

**NANYANG PRIMARY SCHOOL**

**PRIMARY FOUR SCIENCE**

**SEMESTRAL ASSESSMENT 2**

**2007**

**BOOKLET A**

**Date : 26<sup>th</sup> Oct 2007**

**Duration : 1 h 45 min**

**Name : \_\_\_\_\_ (     )**

**Class: Primary \_\_\_\_\_ (     )**

**Marks Scored:**

|                    |  |            |
|--------------------|--|------------|
| <b>Booklet A:</b>  |  | <b>60</b>  |
| <b>Booklet B :</b> |  | <b>40</b>  |
| <b>Total :</b>     |  | <b>100</b> |

**Parent's signature: .....**

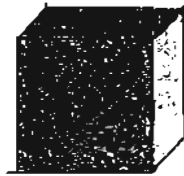
**DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.  
FOLLOW ALL INSTRUCTIONS CAREFULLY.**

**Booklet A consists of 15 printed pages including this cover page.**

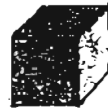
**Section A** (30 x 2 marks = 60 marks)

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

1. The cubes below are made of different materials but have the same mass. Which of the following statements are true?



**Cube P**

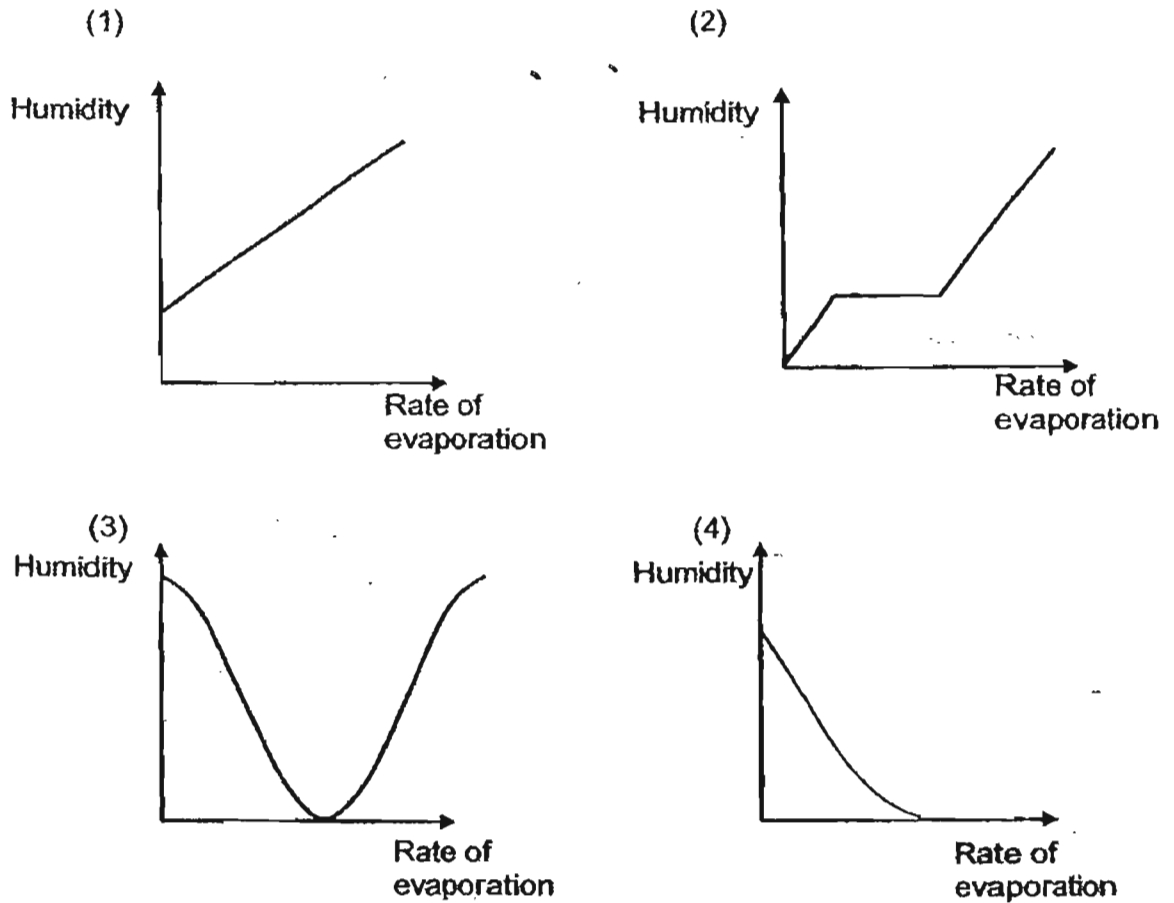


**Cube Q**

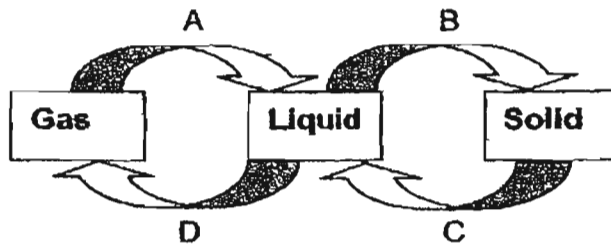
- A Cube Q is lighter.
- B Cube P occupies more space.
- C Cube P is made of a lighter material.
- D Q is more likely to float on water than Cube P.

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

2. Which one of the following graphs best shows the relationship between the humidity level of the air and rate of evaporation of water?



3. Water may undergo any one of the processes A, B, C or D depending on the surrounding temperature.



During which two processes will water gain heat from the surrounding?

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

4. Which of the following are ways of conserving water?
- A Washing floor with water collected from the rain.
  - B Leaving the tap running while you cleanse your face with a facial cleanser.
  - C Using a hose to water a few pots of plants instead of using a watering can.
  - D Ensuring that you have a full load of dirty laundry before washing, when using a washing machine.

