contain water so the caterpillar in Setup $W$ will survive the longest as air, food and water is present in the container. |
| :---: | :---: | :---: |
|  | (b) | Set-up W and Set-up Y |
| Q32 | (a) | Letter C |
|  | (b) | Mammals |
| Q33 | (a) | The water of the soil will be absorbed by the roots of the plants. Sen water absorbed by the plants will escape and evaporate through the The warm water vapour touches the cooler surface of the bottle, loses hest and condenses on the bottle surface as tiny water droplets. These water droplets win fall back to the soil so the plants in the terrarium need not be watered flochu aty. |
|  | (b) | The terrarium should be placed near a light source or next to a window. |
| Q34 |  | $\square \square$ |
|  |  | The number of young plant decreases as the distance from the increases showing that the plant dispersed. Seeds that are dispersed will not be land far from the parent plant. |
| Q35 | (a) | To find out whether the colour of light affects the photosynthesis carreco plant leaves. |
|  | (b) | oxygen |
|  | (c) | White light is the best colour of light for photosynthesis to occur. |
| Q36 | (a) |  |
|  |  | Plants growing in salt solution grows further than those growing in water. |
|  | (b) | (i) The temperature of the surroundings. <br> (ii) The amount of light the plant receives. |
|  | (c) | Number of leaves |
| Q37 | (a) | To find out the flexibility of the different materials. |
|  | (b) | Material V |
|  | (c) | The length of the material |
| Q38 | (a) | When two cups are placed in the basin of hot water, the glass B gained heat and expands. However, she poured hot water into glass A causing it to expand foo. Thus, both glasses could not be separated. |
|  | (b) | She could put both cups in the hot water again and put ice into cup $A$. |


| Q39 | (a) | Different metals when heated over the same flame for the same period of time expands at different rates. |
| :---: | :---: | :---: |
|  | (b) | Less than 210 mm . The rod is thick so it will take a longer time for the heat to travel from one end to the other end. |
| Q40 | (a) | (i) Iron scraps <br> (ii) Wooden chips |
|  | (b) | The iron scraps, magnetic objects are attracted to the wheel made of magnet as the magnetism can pass through the rubber belt which is non-magnetic. The iron scraps continue to travel to the underside of the belt until it reaches a certain distance, where the force of attraction by the magnet is weak and falls into container V . |
| Q41 | (a) | 5;3 |
|  | (b) | (i) 0 . After bulb 1 blows, the circuit is broken, thus no electricity can flow through. <br> (ii) 3 . After bulb 4 blows, electricity can still flow through the rest of the circuit. |
| Q42 | (a) | The air escape from the balloon, it pushes the toy forward. |
|  | (b) | A longer distance. The toy, would move a longer distance than before. The straws reduce the friction between the box and the floor. |
|  |  | -- |
| Q43 | (a) | Chemical Potential Energy $\rightarrow$ Heat energy $\rightarrow$ Heat kinetic energy $\rightarrow$ Kinetic energy |
|  | (b) | Faster. There will be more chemical potential energy of the coal converted to more heat energy of the coal, converted to more heat energy of the water, converted to more kinetic energy of the steam and is finally converted to more kinetic energy of the piston. |
|  | (c) | Add lubricant on the wheel. |
| Q44 | (a) | The greater the size of the sail, the greater he distance the car travelled. |
|  | (b) | He could repeat the test again and find the average of the results. |
|  | (c) | The material of the sail. |

