

**NANYANG PRIMARY SCHOOL**

**PRIMARY 6 SCIENCE**

**SEMESTRAL ASSESSMENT 1  
2009**

**BOOKLET A**

**Date : 8 May 2009**

**Duration : 1 h 45 min**

**Name : \_\_\_\_\_ (     )**

**Class: Primary 6 (     )**

**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: \_\_\_\_\_**

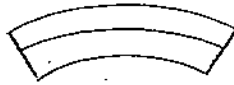
**DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.  
FOLLOW ALL INSTRUCTIONS CAREFULLY.**

**Booklet A consists of 16 printed pages including this cover page.**

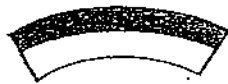
**Section A** (30 x 2 marks = 60 marks)

For each question from 1 to 40, 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.

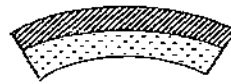
1. Different metals expand at different rates when heated. If 2 metal strips are joined together into a bar and heated, they would bend as shown in the diagram below.



4 such bars, P, Q, R and S, were heated for 2 minutes. The results are shown below.



Bar P



Bar Q



Bar R



Bar S

Key			
Metal A	Metal B	Metal C	Metal D

Arrange the four metals starting from the one which expands the most to the one which expands the least.

→ Expand the least

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

Study the information and answer questions 2 and 3.

Some pupils collected some recycled material. They did some research on the material and recorded their findings in the table below.

Material	Shape of material	Facts about the material
PVC	sheet and pipe	strong, waterproof, does not float, sheets are easy to cut and bend
polystyrene	block	breaks easily, hard to cut, floats, waterproof
nylon	rope	strong, stretches easily, easy to cut, does not float
cotton	rope	strong, does not stretch, floats, easy to cut
plywood	sheet	strong, does not break easily, floats, hard to cut, not waterproof
steel	spring	strong, very hard to cut

The pupils wanted to use the materials they have collected to build a swing for outdoor.

2. Which material would best be used to make the ropes of the swing?

- |           |                 |
|-----------|-----------------|
| (1) PVC   | (2) polystyrene |
| (3) nylon | (4) cotton      |

3. Which material would best be used to make the seat of the swing?

- |             |                 |
|-------------|-----------------|
| (1) PVC     | (2) polystyrene |
| (3) plywood | (4) steel       |

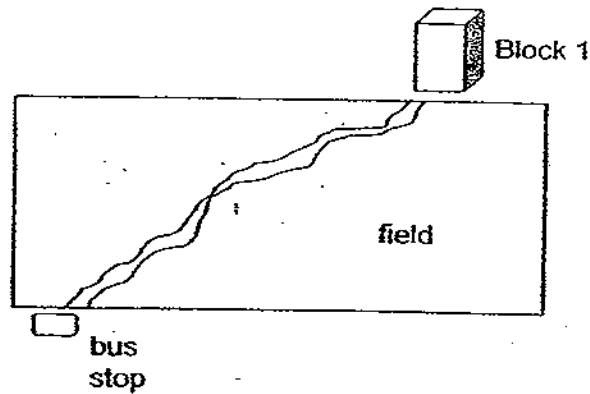
4. In the drawing below, two similar balls, U and V, are moving in the same direction. Ball V is moving faster than ball U. Ball V hits ball U.



What is the likely outcome when Ball V hits ball U?

- (1) Ball U moves faster than before in the same direction.
- (2) Ball V moves faster than before in the same direction.
- (3) Ball U moves faster than before in the opposite direction.
- (4) Ball V moves faster than before in the opposite direction.

5. The diagram below shows the surrounding of residential building, Block 1.



Residents in Block 1 have to walk across a field to reach the nearest bus stop. After a few months, Zheng Yang, one of the residents of Block 1, noticed that an earth path had formed across the field from Block 1 to the bus stop.

Which of the following statement(s) explain(s) the formation of the earth path?

- A People walking on the field blocked sunlight from the grass hence no grass will grow .
- B Any new grass plant which may grow was stepped on and killed by the people walking on the field.
- C The force of the footsteps of people walking on the field had packed the soil particles so tightly that roots of the grass will not grow.

(1) A only

(2) B only

(3) B and C only

(4) A, B and C

6. Mrs Lim dropped a glass vase. What are the forms of energy present when the vase hits the concrete floor?

- A light energy
- B sound energy
- C kinetic energy
- D potential energy

(1) A and B only

(2) B and C only

(3) C and D only

(4) B, C and D only



8. Ravi set up an aquarium near the window. There were 5 fish of the same species and some water plants in the aquarium. Ravi left the set-up alone for 1 week.

A week later, Ravi noticed that the fish were surviving well but there are fewer water plants.

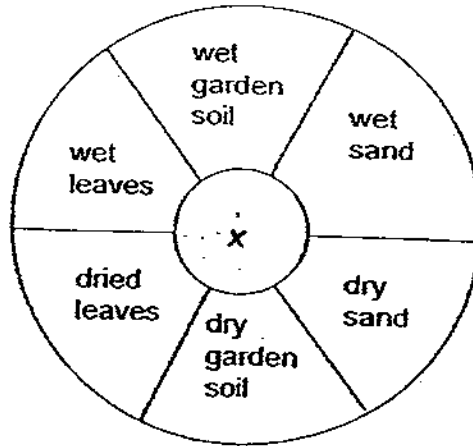
Ravi then introduced Organism S into the aquarium and left the aquarium alone again for another week. After 6 days, there was only Organism S in the aquarium.

Which one of the following statements explains his observation after Organism S was introduced?

- (1) The fish are herbivores.
  - (2) Organism S is an omnivore.
  - (3) Organism S has used up all the dissolved air in the water.
  - (4) Organism S has a disease that infect and kill the fish and the water plants.
9. Weed K are small, unwanted plants growing in the school's garden. Which one of the following reasons best explains why we need to remove them?
- (1) Insects will only pollinate the flowers of Weed K.
  - (2) Weed K are more attractive than the plants in the garden.
  - (3) Weed K will block sunlight from reaching the plants in the garden.
  - (4) Weed K will compete with the plants in the garden for their basic needs.
10. Rattle snakes, scorpion and jerboa (small mammal) are animals found in the desert. Which one of the following conditions listed will affect all these animals drastically and directly?
- (1) Amount of light
  - (2) Amount of sand
  - (3) Number of trees present
  - (4) Temperature of the surrounding

