Pei Chun Public School
Semestral Assessment 1 – 2012
Science
Primary 6

Name : _____ ( ) Date : 10 May 2012

Class : Pr. 6 ( )

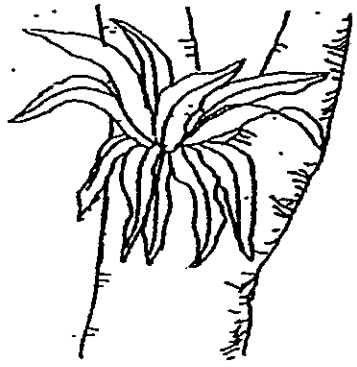
Science Teacher : _____ Time : 1h 45 min

Section A (25 × 2 marks)
For questions 1 to 25, choose the most suitable answer and shade its number (1, 2, 3 or 4) on the Optical Answer Sheet (OAS) provided.

1. Gopal observed different types of plants and recorded the data as shown in the table below.

Type of plants	Observations made
A	low-growing, root-like structures
B	spores, roots, stems and leaves
C	seeds enclosed in fruit, flowers, roots, stems, leaves
D	naked seeds, needle or scale-like leaves, roots, stems seed in cones

The diagram below shows a fern that grows on a tree.



Based on the information above, which type of plant is the fern likely to be?

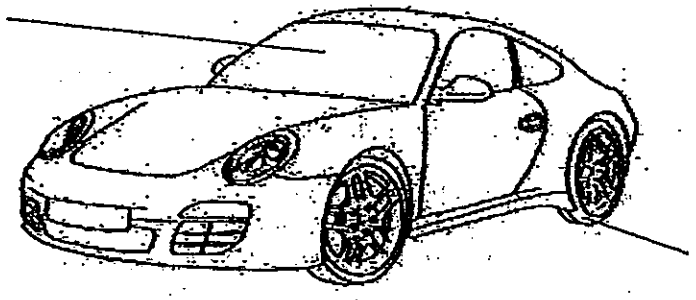
(1) A
(2) B
(3) C
(4) D

( )

2. Amy observed four materials, P, Q, R and S, and recorded her observations in the table below.

Material	Waterproof	Transparent	Flexible
P	✓	✓	
Q	✓	✓	✓
R	✓		✓
S			✓

The diagram below shows a car.



Based on the information above, which of the following materials is most suitable for making parts Y and Z?

	Part Y	Part Z
(1)	R	P
(2)	P	S
(3)	Q	S
(4)	P	R

( )

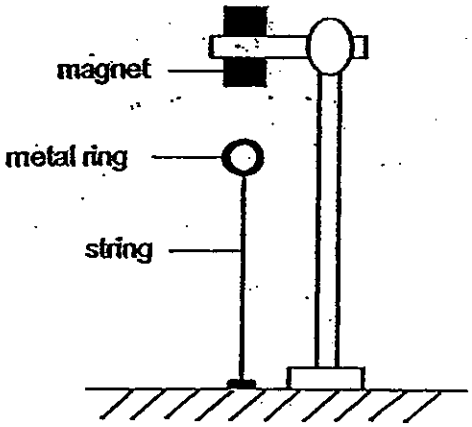
3. Substance J freezes at 25°C and boils at 350°C.

Which of the following shows correctly the states of substance J at 10°C and at 230°C?

	State of substance J at	
	10°C	230°C
(1)	liquid	solid
(2)	liquid	gas
(3)	gas	liquid
(4)	solid	liquid

( )

4. Peter clamped a magnet as shown below.



A metal ring, tied to the table by a string, was found to remain suspended in the air.

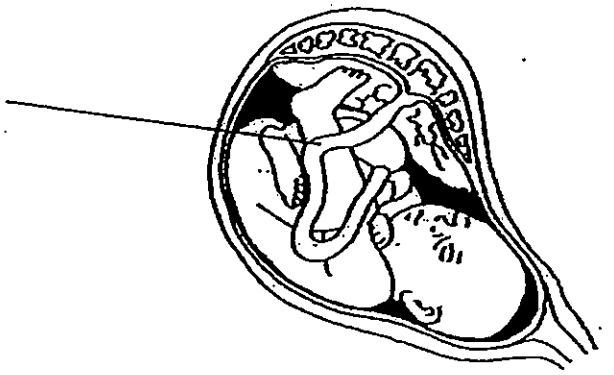
Which of the following statements about the metal ring are correct?

G : The metal ring is repelled by the magnet
H : The metal ring is attracted by the magnet.
J : The weight of the metal ring is less than the magnetic force acting on it.
K : The weight of the metal ring is greater than the magnetic force acting on it.

(1) G and J
(2) G and K
(3) H and J
(4) H and K

( )

5. The diagram below shows a developing baby in a woman's body.
M is part of the human reproductive system.



Which other system can M belong to?

(1) skeletal system
(2) digestive system
(3) muscular system
(4) circulatory system

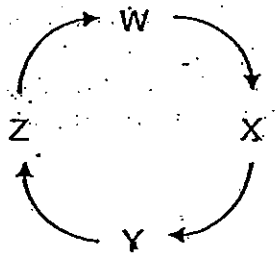
( )

6. The following statements describe the different stages in the life cycle of a butterfly.

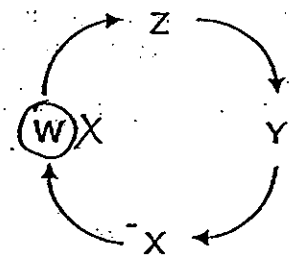
Stage W : adult emerges with wings last
Stage X : feed on its eggshell and leaves 1st larva
Stage Y : found on the underside of the leaves feeding 2nd
Stage Z : pupa found attached upside down on a twig without any visible activity 3rd

Which of the following shows the correct order of the different stages in the butterfly's life cycle?