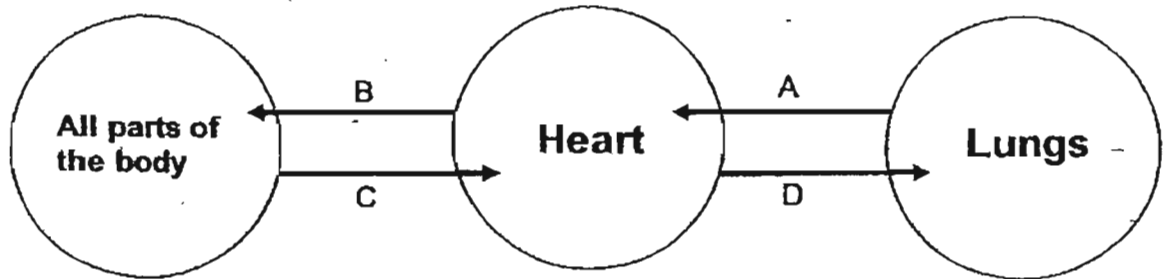
(1) A and C only

(2) A and D only

(3) B and C only

(4) B and D only

5. The diagram below shows how blood is circulated in our body.



Which of the following blood vessels transport oxygenated blood?

(1) A and B

(2) A and D

(3) B and C

(4) C and D

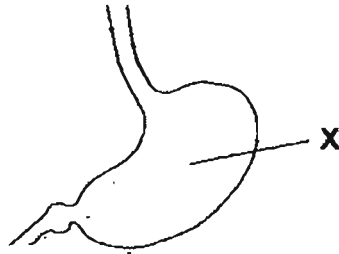


9. Which of the following are hinge joints?
- (1) Elbow and shoulders                      (2) Elbow and hip joints  
(3) Shoulder and neck                        (4) Elbow and knee
10. Which of the following sense organs do Joan need to make the observations that a paperweight is blue, smooth and heavy ?
- (1) Skin and tongue                            (2) Eyes and nose  
(3) Skin and eyes                                (4) Tongue, nose and ears
11. Which of the following activities make use of the muscular system?
- A Walking  
B Breathing  
C Pressing the door bell  
D Carrying your school bag
- (1) A and B only                                (2) B and C only  
(3) B, C and D only                            (4) A, B, C and D
12. Which of the following is/are function/s of the roots of a water hyacinth?
- A Absorb water and minerals  
B Hold the plant firmly to the ground  
C Absorb dissolved oxygen for the plant
- (1) A only    (2) B only  
(3) A and B only                                (4) A, B and C

13. Which of the following is not a function of the skeletal system?

- 1) It helps us to move.
- 2) It enables us to stand upright.
- 3) It protects the vital organs in our body.
- 4) It improves the blood circulation in our body.

14. The organ marked "X" below is part of the digestive system.



Which of the following statements is true about the digestion of food at X ?

- 1) It is here where food first gets digested by digestive juices.
- 2) Digestion is completed here and unwanted food is removed.
- 3) Chewed food is digested further and turns into a thick liquid.
- 4) Digested food is absorbed through the walls of X and into the bloodstream.

15. The table below shows the amount of gases in 1000cm<sup>3</sup> of air exhaled by a 13 year-old girl when she is sleeping.

| Volume of gases (cm <sup>3</sup> ) in exhaled air |                |             |
|---|----------------|-------------|
| oxygen  | Carbon dioxide | Other gases |
| 180   | 60             | 760         |

Which of the following is most likely to be the amount of gases in 1000cm<sup>3</sup> of air exhaled by the same girl when she is playing basketball?

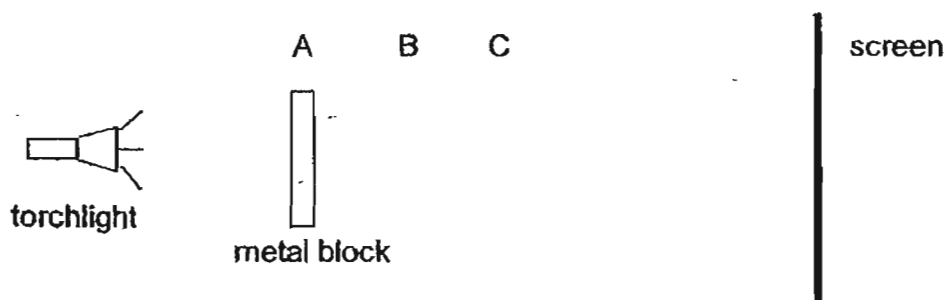
|     | Volume of gases (cm <sup>3</sup> ) in exhaled air |                |             |
|-----|---|----------------|-------------|
|     | oxygen  | Carbon dioxide | Other gases |
| (1) | 150   | 90             | 760         |
| (2) | 180   | 60             | 760         |
| (3) | 200   | 50             | 750         |
| (4) | 220   | 40             | 740         |

16. Which of the following statements correctly compare the difference between air that is inhaled and air that is exhaled by a healthy person?

- A Exhaled air is warmer than inhaled air.
- B Inhaled air has less oxygen than exhaled air.
- C Exhaled air has more carbon dioxide than inhaled air.
- D Inhaled air has less water vapour than exhaled air.

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

17. Ramli set up an experiment on light as shown in the diagram below.



Ramli placed the metal block at positions A, B and C, which were at different distances from the screen. At each position, he measured the length of the shadow cast on the screen. Which one of the following most correctly showed the lengths of the shadows Ramli recorded for positions A, B and C?