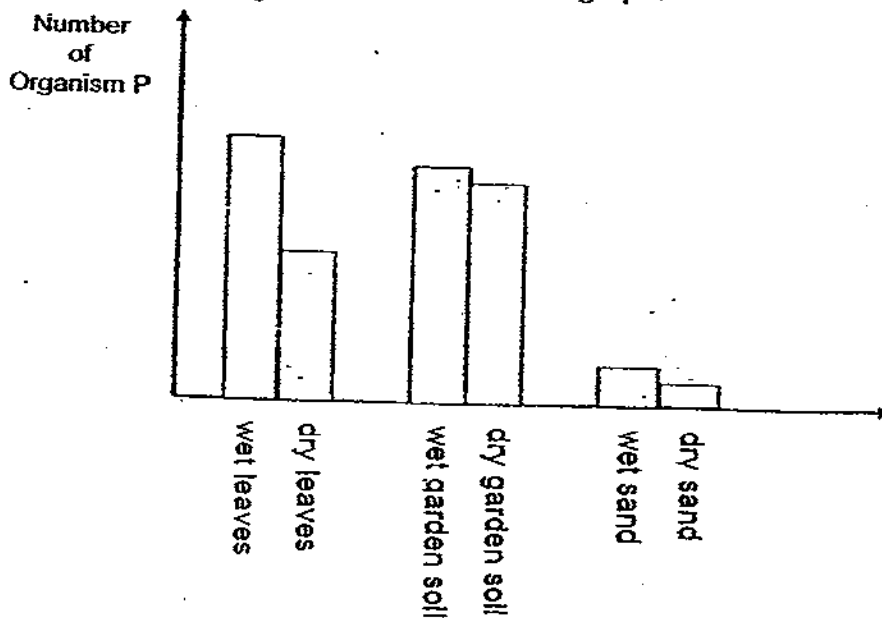


Study the information and answer questions 13 and 14.



Kait Ming conducted an experiment to find out the preferred habitat of Organism P. 20 Organism P were released into Area X of the round plastic container shown above. A black cloth was used to cover the container.

After 3 hours, Kait Ming counted the number of Organism P in each section and plotted his results in a bar graph.



13. Based on the results, which of the following communities would you most likely find Organism P?

- (1) garden and swamp
- (2) tree and rotting log
- (3) leaf litter and beach
- (4) leaf litter and rotting log



14. What can Kait Ming do to ensure that his results are reliable?

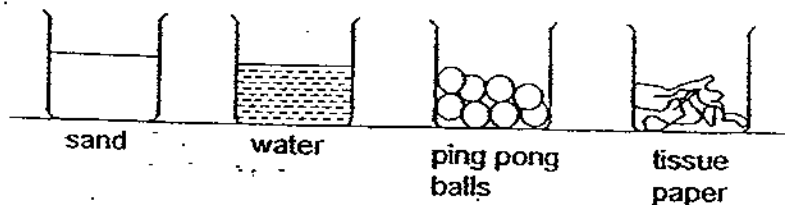
- A Repeat the experiment a few times
- B Place food for Organism P in Area X
- C Place 10 Organism P in each of the 6 sections of the container
- D Carry out the experiment without covering the container with a black cloth

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

15. A container has a capacity of  $5000\text{cm}^3$ . When  $3000\text{cm}^3$  of water and  $3000\text{cm}^3$  of air were introduced into the container, what is the final volume of water and air in the container?

	Volume of water ( $\text{cm}^3$ )	Volume of air ( $\text{cm}^3$ )
(1)	2000	3000
(2)	2500	2500
(3)	3000	2000
(4)	3000	3000

16. The diagram below shows 4 beakers of the same size containing different objects.

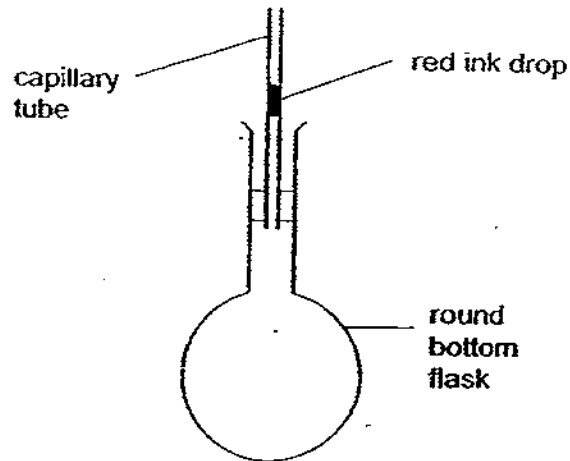


Water is poured into each beaker at the same time. The water is poured in at the same rate.

Arrange the content of each beaker in order starting from the one which will allow the water to overflow in the shortest time first.

- (1) sand, water, ping pong balls, tissue paper
- (2) sand, water, tissue paper, ping pong balls
- (3) water, sand, tissue paper, ping pong balls
- (4) water, ping pong balls, tissue paper, sand

- 17 Meiling set up an experiment as shown below.



When the flask was immersed in a trough of hot water, She recorded her observation and explained the observation correctly. Which one of the following would be Meiling's observation and explanation?

	Observation	Explanation
(1)	ink drop dropped and did not rise	Flask expanded more than the air in the flask
(2)	ink drop remained in the same position	Flask and the air within expanded equally
(3)	ink drop moved up the capillary tube immediately	Only air expanded and pushed the ink drop up
(4)	ink drop dropped a little before moving up the capillary tube again	Flask expanded first before the air within expanded.

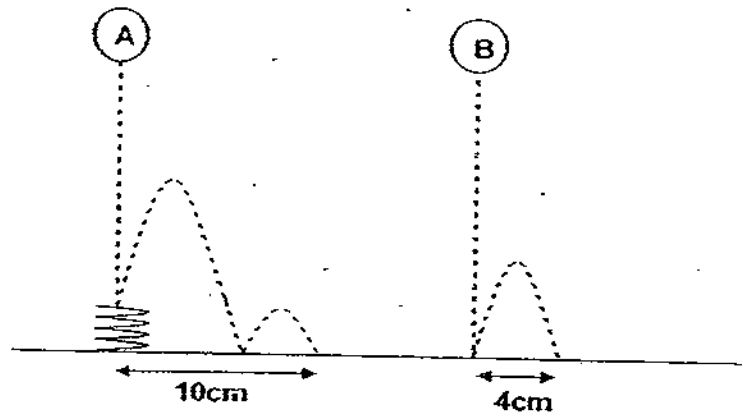
18. Which one of the following statements about the human's skeletal system is incorrect?

- (1) Teeth is part of the skeletal system.
- (2) Ribcage protects the heart, lungs and stomach.
- (3) Spine supports the body and protects vital organ.
- (4) Hip bones, skull and ribcage protect vital organs of the body.

19. Which one of the following statements is correct?

- (1) Liver is part of the digestive system.
- (2) Skin is the largest organ in our body.
- (3) Stomach has no muscle because it is not for movement.
- (4) There are no blood vessels in our brain as it needs not respire.