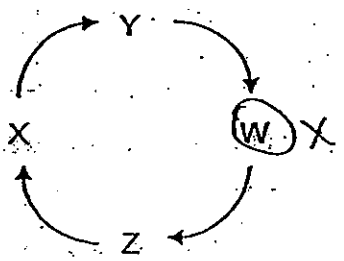
(1)



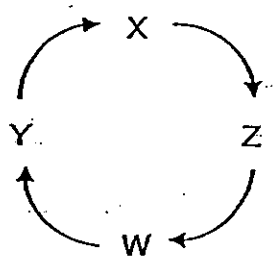
(2)



(3)



(4)



(1 x (4)

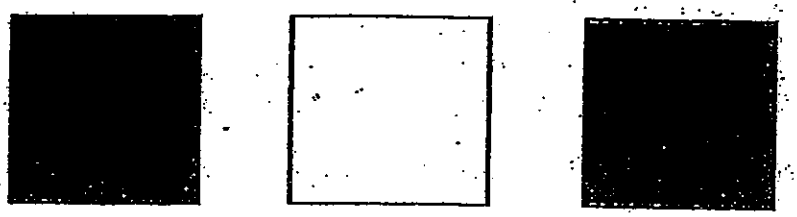
7. Which of the following correctly shows the energy changes that take place when a battery-operated torch is switched on?

(1) potential energy ⟶ (light energy + heat energy)
(2) (electrical energy) ⟶ (light energy + heat energy)
(3) potential energy ⟶ electrical energy ⟶ light energy + heat energy
(4) potential energy ⟶ electrical energy ⟶ light energy ⟶ heat energy

(3/)

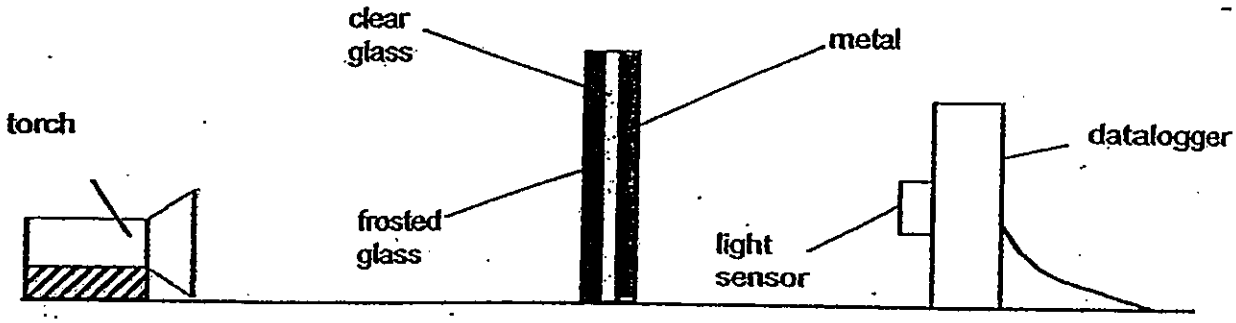
battery →
cpe

8. Gita has three sheets made of different materials as shown below.



frosted glass clear glass metal

She placed the frosted glass between a torch and a light sensor connected to a datalogger and recorded the amount of light detected by the sensor. Next, she repeated her experiment by attaching the clear glass behind the frosted glass. Lastly, she repeated her experiment again by placing the three sheets together as shown below.

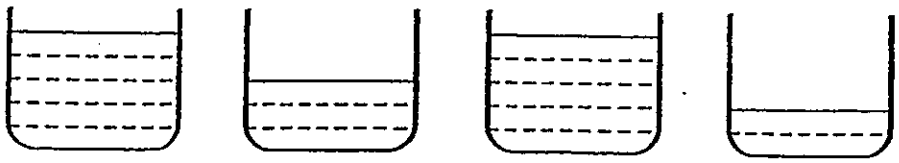


Which of the following most likely represents the results of her experiment?

	Amount of light recorded (lux)		
	Frosted glass only	Frosted glass and clear glass	Frosted glass, clear glass and metal
(1)	300	100	0
(2)	300	300	0
(3)	300	400	0
(4)	300	400	200

( )

9. The diagrams below show four beakers of water.



beaker A 50°C beaker B 80°C beaker C 80°C beaker D 90°C

Which of the following beakers contains the most heat?

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

( )

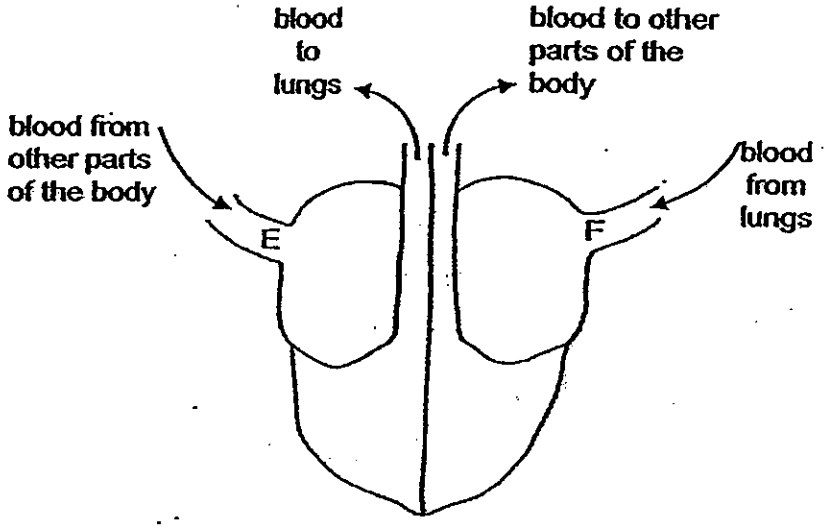
10. Which of the following statements about the plant transport system are true?

J: The food-carrying tubes can only transport food in the upwards direction.
K: The water-carrying tubes can only transport water and minerals in the upwards direction.
L: The food-carrying tubes can transport food in either upwards or downwards directions.
M: The water-carrying tubes can transport water and minerals in either upwards or downwards directions.

(1) J and K
(2) K and L
(3) J and M
(4) L and M

( )

11. The diagram below shows how blood flows within a human heart.



Which of the following describes the blood found in each of these parts?