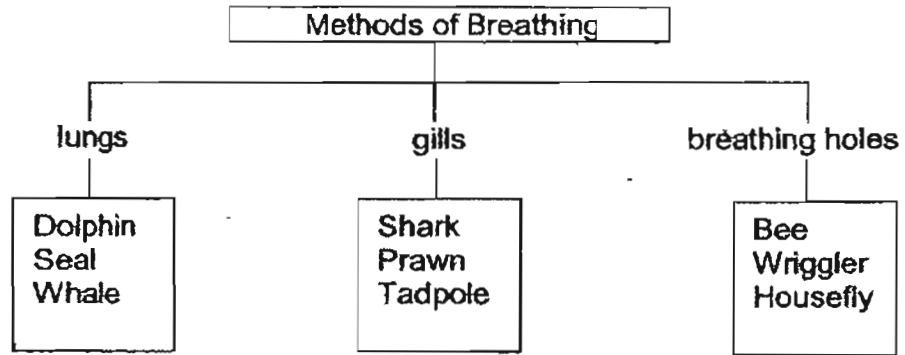
|     | Length of shadow at A / cm | Length of shadow at B / cm | Length of shadow at C / cm |
|-----|----------------------------|----------------------------|----------------------------|
| (1) | 16                         | 12                         | 8                          |
| (2) | 12                         | 8                          | 16                         |
| (3) | 8                          | 12                         | 16                         |
| (4) | 16                         | 16                         | 16                         |



18. In which one of the following parts of an earthworm does gaseous exchange take place?

- (1) mouth
- (2) bristles
- (3) skin
- (4) saddle

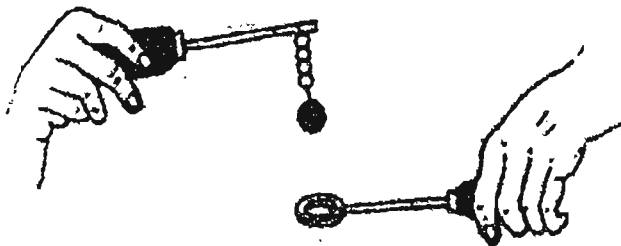
19. Study the classification chart below.



Which one of the following organisms has been wrongly classified?

- (1) Dolphin
- (2) Prawn
- (3) Bee
- (4) Wiggler

20. The diagram below shows a metal ball and ring apparatus. At the start of the experiment, the ring was too small for the ball to pass through.



What should be done to the metal ball and ring apparatus to enable the ball to pass through the ring?

- A The metal ball should be heated over a bunsen burner.
- B The metal ball should be dipped in cold water.
- C The ring should be heated over a bunsen burner.
- D Both the metal ball and the ring should be dipped in hot water.

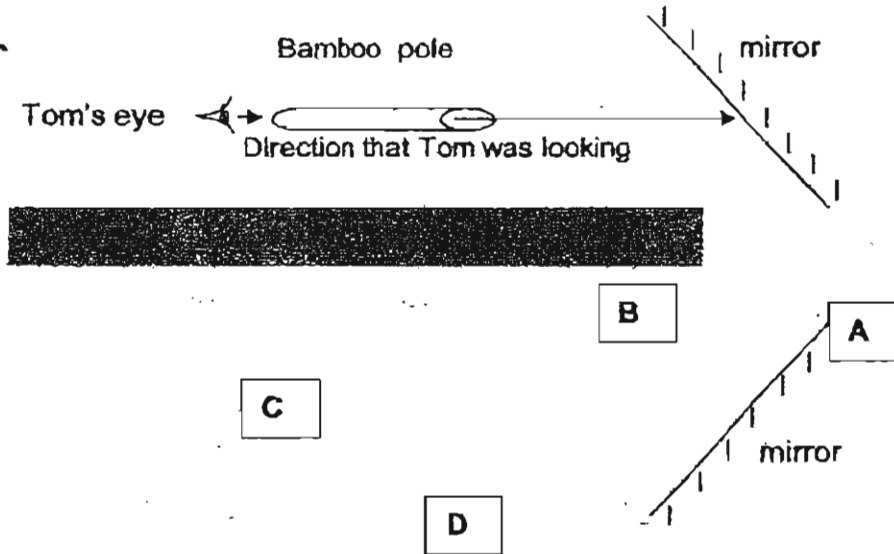
- (1) A and B only
- (2) B and C only
- (3) B, C and D only
- (4) A, B, C and D only

21. Which of the following is/are possible sources of light energy for us to see at night?

- A Sun
- B Moon
- C Stars
- D Fireflies

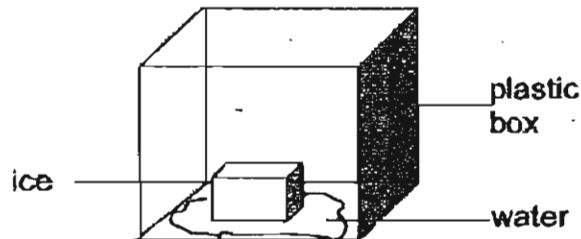
- (1) A and B only
- (2) C and D only
- (3) A, B and C only
- (4) B, C and D only

22. Tom looks at a mirror through a hole of a bamboo pole as shown in the diagram below.



From the diagram above, which of the box(es), A, B C or D, will Tom be able to see?

- (1) A only  
 (2) C only  
 (3) A and B only  
 (4) B, C and D only
- 23) Amos placed a block of ice in a dry enclosed plastic box. He noticed that the block of ice started melting after some time as shown in the diagram below.



Which one of the following describes what happened to the temperature of the ice, water and plastic box when the ice was melting?