20. Chen Wei dropped two similar marbles, A and B, from the same height onto an uncompressed spring and on a carpeted floor respectively. Marble A hit and compressed the spring before it bounced twice and landed 10cm from the spring on the carpeted floor. Marble B hit the floor, bounced once and landed 4cm from where it first hit the carpeted floor.



Which of the following statements are true about the two marbles?

- A Marble A started with greater potential energy than Marble B.
- B Kinetic energy of Marble A was converted to elastic potential energy when it hit the spring.
- C After one bounce, all the energy that Marble B possessed was converted to heat energy and sound energy.
- D Marble B had more kinetic energy than gravitational potential energy as it did not bounce higher than Marble A.

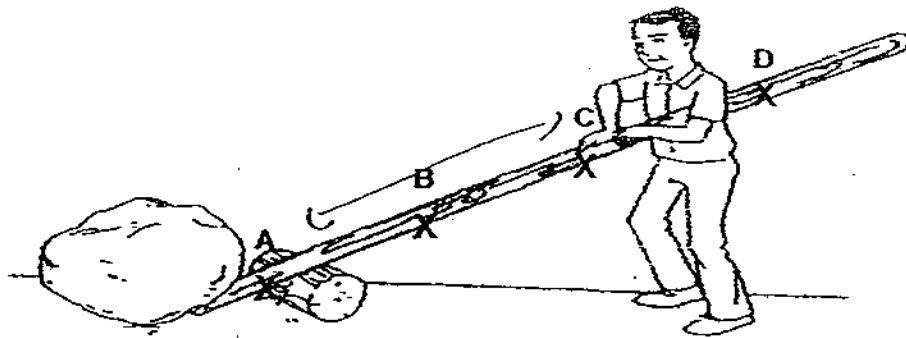
- |                  |                   |
|------------------|-------------------|
| (1) A only       | (2) A and B only  |
| (3) B and C only | (4) A, B, C and D |

21. Which of the following processes require heat energy?

- A Melting ice
- B Boiling water
- C Obtaining salt from sea water
- D Condensation of water vapour

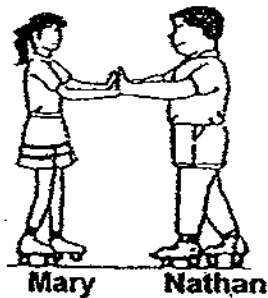
- |                     |                     |
|---------------------|---------------------|
| (1) A and B only    | (2) C and D only    |
| (3) A, B and C only | (4) A, B and D only |

22. The diagram below shows Mr Tan using a pole as a lever to lift a rock. A, B, C and D are positions along the pole. He is unable to lift the rock when he applied the force at C.



What could he do to enable him to lift the rock?

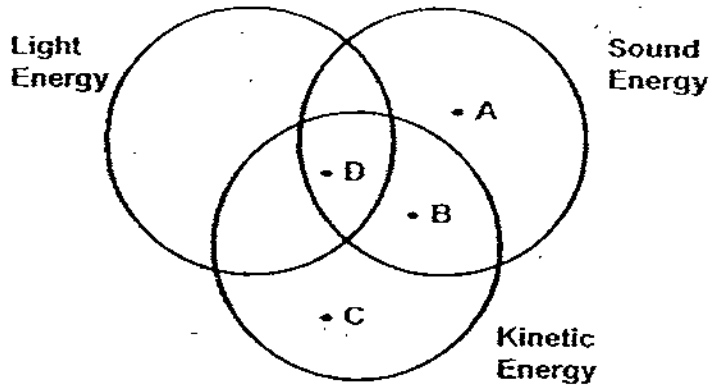
- (1) Shift the fulcrum to position B and apply force at C.
  - (2) Move himself forward and apply force at B with the fulcrum positioned at A.
  - (3) Move himself backward and apply force at D with the fulcrum positioned at A.
  - (4) Move himself backward and apply force at D with the fulcrum positioned at B.
23. The diagram below shows two pupils, Mary and Nathan, standing on roller skates. Mary is half of Nathan's weight.



Which of the following will happen when they both exert an equal amount of force towards each other?

- (1) Both of them will stay at the same spot.
- (2) Mary will move backward but Nathan will move forward.
- (3) Both of them will move away backward at the same speed.
- (4) Both of them will move backward but Nathan will move at a slower speed.

24. The Venn diagram below shows the types of useful energy produced by different electrical devices, A, B, C and D.

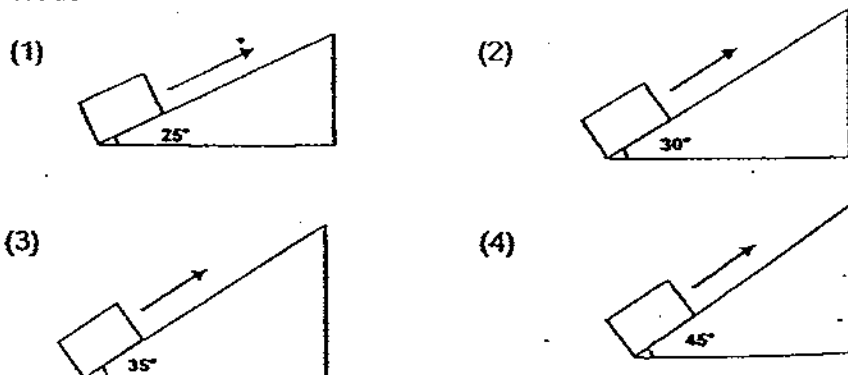


Which one of the following options correctly state the examples of the devices?

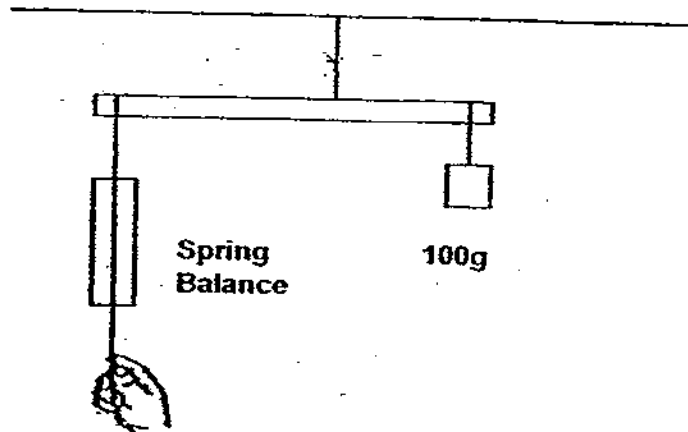
	A	B	C	D
(1)	doorbell	CD player	electric toothbrush	microwave oven
(2)	electric toothbrush	CD player	microwave oven	doorbell
(3)	CD player	electric toothbrush	doorbell	microwave oven
(4)	doorbell	microwave oven	electric toothbrush	CD player

25. Study the diagrams below. Four similar loads are moved up the inclined planes.

Which one of the inclined planes requires the least effort to move the load?