	E	F
(1)	high in carbon dioxide	high in oxygen
(2)	high in oxygen	high in carbon dioxide
(3)	high in carbon dioxide	high in carbon dioxide
(4)	high in oxygen	high in oxygen

( )

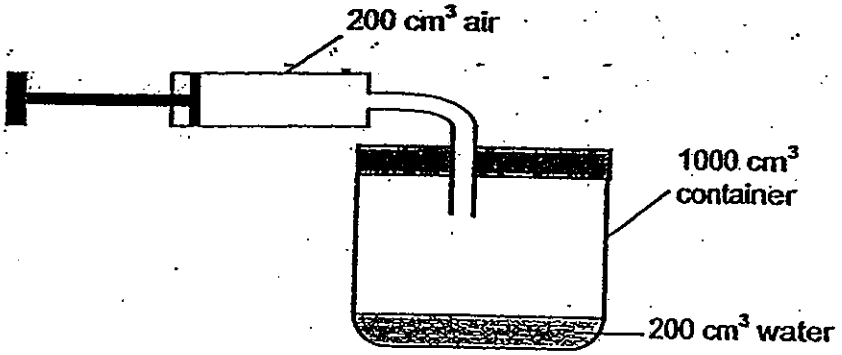
12. Substance Y has to pass through various parts of a plant cell before reaching the nucleus.

Which of the following shows the order in which substance Y has to pass through?

(1) cell wall → cell membrane → cytoplasm
(2) cell membrane → cell wall → cytoplasm
(3) cytoplasm → cell membrane → cell wall
(4) cell wall → cytoplasm → cell membrane

( )

13. The diagram below shows an air pump connected to a container that is partly filled with water.

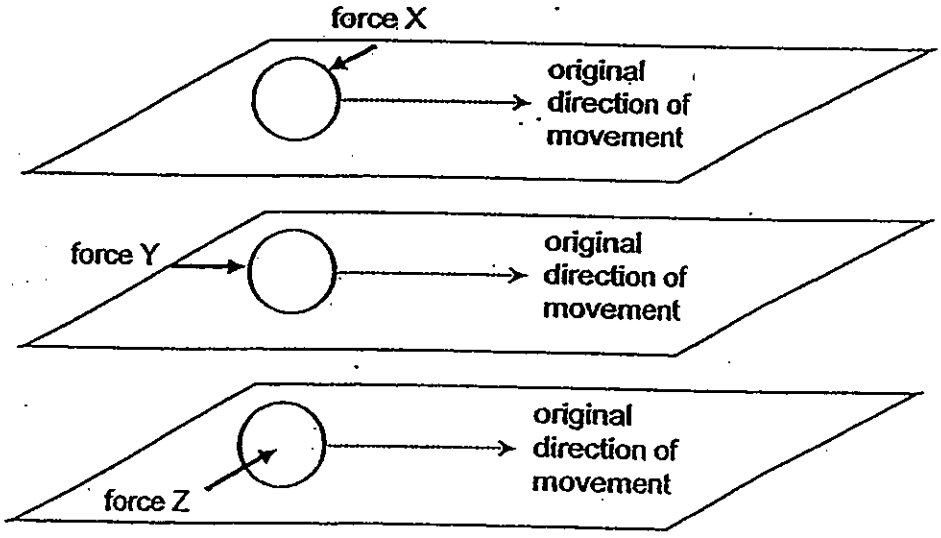


Siti pumped air into the container by pushing in the plunger completely three times. What would the volume of air in the container be?

(1) 600 cm^3
(2) 800 cm^3
(3) 1000 cm^3
(4) 1400 cm^3

( )

14. Rahim wanted to find out the effects of force on the movement of an object. He applied three forces, one at a time, to a moving ball. The direction of each applied force is indicated by the arrow.

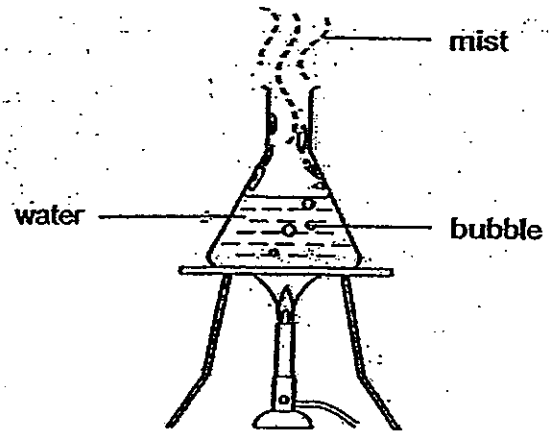


Which of the following shows correctly the effects of the three forces on the movement of the ball?

	Force X	Force Y	Force Z
(1)	move slower	change direction	move faster
(2)	change direction	move faster	change direction
(3)	move faster	change direction	move slower
(4)	change direction	move slower	change direction

( )

15. Xiao Mei carried out an experiment as shown below.



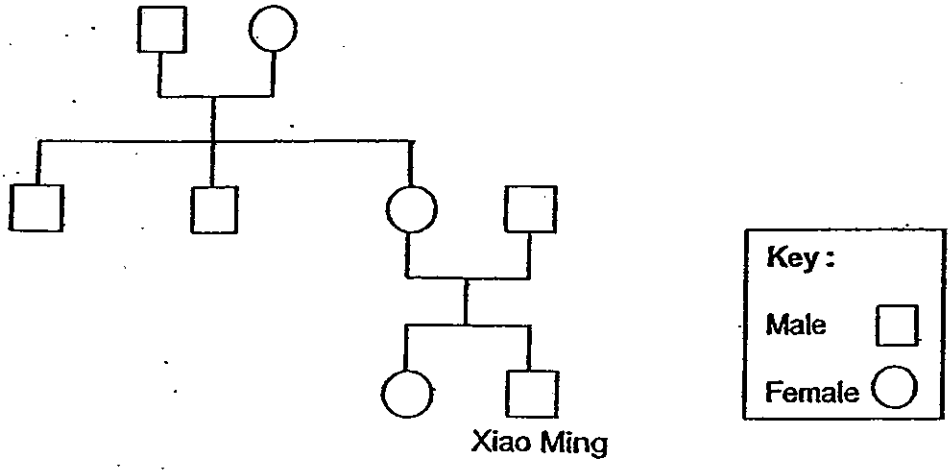
When the water started to boil, she observed that water droplets were formed on the sides of the flask.