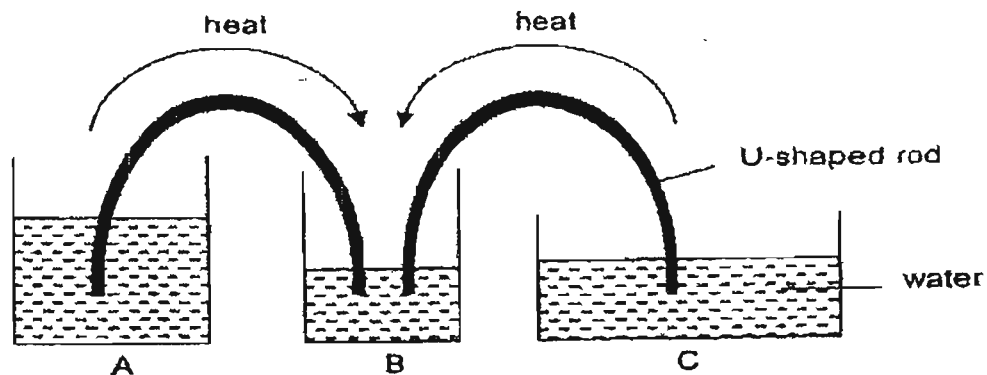
|     | Temperature of |           |             |
|-----|----------------|-----------|-------------|
|     | Ice            | Water     | Plastic box |
| (1) | No change      | Decrease  | Increase    |
| (2) | No change      | No change | Decrease    |
| (3) | Decrease       | Increase  | Decrease    |
| (4) | Increase       | Decrease  | Increase    |

24. Meimei placed an iron ball in a hot oven set at  $140^{\circ}\text{C}$  and took it out after 35 minutes. Which properties of the iron ~~cube~~ ball would have changed due to the heating?

- A Weight
- B Shape
- C Volume
- D Temperature

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

25. The arrows in the diagram below indicate how heat travels through 2 similar U-shaped copper rods immediately after they were immersed into 3 beakers of water, A, B and C.



Which of the following most likely shows the temperatures of water in the 3 beakers when the rods were just put in?

|     | Beaker A / $^{\circ}\text{C}$ | Beaker B / $^{\circ}\text{C}$ | Beaker C / $^{\circ}\text{C}$ |
|-----|-------------------------------|-------------------------------|-------------------------------|
| (1) | 50                            | 30                            | 80                            |
| (2) | 30                            | 50                            | 80                            |
| (3) | 80                            | 50                            | 30                            |
| (4) | 50                            | 80                            | 30                            |

26. In nature, which one of the following shows the correct order in which energy is transferred?

- (1) cow  $\rightarrow$  sun  $\rightarrow$  grass  $\rightarrow$  tiger
- (2) sun  $\rightarrow$  goat  $\rightarrow$  maize  $\rightarrow$  man
- (3) grass  $\rightarrow$  grasshopper  $\rightarrow$  sun  $\rightarrow$  chicken
- (4) sun  $\rightarrow$  corn  $\rightarrow$  rat  $\rightarrow$  owl

27. Four pupils, Ken, Samy, Liling and Fatimah, are making some statements on the process of respiration.

During respiration, energy is being stored.

Ken

Sugar and water are being released during respiration.

Samy

Respiration is a process that takes place in both plants and animals.

Liling

During respiration, energy and carbon dioxide are being released.

Fatimah

Who made correct statements about respiration?

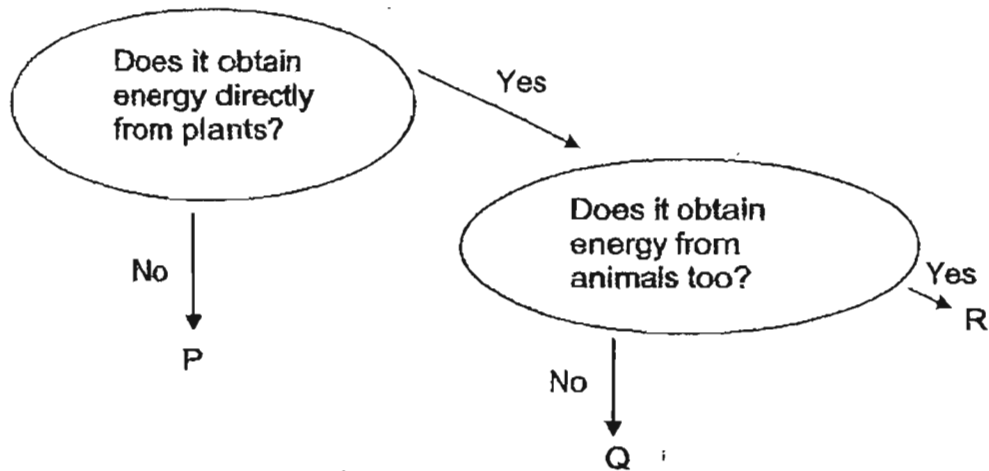
(1) Ken and Samy

(2) Liling and Fatimah

(3) Ken and Liling

(4) Samy and Fatimah

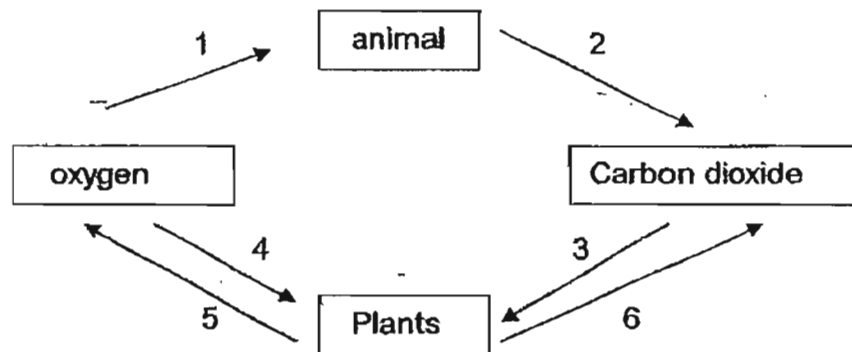
28. The flow chart below shows how living things depend directly or indirectly on plants.