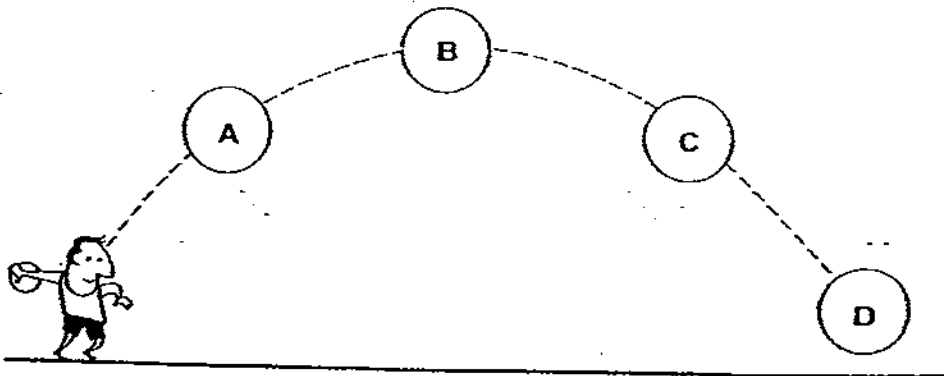


26. Ethan is trying to find out the effort needed to balance the 100g weight as shown in the diagram below.



What should be the reading of the spring balance?

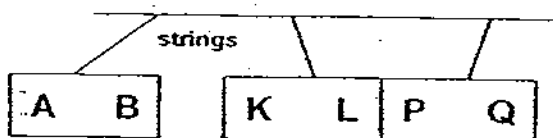
- (1) 0 g  
(2) 100 g  
(3) Less than 100 g  
(4) Greater than 100 g
27. The diagrams below shows the path of a ball after it was being thrown into the air. A, B, C and D are different positions of the ball along the path.



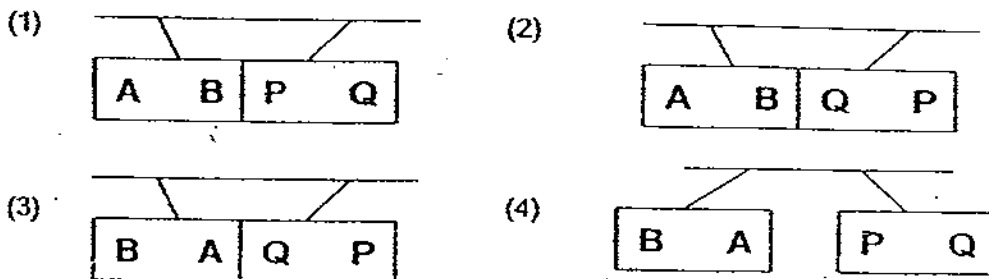
At which position does the ball has the most kinetic energy?

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

28. The diagram below shows what happened when three similar bar magnets were suspended next to one another.



Which of these diagrams show correctly, what happens when the magnets are placed next to each other?



29. The table below shows different actions and the properties of friction demonstrated by the actions. A tick (✓) means the property/properties of friction is/are responsible for the respective action.

		Friction produces heat	Friction opposes motion	Friction slows down motion	Friction wears down surfaces
A	Sharpening a knife				✓
B	Engaging a car's brakes		✓	✓	
C	Striking a matchstick	✓			
D	Holding a glass cup in your hand		✓	✓	

Which of these actions are correctly matched to the properties of friction which they demonstrate?

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

30. Which one of the following shows the correct example of plants and the part where the food is stored?

	Leaves	Stem	Root	Fruit
(1)	cabbage	cucumber	sweet potato	corn
(2)	lettuce	onion	turnip	chilli
(3)	spinach	potato	ginger	tomato
(4)	mustard	carrot	yam	mango



**NANYANG PRIMARY SCHOOL**

**PRIMARY 6 SCIENCE**

**SEMESTRAL ASSESSMENT 1  
2009**

**BOOKLET B**

**Date : 8 May 2009**

**Duration : 1-h 45 min**

**Name :** \_\_\_\_\_ (      )

**Class: Primary 6 (      )**

**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:** \_\_\_\_\_

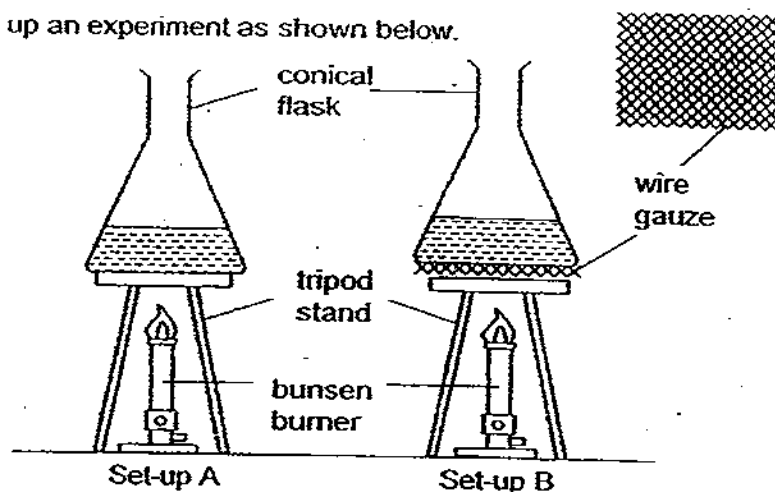
**DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.  
FOLLOW ALL INSTRUCTIONS CAREFULLY.**

**Booklet B consists of 14 printed pages including this cover page.**

**Section B (40 marks)**

Write your answers to questions 31 to 46 in the spaces provided.  
Marks will be deducted for misspelt key words.

31. Emily set up an experiment as shown below.



Each conical flask contained 100ml of water. Emily recorded that it took 10 minutes for the water in Set-up A to boil.