After some time, no water droplets were formed on the inside of the flask because _____.

(1) the temperature of the mist was too high for water droplets to form
(2) the temperature of the water was too high for water droplets to form
(3) the temperature of the flask became too low for the water vapour to condense on it
(4) the temperature of the flask became too high for the water vapour to condense on it

( )

16. The diagram below shows the family tree of Xiao Ming.



From the diagram above, how many children do Xiao Ming's grandparents have?

(1) 6
(2) 2
(3) 3
(4) 4

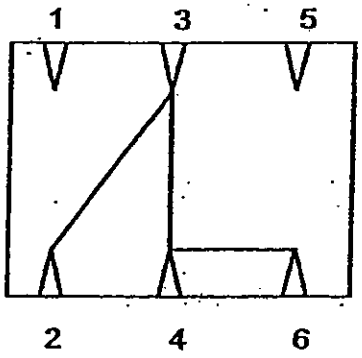
( )

17. A circuit card is tested with a circuit tester. The results are recorded as follow.

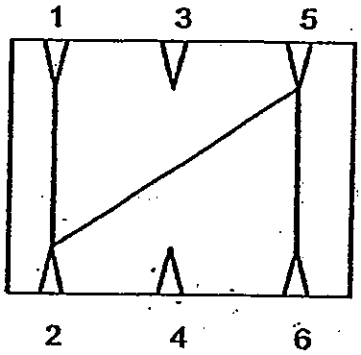
Clips tested	Bulb of circuit tester
1 and 2	lights up
2 and 6	does not light up
1 and 4	lights up
4 and 6	does not light up
2 and 5	lights up

Which diagram represents the circuit card that was tested?

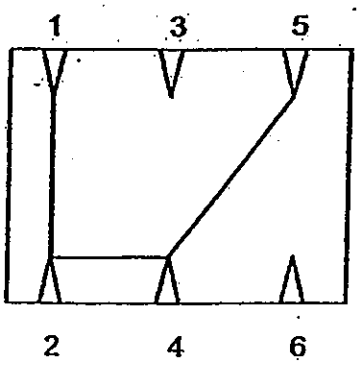
(1)



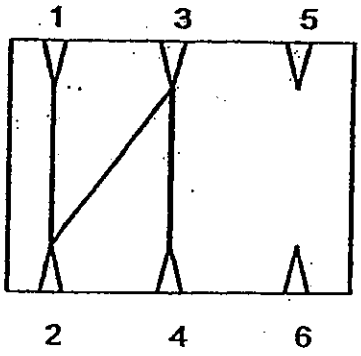
(2)



(3)



(4)



( )

18. The table below records the number of organisms that could be found near and in a pond community in half an hour.

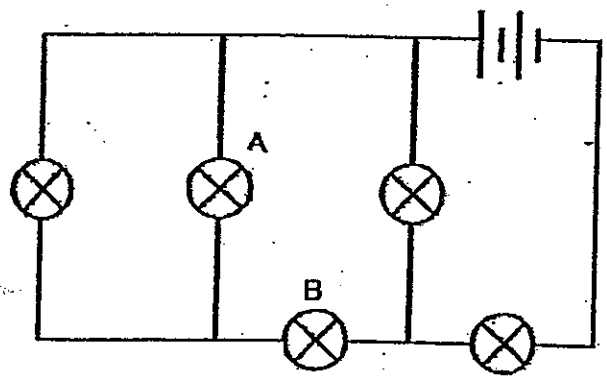
Organisms	Number of organisms
cattail	3
dragonflies	8
dragonfly nymphs	7
frogs	12
hydrilla	11
mosquitoes	20
mosquito larvae	15
tadpoles	23

How many populations could be found in the above community?

(1) 5
(2) 6
(3) 8
(4) 99

( )

19. The diagram below shows five lamps connected to two batteries. All the bulbs are lit.

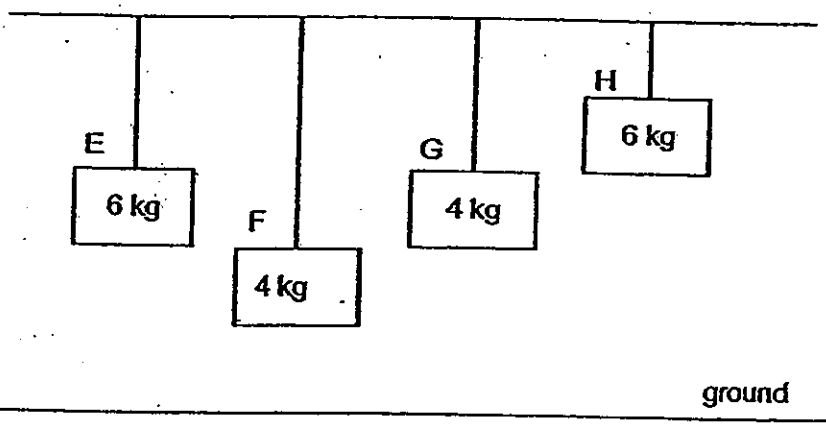


Which of the following shows correctly the number of bulbs that will remain lit in the circuit when bulb A or bulb B blows?