What are P, Q and R likely to be?

|     | P           | Q           | R        |
|-----|-------------|-------------|----------|
| (1) | owl         | toad        | squirrel |
| (2) | earthworm   | chicken     | snail    |
| (3) | grasshopper | mouse       | bee      |
| (4) | frog        | caterpillar | rat      |

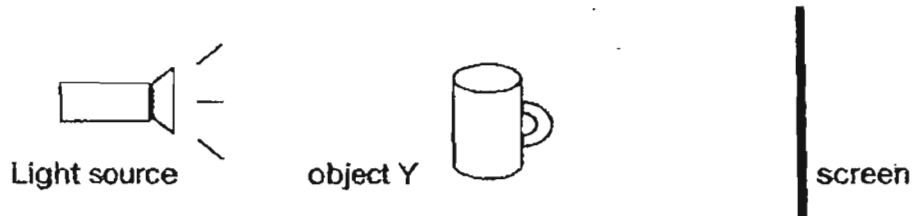
29. The diagram below shows how plants and animals exchange gases between themselves as well as the environment.



Which two arrows show the process of photosynthesis?

- (1) Arrows 1 and 3
- (2) Arrows 2 and 4
- (3) Arrows 3 and 5
- (4) Arrows 5 and 6

30. Jimmy carried out an experiment by placing object Y between a light source and a screen, as shown in the diagram below. He rotated object Y and drew its shadow that was formed on the screen each time.



Which of these shadows was he likely to see on the screen?



A



B



C



D

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

**NANYANG PRIMARY SCHOOL**

**PRIMARY 4 SCIENCE**

**SEMESTRAL ASSESSMENT 2**

**2007**

**BOOKLET B**

**Date : 26<sup>th</sup> Oct 2007**

**Duration : 1 h 45 min**

**Name : \_\_\_\_\_ (       )**

**Class: Primary \_\_\_\_\_ (       )**

**Marks Scored:**

|                    |  |            |
|--------------------|--|------------|
| <b>Booklet A:</b>  |  | <b>60</b>  |
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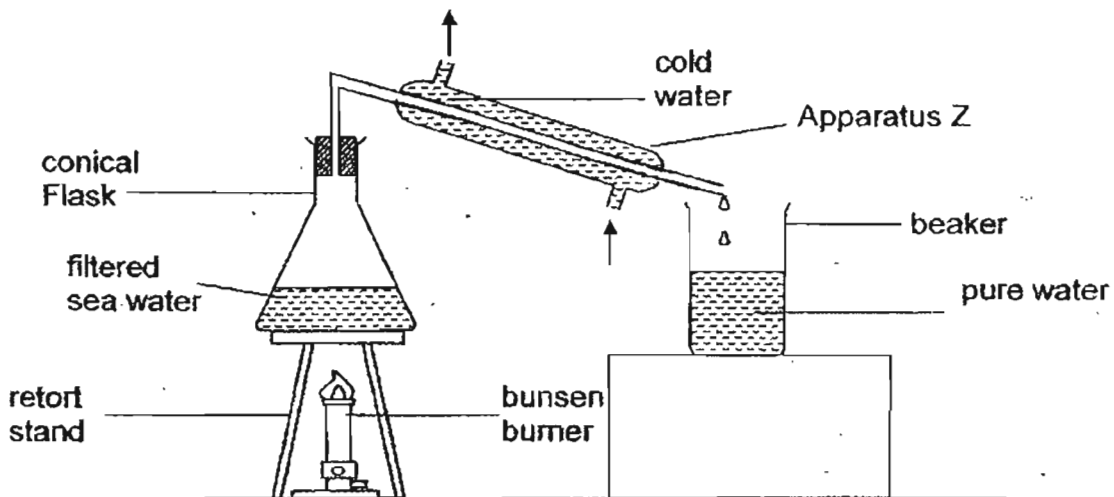
**Booklet B consists of 14 printed pages including this cover page.**



**Section B (40 marks)**

Write your answers to questions 31 to 45 in the spaces provided.  
Marks will be deducted for misspelt key words.

31. Study the set up below which is used to obtain pure water from sea water.



- a) Why is cold water pumped into Apparatus Z? (1 m)

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- b) The sea water contained salt dissolved in it. Explain why the water collected in the beaker did not contain salt? (1 m)

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- c) How is the rate of collection of pure water in the beaker related to the strength of the bunsen flame? (1 m)

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32. a) In the water cycle, when would the tiny water droplets in the clouds fall as rain? (1m)

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Cloud seeding is commonly used in countries where there is not much rain. It has proven to be extremely effective in areas with cloud built ups but little rainfall. Small particles are released from planes into the clouds to form rain.

- b) How did the small particles released help form rain? (1 m)

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33. Ali left 2 similar pots of plants in an open area with enough sunlight and he watered them regularly. He then used clear plastic tape to cover the upper side of all the leaves in Plant A and the under side of all the leaves in Plant B.