(a) By adding a wire gauze in Set-up B, how will it affect the time taken for the water to boil? (1 mark)

---

---

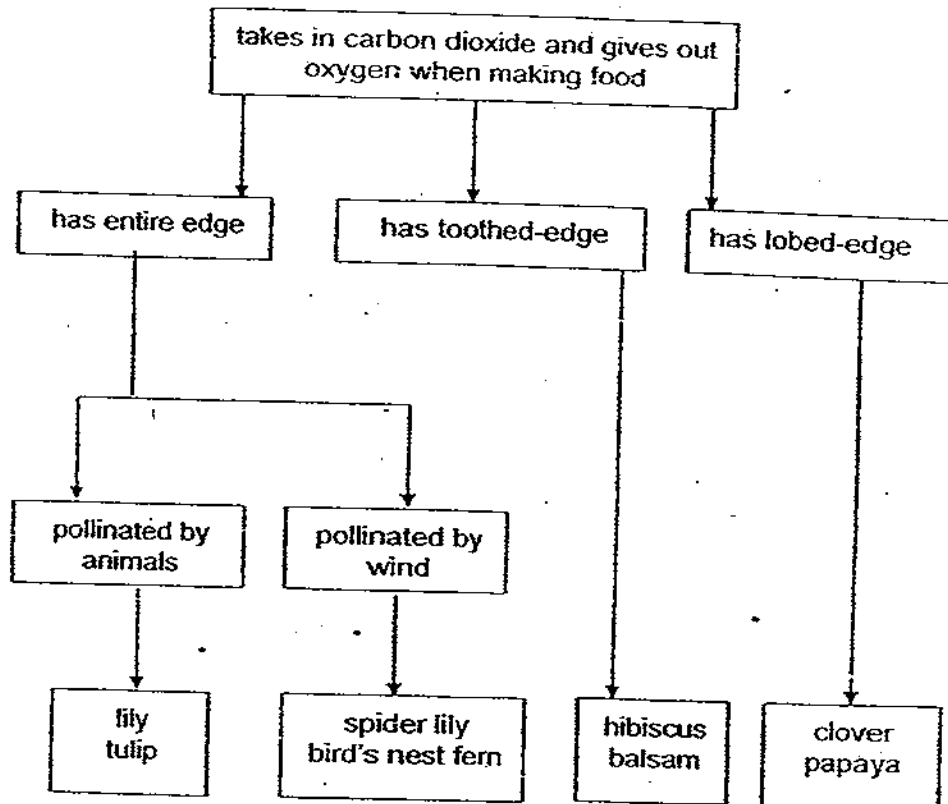
(b) Explain your answer in (a). (1 mark)

---

---

---

32. Study the classification chart below.



(a) Which part of the plant "takes in carbon dioxide and gives out oxygen when making food"? (1 mark)

(b) Identify the plant that has been classified wrongly. (1 mark)

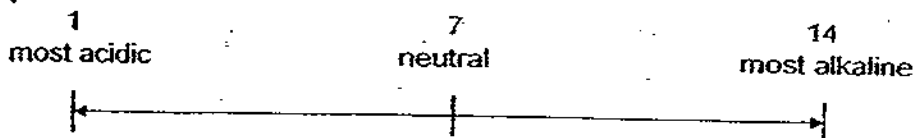
(c) Give 1 reason why the plant is classified wrongly. (1 mark)

33. Halim placed 10 guppies into each of the 4 aquariums, P, Q, R and S. He added different amount of acid into the aquariums and recorded the acidity of the water in each aquarium. He also ensured that the guppies had enough food throughout the experiment.

**Start of experiment**

Aquarium	Amount of acid added (ml)	Acidity of water (pH)	Number of guppies alive
P	0	7	10
Q	10	6	10
R	20	5	10
S	30	4	10

**pH scale**



After 30 minutes, Halim recorded his observations in the table below.

**End of experiment**

Aquarium	Number of guppies alive
P	10
Q	10
R	9
S	0

- (a) What is the aim of Halim's experiment? (1 mark)

---



---

- (b) What is the purpose of setting up Aquarium P? (1 mark)

---



---

- (c) What conclusion can we draw from Halim's experiment? (1 mark)

---



---

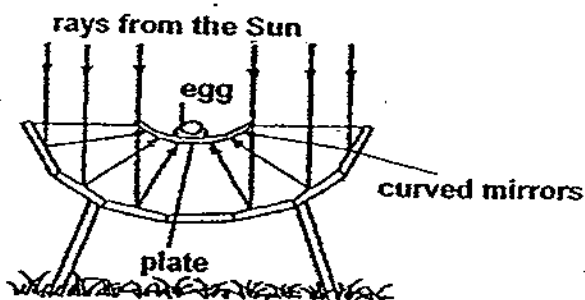
34. Kee Yong wanted to find out what type of food would attract flies. He place different foods, E, F and G, on a table in the yard. Kee Yong noticed that the food attracted both houseflies and fruit flies. He recorded his observation in a table.

Types of flies	Number of flies on		
	Food E	Food F	Food G
housefly	13	9	5
fruit fly	7	11	15

Based on the data above, put a tick in the correct column to indicate if each of the statement is 'True', 'False' or 'Not Possible to Tell'. (2 marks)

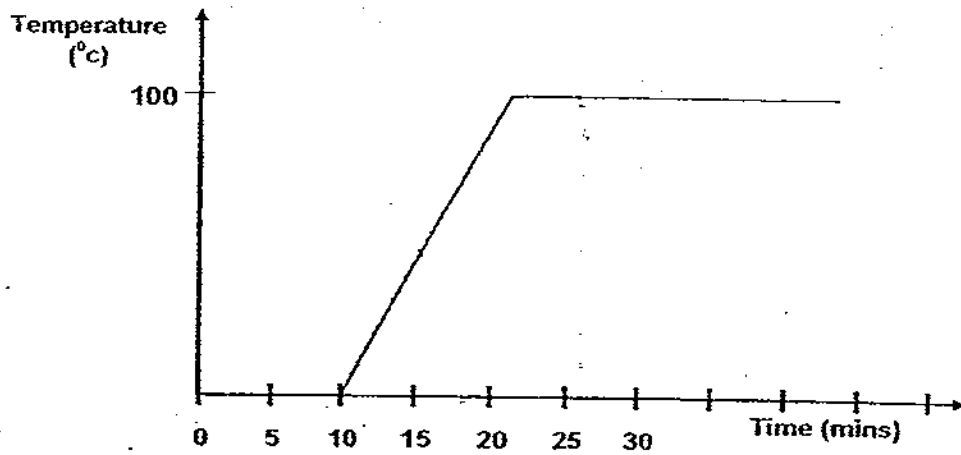
	Statements	True	False	Not Possible to Tell
i	More flies were attracted to Food E.			
ii	Fruit flies preferred Food F and Food G to Food E.			
iii	Houseflies preferred Food E to Food F and Food G.			
iv	When the amount of food was increased, the number flies would increase too.			