	Number of bulbs remaining lit	
	when only bulb A blows	when only bulb B blows
(1)	4	4
(2)	4	2
(3)	3	4
(4)	2	2

( )

20. Four objects, E, F, G and H, were suspended above the ground as shown below.



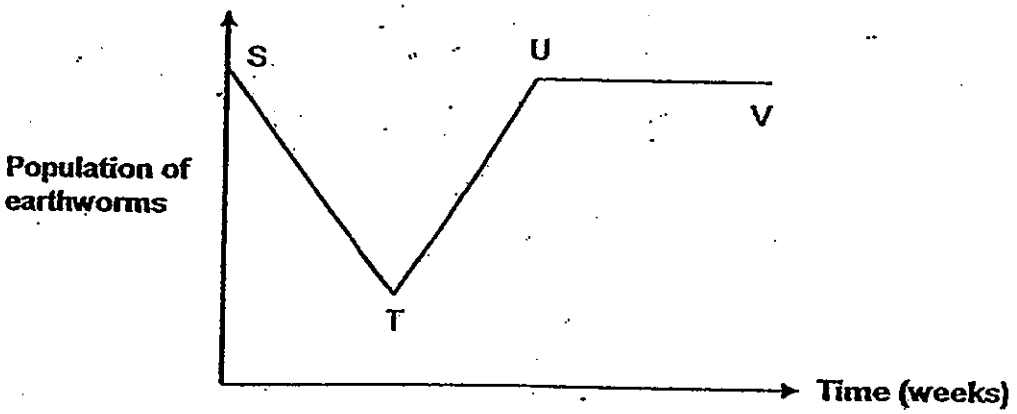
Which of the following statements are true?

W : Object H has more gravitational potential energy than object E.
X : Object E has more gravitational potential energy than object G.
Y : Object F and object G have the same amount of gravitational potential energy.
Z : When the string holding object F is cut, all its gravitational potential energy will change into kinetic energy only.

(1) W and X
(2) Y and Z
(3) W, X and Z
(4) X, Y and Z

( )

21. The graph below shows the population of earthworms over a period of time in a particular habitat.



What could have happened at point T?

(1) There was a drought.
(2) There were more dead leaves in the soil.
(3) Some woodlice were introduced into the habitat.
(4) Some chickens were introduced into the habitat.

( )

22. A study was conducted on organism X. It was discovered that organism X prefers to live in dark and dry areas. It can even survive up to one month without water.

Study the table as shown below.

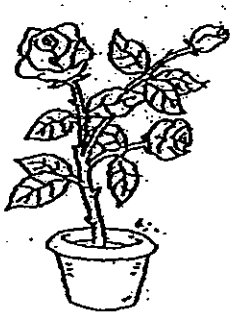
Habitat	Amount of sunlight received daily	Amount of rainfall per year (cm)
A	low	30
B	low	150
C	high	20
D	medium	100

Based on the information above, in which habitat will organism X most likely be found?

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

( )

23. Raja wants to find out the type of soil that is most suitable for growing a rose plant as shown below.



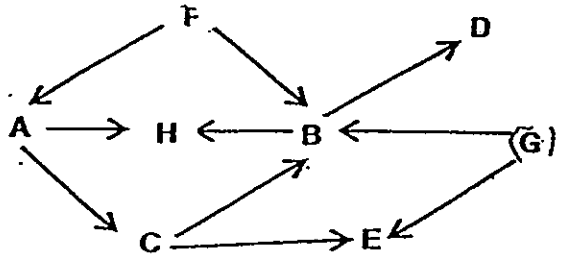
Study the table as shown below.

Pot	Type of soil	Amount of soil (cm^3)	Amount of water (ml)
1	sandy	400	100
2	sandy	900	200
3	clayey	400	50
4	clayey	900	200
5	garden	400	150
6	garden	900	200

Which three pots should Raja compare in order to draw a correct conclusion?

(1) pots 1, 3 and 5
(2) pots 1, 3 and 6
(3) pots 2, 3 and 5
(4) pots 2, 4 and 6

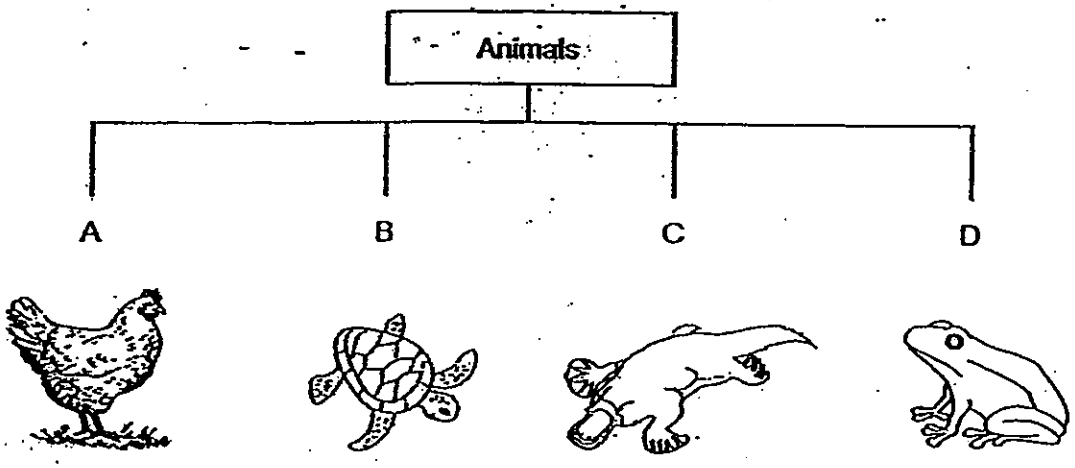
24. The diagram below shows a food web.



Based on the food web above, how many food producer(s) are there?

(1) 1
(2) 2
(3) 3
(4) 4

25. The classification chart below shows how some animals can be grouped according to their body coverings.



In which group would you put the penguin in?

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

( )

For Questions 26 to 30, please refer to Booklet K.