- a) Which plant is most likely to die first? (1 m)

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- b) Explain your answer in (a). (1 m)

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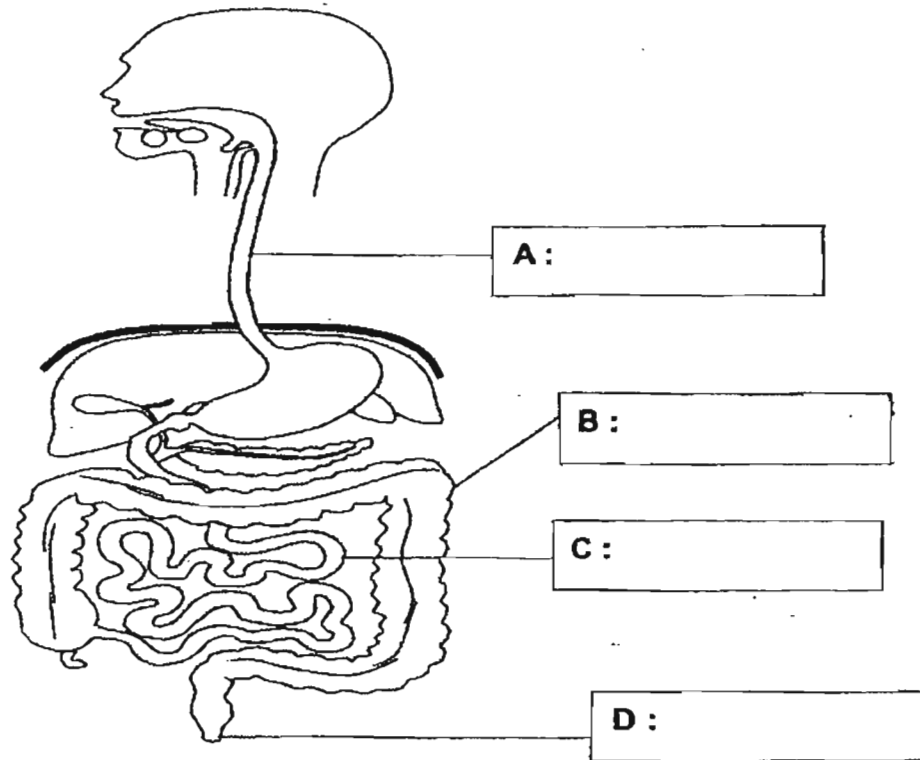
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- c) Besides water and sunlight, what do plants also need to grow well? (1 m)

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34. The diagram below shows the human digestive system.



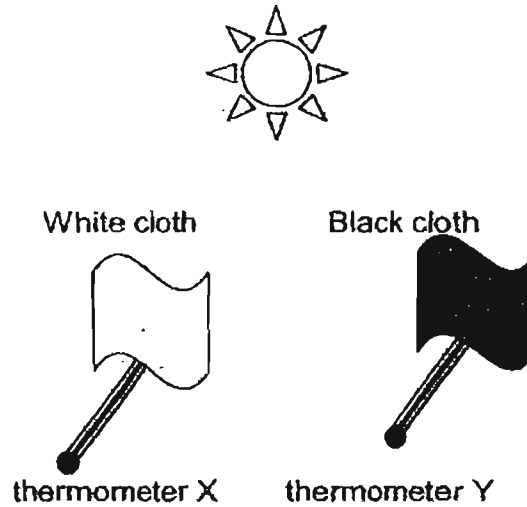
a) Name the organs labelled A to D in the boxes provided. (2 m)

b) What is the function of organ B. (1 m)

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35. Shane placed two thermometers, X and Y, on the ground at basketball court on a sunny day. After two minutes, when the temperatures on both thermometers did not change anymore, he covered thermometer X with a white cloth and thermometer Y with a black cloth. He then left the whole set-up on the ground for another three minutes, as shown in the diagram below.



He recorded the results of his findings as shown below:

|   |
|---|
| Temperature on both thermometers at the start: 33°C |
| Temperature on thermometer with white cloth: 30°C   |
| Temperature on thermometer with black cloth: 36°C   |

- (a) Based on the information above, what had Shane found out? (1m)

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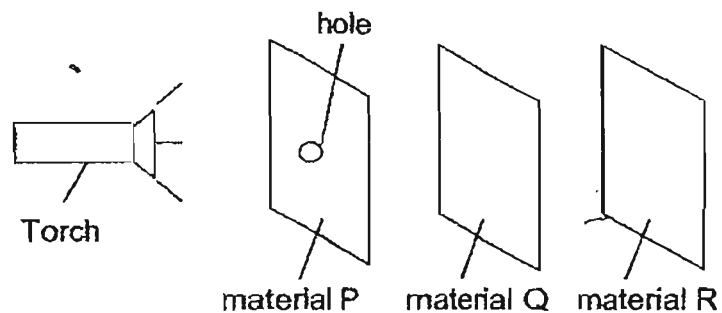
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- (b) Explain why sportsmen prefer light-coloured shirts to dark-coloured ones on a sunny day. (1m)

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36. A group of pupils carried out the experiment shown below, in a dark room.



Sheets P, Q and R were arranged in a straight line. When the torch was switched on, she could observe a bright oval patch on material R only.

- (a) Based on the pupils' observation in the above experiment, state the property of material Q. (1 m)

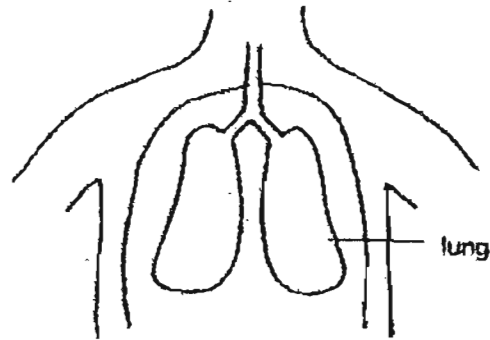
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- (b) Name an example of each of the materials P and R. (2 m)

Material P could be made of \_\_\_\_\_.

Material Q could be made of \_\_\_\_\_.

- 37 The diagram below shows part of the human respiratory system. The diaphragm is not shown in the diagram.