35. The diagram below shows the cross section of a semi-circular device designed to cook an egg outdoors.



- (a) What is the use of the mirrors in the above device? (1 mark)
- 
- (b) State the energy conversions for the cooking of the egg. (1 mark)
-

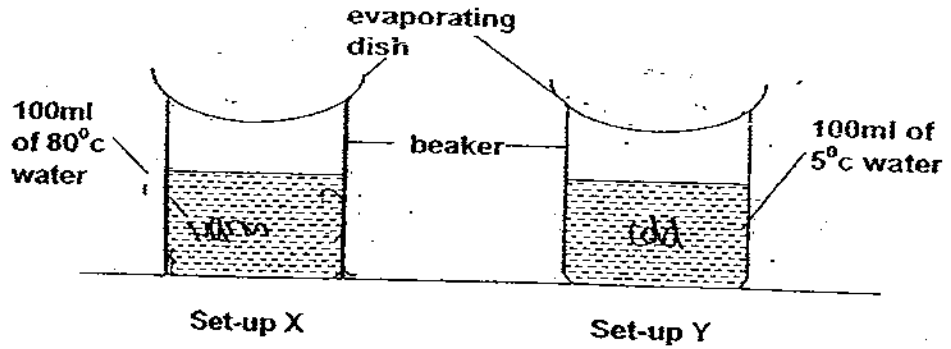
36. A beaker of ice was heated for 30 minutes. The graph below shows how the temperature of the contents in the beaker varies with time.



Based on the graph above, complete the table below. (2 marks)

Time (min)	Content in beaker
	Ice
5	
15	
25	

37. The diagram below shows 2 beakers of water on a table.



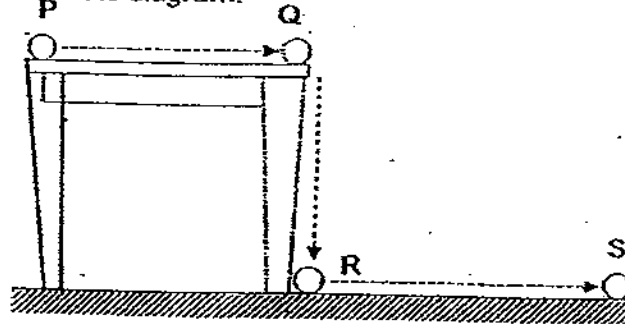
- (a) Draw the droplets of water observed on both set-ups above. (2 marks)
- (b) Explain the formation of the droplets in Set-up Y. (1 mark)

---



---

38. A ball bearing rolls from position P on a table and eventually stops at S as shown in the diagram.

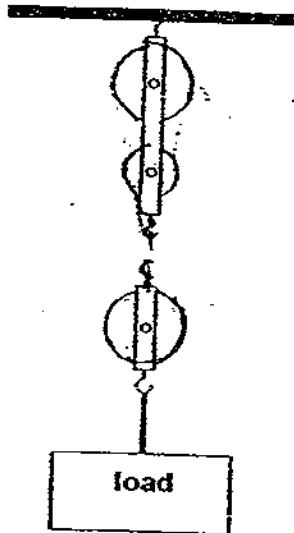


Four statements about the energies of the ball bearing are given below. Study the diagram above and indicate whether each of the statements is True, False or Not Possible to Tell. Put a tick(✓) in the correct box.

(2 marks)

Statement	True	False	Not Possible to tell
a The ball bearing has kinetic energy and potential energy at Q.			
b The kinetic energy increases from R to S.			
c The kinetic energy of the ball bearing at P to Q is more than at R to S.			
d The potential energy decreases from Q to R.			

39. Mr Lee who was standing on the ground floor, wanted to lift a box to the third floor.
- (a) In the diagram below, draw the position of the rope in the pulley system which Mr Lee used to make his work easier. (1 mark)



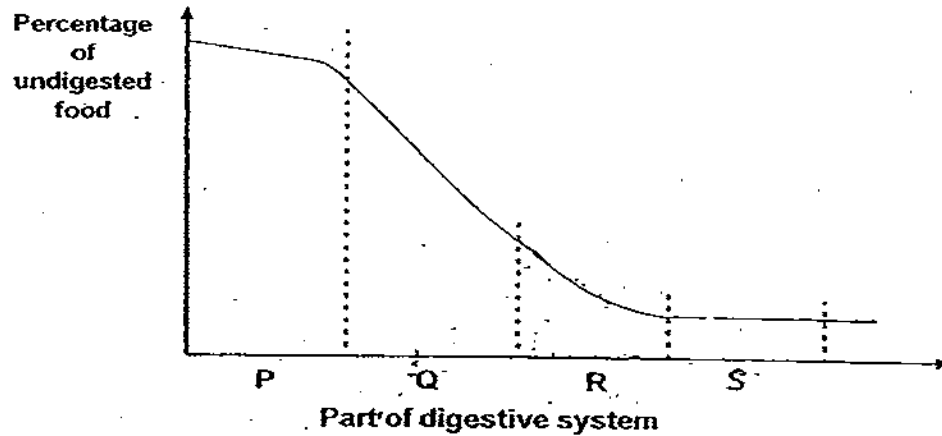
- (b) State two ways the pulley system helps to make work easier? (2 marks)

(i) \_\_\_\_\_  
\_\_\_\_\_

(ii) \_\_\_\_\_  
\_\_\_\_\_



40. The graph below shows the percentage of undigested food that passed through the digestive system of an adult.



- (a) Name the part of the digestive system that is best represented by Part Q of the graph? (1 mark)

---

- (b) Which part of the digestive system, P, Q, R and S would you find the most blood vessels? (1 mark)

---

- (c) Explain your answer in (b). (1 mark)

---

---

41. The table below shows some aquatic plants found in a pond.

Group A	Group B	Group C
cabomba	duckweed	arrowhead
elodea	water hyacinth	cattail
hydrilla	water lettuce	sedge

(a) Give suitable headings for Group A, B and C (2 marks)

Group A : \_\_\_\_\_  
 Group B : \_\_\_\_\_  
 Group C : \_\_\_\_\_

It was found that Group B plants grow uncontrollably throughout the pond.