End of Section A

Pei Chun Public School
Semestral Assessment 1 – 2012
Science
Primary 6

Name: _____ ( )

Class: Pr. 6 ( )

Date: 10 May 2012

Time: 1 h 45 min

Science Teacher: _____

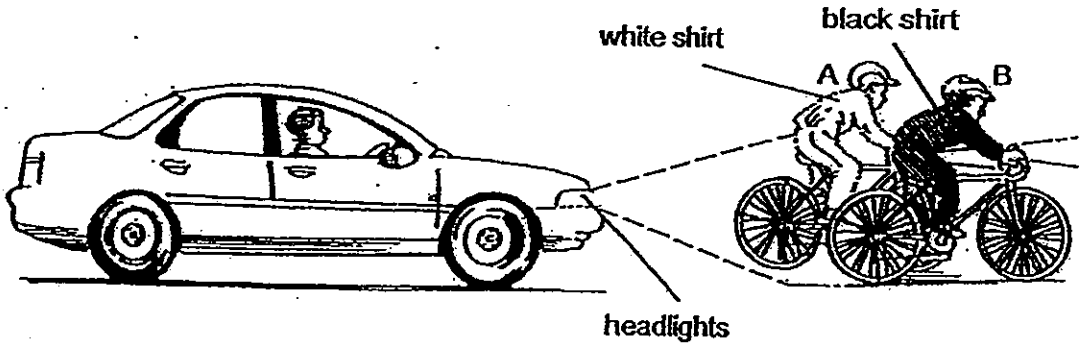
Parent's signature: _____

Section A	60
Section B	30
Booklet K (excludes MCQs)	10
Total	100

Section B (30 marks)

For questions 31 to 40, write your answers in the spaces provided.

31. Two cyclists, A and B, are cycling along a dark stretch of road at night. Cyclist A is wearing a white shirt while Cyclist B is wearing a black shirt. A man is driving behind the two cyclists. He has switched on the headlights and the light shines on the cyclists as shown below.



a) How is the driver able to see cyclist A?

_____

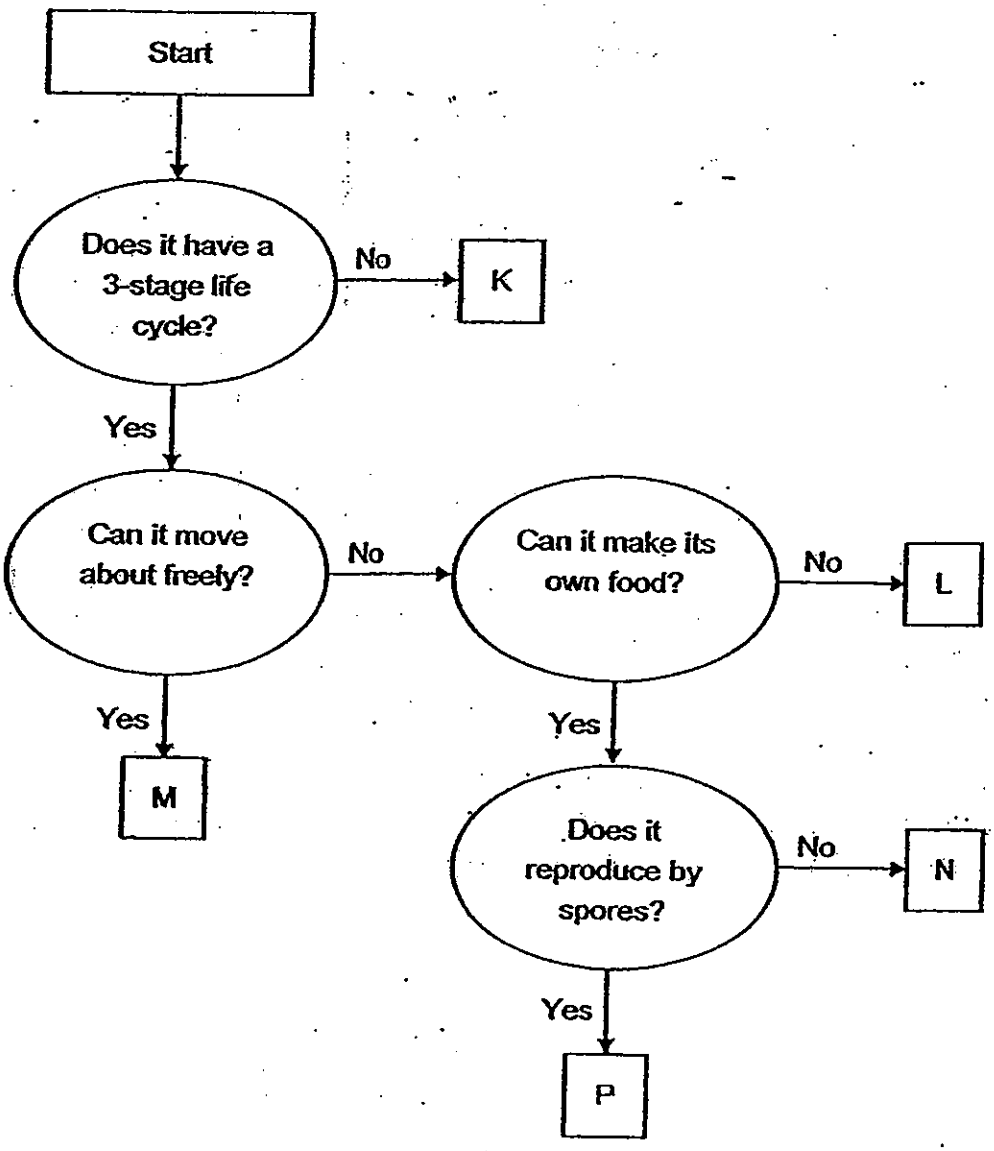
_____

b) Explain why it is dangerous for cyclist B to wear a black shirt at night [1]

_____

_____

32. Study the flowchart carefully.



a) State two characteristics of organism N. [1]

_____

_____

b) Based on the information above, state one similarity and difference between organism M and organism P. [2]