- (a) In the table below, put a tick (✓) next to the correct drawing to show how the missing diaphragm would look like when a person exhales completely. (1 m)

|  |  |
|--|--|
|  |  |
|  |  |
|  |  |

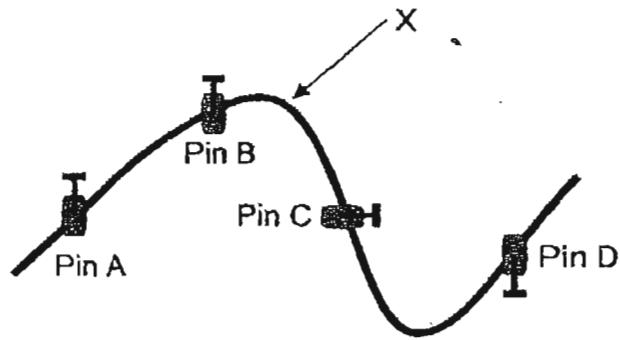
- (b) Cigarette smoke can damage the walls of the air sacs in the lungs. Explain how this can affect the function of respiration of the lungs? (1m)

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- 38 Ming Ming conducted an experiment by sticking pins, A, B, C and D on blobs of candle wax at different points on an aluminium wire. She then heated the wire at the part marked X, as shown in the diagram below.



- (a) State in which order the pins would start to drop off by filling in the boxes with letters A, B, C or D. (1 m)

First to drop off →

|  |  |  |  |
|--|--|--|--|
|  |  |  |  |
|--|--|--|--|

- (b) State two variables that should be kept the same in the experiment in order to ensure a fair test. (2 m)

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- 39 Laura wanted to find out how the temperature affects the rate at which a sugar cube dissolved. She then set up an experiment using some sugar cubes, a thermometer and four similar beakers containing water, as shown in the table below.

| Beakers | No. of sugar cube | Temperature of water | Amount of water |
|---------|-------------------|----------------------|-----------------|
| P       | 1                 | 50°C                 | 300 ml          |
| Q       | 1                 | 70°C                 | 300 ml          |
| R       | 2                 | 50°C                 | 300 ml          |
| S       | 2                 | 70°C                 | 300 ml          |

- (a) Apart from the data given above, what else should Laura measure in order to see how the temperature of water affects the rate at which sugar cubes dissolve? (1 m)

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- (b) Which two beakers should Laura compare to achieve her aim of the experiment? (1 m)

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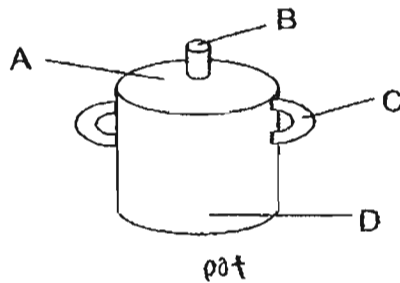
- (c) What should Laura do to ensure that the results of her experiment are reliable? (1 m)

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- 40 The diagram below shows a cooking pot. The various parts of the pot are labelled A, B, C and D.



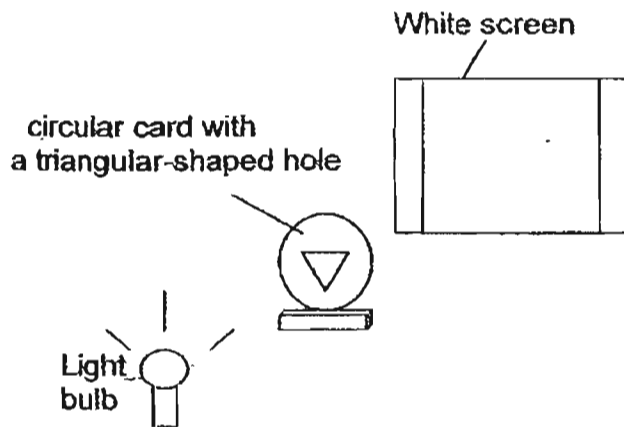
- (a) Which part(s) of the cooking is/are made of plastics? (1 m)

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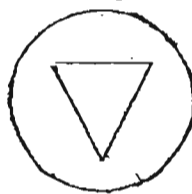
- (b) Why is plastics used in making the part(s) mentioned in (a)? (1 m)

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- 41 Don conducted an experiment using the set-up below.



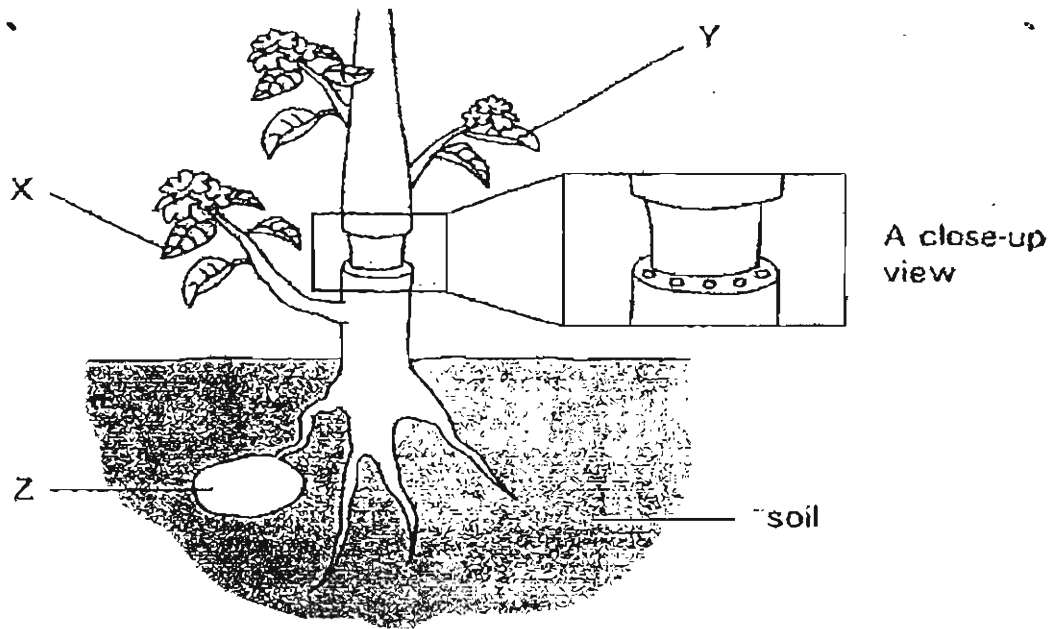
- (a) Shade in the diagram below to show the shadow formed on the screen. (1 m)