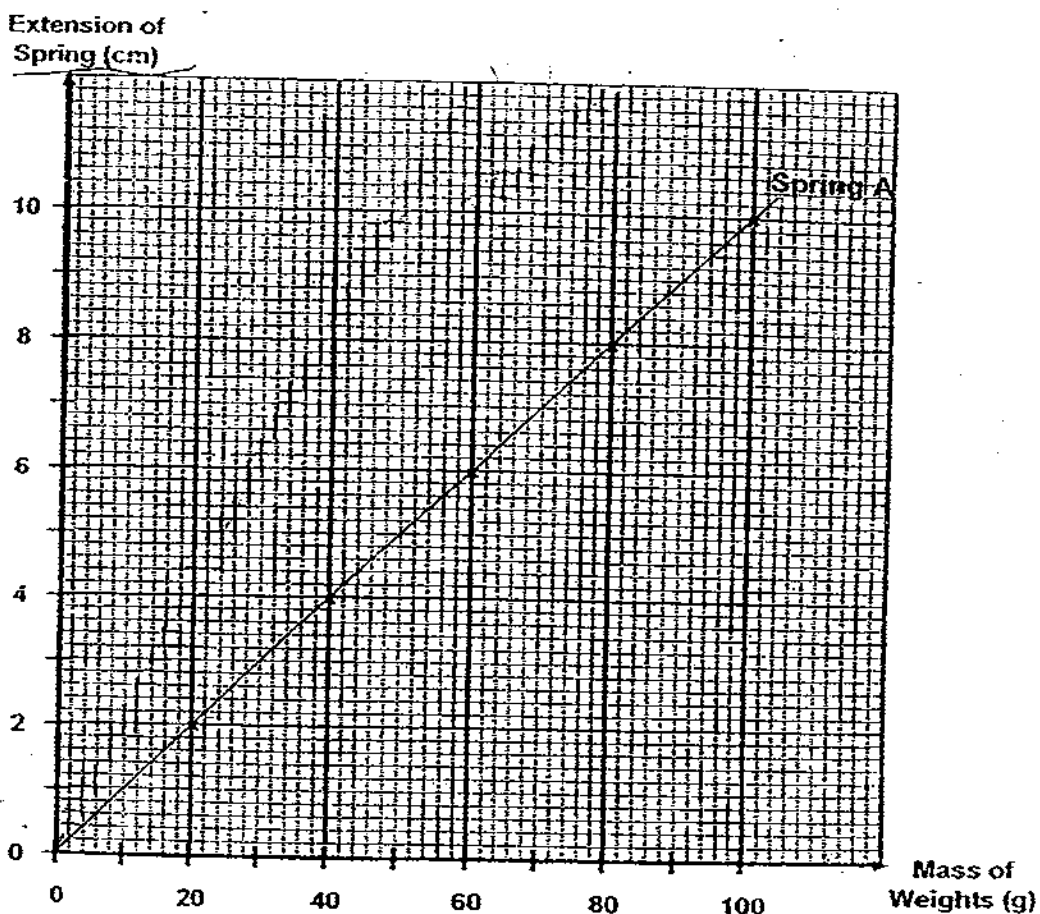
(b) Which group of plant would be affected most? Explain your answer. (1 mark)

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

(c) How will the situation affect the fishes in the pond? (1 mark)

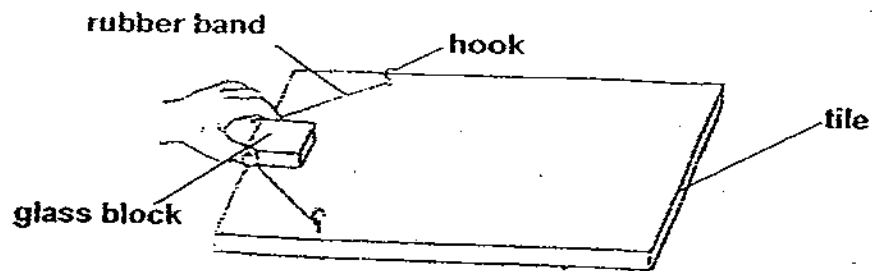
\_\_\_\_\_  
 \_\_\_\_\_

42. The graph below shows the extension of spring A, when different masses of weights are hung from it. The original length of spring A is 8cm



- (a) What is the length of spring A when 60g of weights are hung on it? (1 mark)
- 
- (b) The same set of weights was also added on Spring B. However the extension of Spring B is twice of Spring A's. Plot on the above graph the extension of Spring B. Label your graph "Spring B". (2 marks)

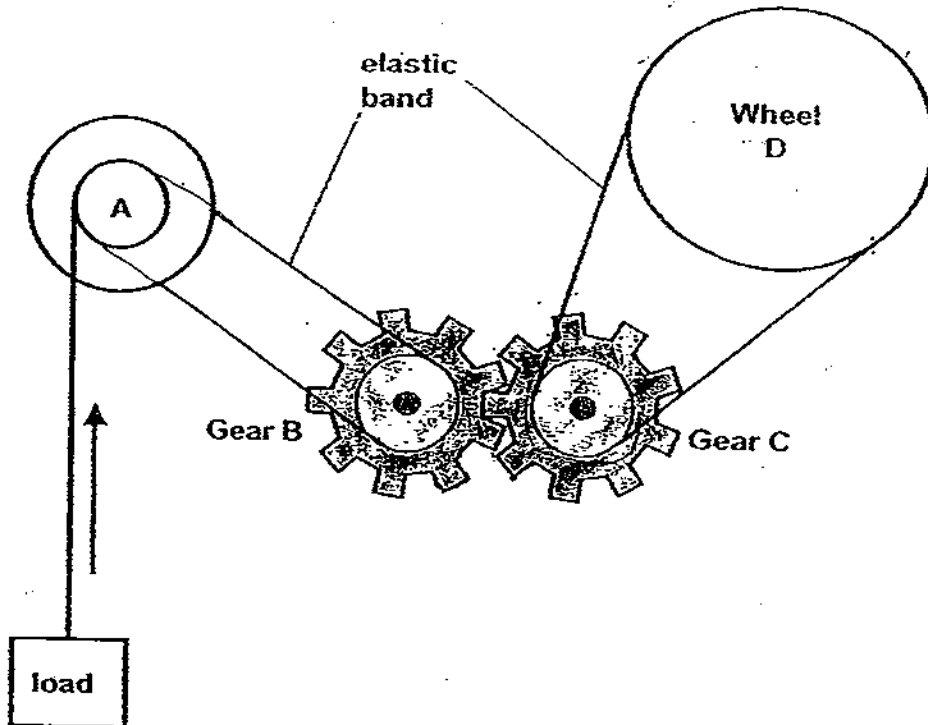
43. Richard wanted to test 4 anti-slip substances, G, H, I and J. He used a glass block to move over 4 similar tiles coated with the anti-slip substances. He pulled the glass block back to the same distance before releasing it. He recorded the results in a table as shown below.