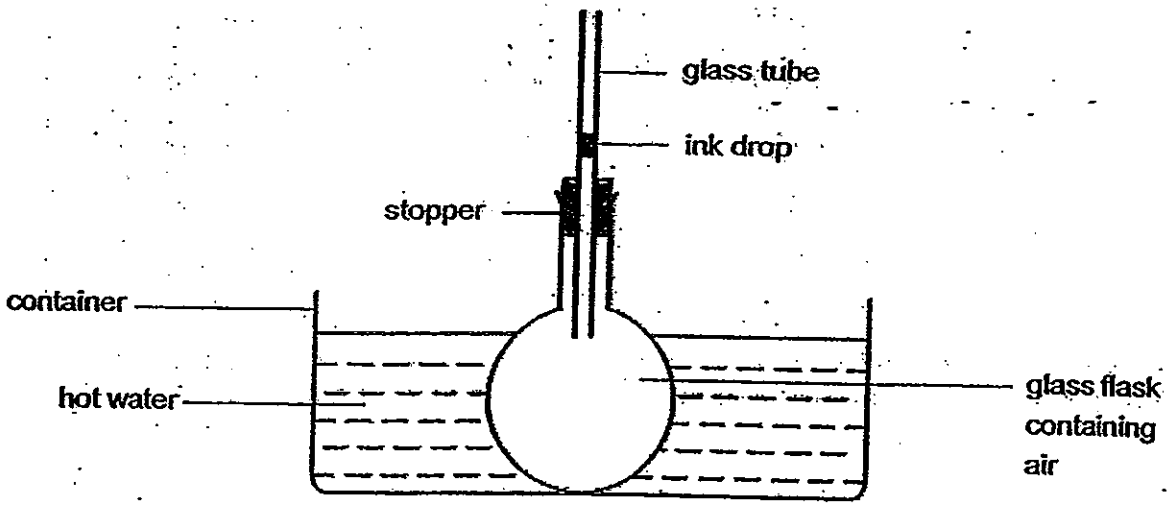
Similarity: _____

_____

Difference: _____

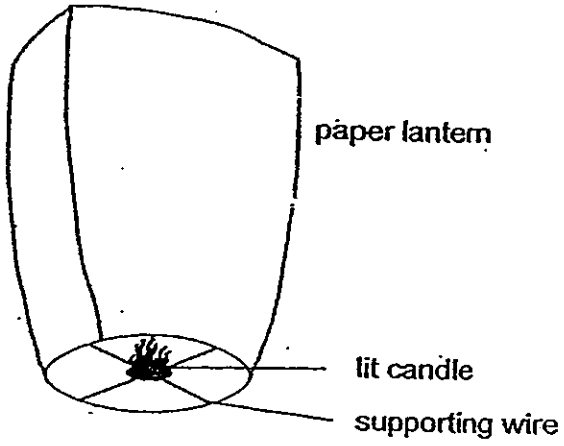
_____

33. Azman carried out an experiment as shown below.



a) When the flask was placed in the container of hot water, the ink drop in the glass tube dropped a little and then rose. Explain why this happened. [2]

b) The diagram below shows a traditional lantern powered by a candle flame.
The top part of the lantern is sealed while the bottom part of the lantern is opened.



The lantern is able to float in the air when the candle is lit.
Explain what causes the lantern to float. [1]

34. The following table shows the rate of blood flow in the blood vessels in various parts of a person's body under different conditions of exercise.

	Rate of blood flow in blood vessels (cm^3 / min)		
	At rest	Walking	Sprinting
Muscle	1200	4500	12500
Stomach	1400	1100	600
Skin	500	1500	1900

a) Based on the information given in the table, give a reason why Richard's face turned red after he had sprinted for five minutes. [1]

b) Explain why the rate of blood flow in the muscle increased when the exercise became more strenuous. [2]

35. Our blood can be classified into four groups, namely, A, B, AB and O. Our blood type is determined by our parents' blood type. The table below shows the relationship between the parents' and their child's blood type.

Parents' blood type	Possible child's blood type	Not possible child's blood type
A and A	A or O	B or AB
A and B	A , B , AB or O	-
A and AB	A , B or AB	O
A and O	A or O	B or AB
B and B	B or O	A or AB
B and AB	A, B or AB	O
B and O	B or O	A or AB
AB and AB	A , B or AB	O
AB and O	A or B	AB or O
O and O	O	A , B or AB

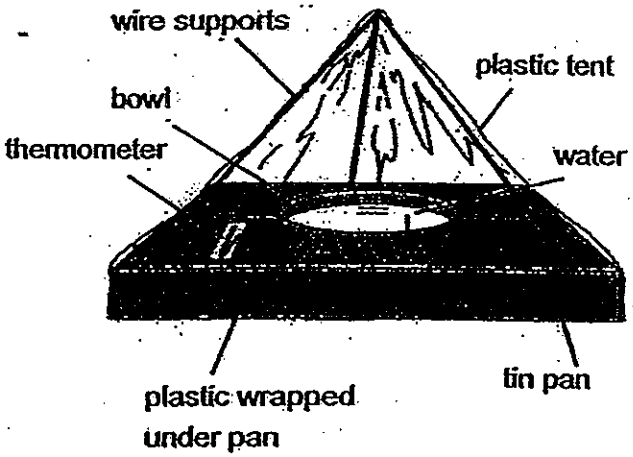
a) Based on the information above, if Grace's parents have the blood type of B and AB, which are the possible blood types that Grace will most likely have? [1]

_____

b) Which of the following are characteristics that we can inherit from our parents? Put a tick (✓) in the appropriate boxes. [1]

Characteristics	
long or short hair	
presence of dimples	
weight of a person	
attached or detached earlobe	

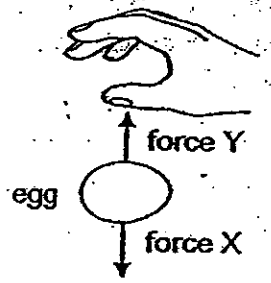
36. Jenny set up a model to demonstrate how water on Earth is recycled by natural processes. She placed a bowl of water in an empty tin pan and covered the pan with a clear plastic tent as shown below.



a) Suggest a reason why the model had to be sealed. [1]

b) She left the model by an open window for a day and found some water collected in the tin pan. Describe how the water in the tin pan was obtained. [3]

37. Ali dropped an egg from a height of 8 m. Two forces, X and Y, are acting on the falling egg as shown below. The egg broke when it hit the ground.