- (b) What would happen to the size of the shadow if Don were to move the circular card towards the screen? (1 m)

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- 42 The diagram below shows a plant with the outer ring of the stem removed. As a result, the tubes carrying food were removed.



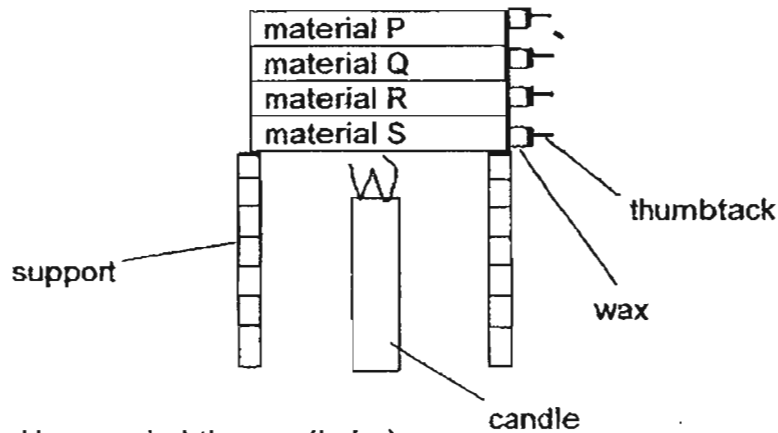
- (a) Name the tubes on the stem that carry (1 m)
- (i) food \_\_\_\_\_
- (ii) water \_\_\_\_\_
- (b) In the diagram, X and Y are the leaves. Which part of the plant is Z? (1 m)
- \_\_\_\_\_
- (c) After one week, Y was still growing healthily even though the tubes carrying food were removed. Give a reason. (2 m)
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

- 43) Classify the following substances into conductors of heat and insulators of heat, using the table below. (2 m)  
(poor conductor)

|       |        |      |           |
|-------|--------|------|-----------|
| Glass | Copper | Wood | Aluminium |
|-------|--------|------|-----------|

|     | Good conductors | Insulators<br>(poor conductor) |
|-----|-----------------|--------------------------------|
| i)  |                 |                                |
| ii) |                 |                                |
|     |                 |                                |

- 44 Ali set up the investigation below to compare the heat conductivity of 4 different materials (P, Q, R and S) that were stacked above each other.



He recorded the results below.

| Material | Time taken for thumbtack to drop (minutes) |
|----------|--|
| P        | 8  |
| Q        | 6  |
| R        | 2  |
| S        | 4  |

- (a) Was Ali's experiment a fair one? Explain your answer. (2m)

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- (b) For each of the conclusions below, write 'True', 'False' or 'Not Possible To Tell' in the table below. (1 m)

|      |   |  |
|------|---|--|
| (i)  | Material P is a better conductor of heat than material Q. |  |
| (ii) | Material R is a better conductor of heat than material S. |  |

- 45 Fill in the blanks with appropriate words to complete the passage below that describe the life cycle of a plant. (3 m)

In the life cycle of a plant, the seed requires \_\_\_\_\_ .  
\_\_\_\_\_ and water to germinate into a seedling. When the  
seedling grows into an adult plant, it produces \_\_\_\_\_ that will  
develop into fruits.

End of paper.  
Check your work!

Setters: Mrs Lynette Wong  
Mr Mohammad



# ANSWER SHEET

NANYANG PRIMARY SCHOOL PRIMARY 4 SCIENCE 2007  
SEMESTRAL ASSESSMENT (2)

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

31) a) The water vapour that is formed in the conical flask can condense. Condensation is faster.

b) Salt cannot evaporate.

c) The stronger strength of the bunsen burner, the faster the rate of collection of pure water.

32) a) The tiny water droplets in the clouds will fall down as rain when there is too much water droplets and gets too heavy.

b) The small particles are attached to the water droplets in the clouds to make them heavier.

33) a) Plant B.

b) More stomata are found on the underside of the underside of the leaves. The plant cannot make food.

34) a) A: gullet, B: large intestine, C: small intestines, D: anus.  
b) To absorb water from the undigested food.

35) a) Jane found out that the black cloth absorbs more heat from the sun than the white cloth.

b) Light colour shirts make them feel cooler.

36) a) Material Q is transparent.  
b) P: metal sheet  
R: nylon

37) a)

b) If the air sacs in the lungs are damaged, we would not be able to exchange gases and respire.

38) a) B, C, D

b) The amount of candle wax and length of the pins.

39) a) Time taken for sugar cube to dissolve completely.

b) P and Q

c) Repeat the experiment a few times, then take the average time taken for sugar cube to dissolve completely.

40) a) B and C.

b) plastic is a poor conductor of heat, therefore we will not burn our hand when we are lifting the pot up.

41) a)

b) The size will become smaller.



42) a) i) phloem. ii) xylem.

b) Roots.

c) There is still water in the plant, so it can make food.

43) i) Aluminium, Wood  
ii) Copper, Glass

44) a) No, the distance between the material and the candle flame is not the same.

b) i) Not ii) True

45) air, warmth, flowers