Anti-slip substance	Average distance moved by the glass block (cm)
G	25
H	17
I	33
J	44

- (a) Which anti-slip substance would be best for applying on the tiles in the bathroom to prevent slipping? (1 mark)
- \_\_\_\_\_
- (b) Explain your choice in part (a). (2 marks)
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

44. Study the diagram and answer the questions below based on the diagram.



- (a) Draw an arrow at wheel D to show the direction it should turn in order to lift the load straight up. (1 mark)
- (b) Would the effort required to lift the load be greater than or less than the load? Explain your answer. (2 marks)

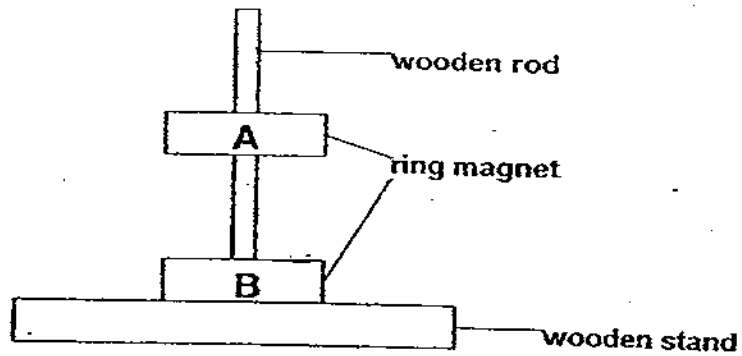
---

---

---

---

45. Two identical ring magnets, A and B were slotted through a wooden rod on a stand as shown in the diagram below. The two magnets did not touch each other.



- (a) Explain the above observation of the two magnets. (1 mark)

---

---

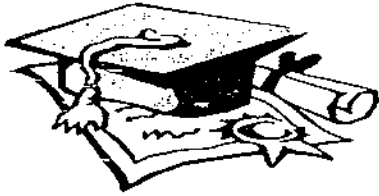
- (b) What would you observe if a heavy ring weight was placed on the ring magnet A by slotting it through the wooden rod? Explain your observation. (1 mark)

---

---

—————END OF PAPER—————

Setters: Mr Jonathan Goh  
Mdm Chia Li Hoon



# ANSWER SHEET

EXAM PAPER 2009

SCHOOL : NANYANG PRIMARY SCHOOL  
SUBJECT : PRIMARY 6 SCIENCE

TERM : SA 1



Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
1	4	1	1	3	2	4	2	4	4	3	4	4	1	3	3	4

Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
2	2	3	3	3	4	1	1	3	4	2	4	2

31)a)The time taken for the water to boil would be faster.

b)The wire gauze is a good conductor of heat, thus the time taken to boil the water would be faster as it is able to transfer heat to the water quickly.

32)a)The leaves of the plants.

b)Bird nest fern.

c)It is a non-flowering plant that is reproduce by spores.

33)a)To find out how the acid of amount of acid in water-affect the guppies.

b)It is a control to compare the result with the other set-ups.

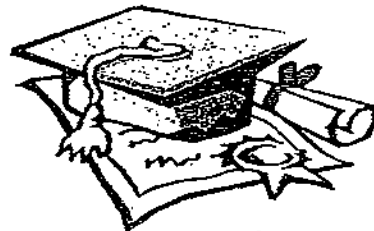
c)Guppies can't survive at the acidity of 4 the higher the acid, the lower the guppies that can survive.

34)i)F

ii)T

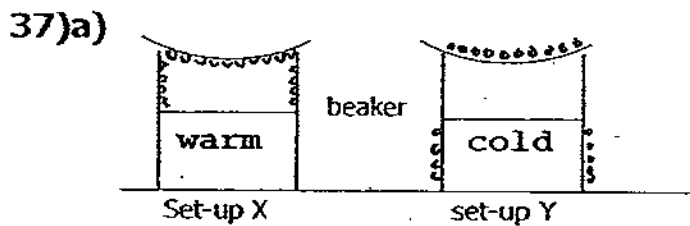
iii)T

iv)Not



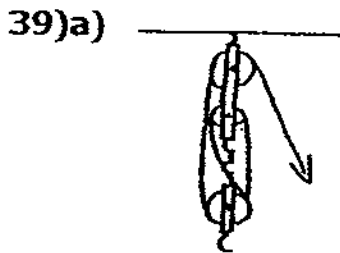
- 35)a) To reflect sun light at the egg and cook it.  
b) Light energy  $\rightarrow$  heat energy.

- 36) 0 --- Ice  
5 --- ice and water  
15 --- water  
25 --- boiling water



- b) The surrounding water vapour touches the beaker, the cold water cause the water vapour condense and became water droplets.

- 38)a) T b) F c) Not d) T



- b) i) The effort needed is lesser.  
ii) The load moves in a opposite direction of the effort.

- 40)a) Stomach.  
b) R  
c) Digestion end in R and absorb digested food into the blood stream.





41)a)A: Submerged plants.

B: Floating.

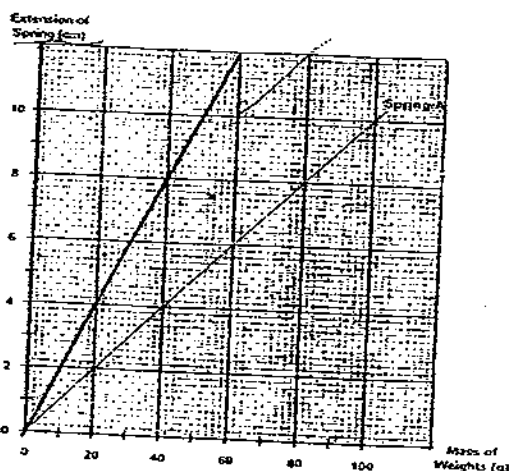
C: Partially submerged.

b)Group A. As the plants in group B floats, it blocked the sunlight and there will no sunlight for group A to photosynthesis and they will die.

c)When all the plants in group A died, there will be no food for the fishes and their population would also decrease not enough oxygen, fish die.

42)a)14cm

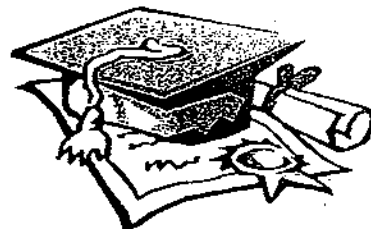
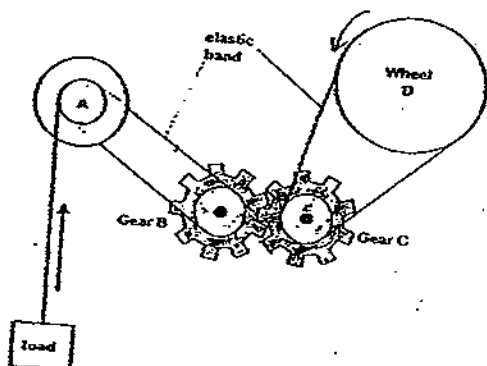
b)



43)a)H

b)H has the most friction as the glass block moved the least when H is applied. Thus, this will prevent people from slipping.(surface) between the feet and the tile.

44)a)



- 44) b) Effort will be lesser.  
1) Wheel D is the biggest.

45) a) The like poles of the ring magnet repel each other thus pushing magnet A up.

b) The magnet will be pushed down as the ring weight is heavier than the magnet.