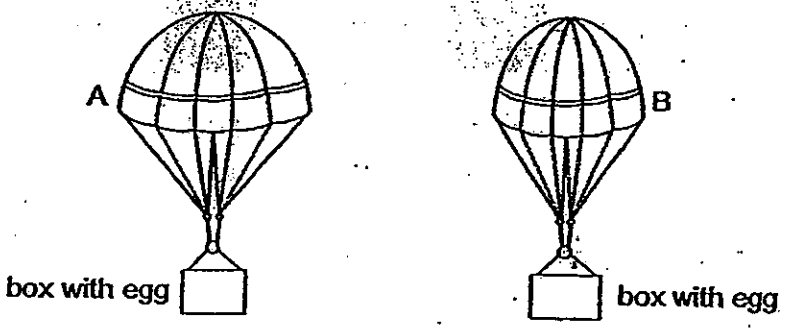


a) Identify force X and force Y [1]

Force X: _____

Force Y: _____

b) Ali placed two similar eggs into two identical boxes. He attached a box each to parachutes A and B and dropped them from the same height. He recorded the time taken for the parachutes to reach the ground.



	Time taken for parachute to reach the ground			
Parachute	First try (s)	Second try (s)	Third try (s)	Average (s)
A	85	90	80	85
B	48	40	41	43

After the three tries for each parachute, he observed that the egg in one of the boxes was not broken.

Based on the results above, which of the parachute, A or B, enabled the egg to remain unbroken after the fall? Explain your answer. [2]

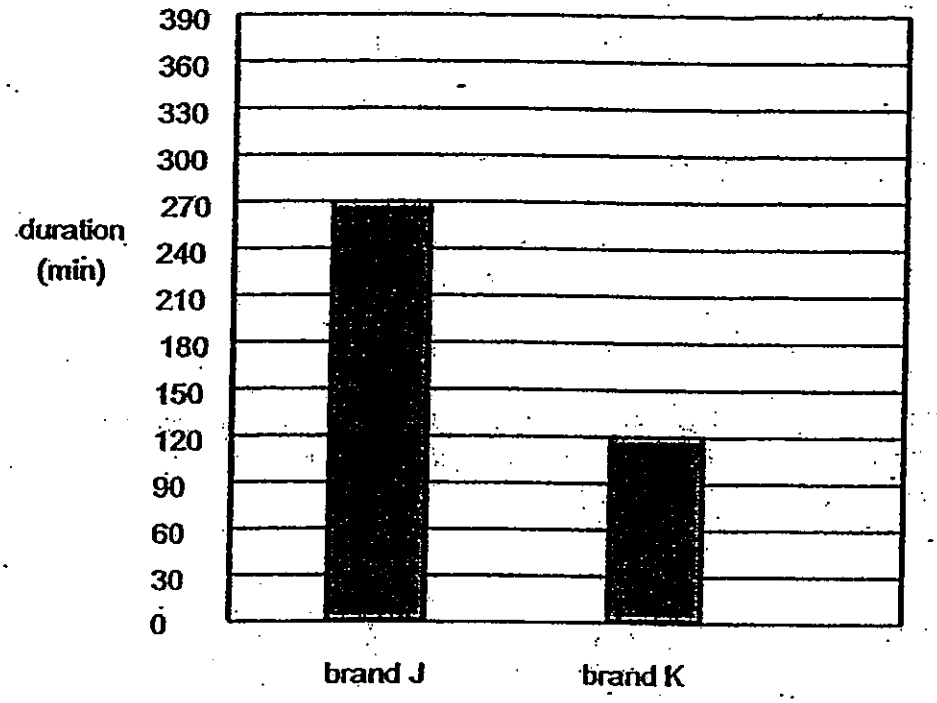
_____

_____

_____

_____

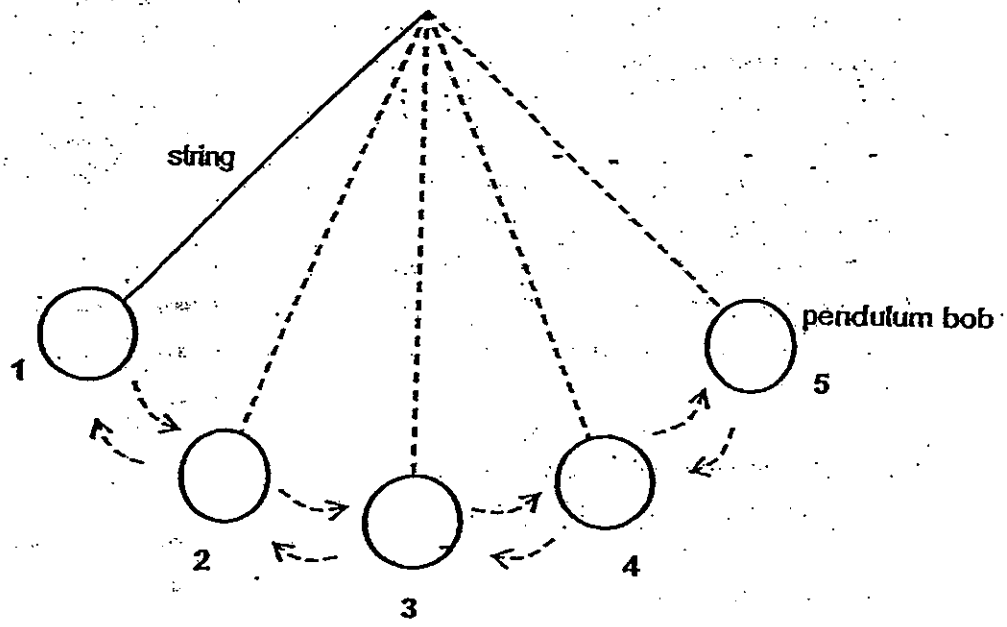
38. Xiao Yu wanted to find out if using batteries of different brands in a torch would affect the duration that the torch could stay lit. She placed two brand J batteries in a torch, switched on the torch, and recorded the duration that the torch stayed lit. She repeated the experiment with brand K batteries and the same torch. She recorded the data on the bar graph shown below.



a) What could Xiao Yu conclude from her experiment? [1]

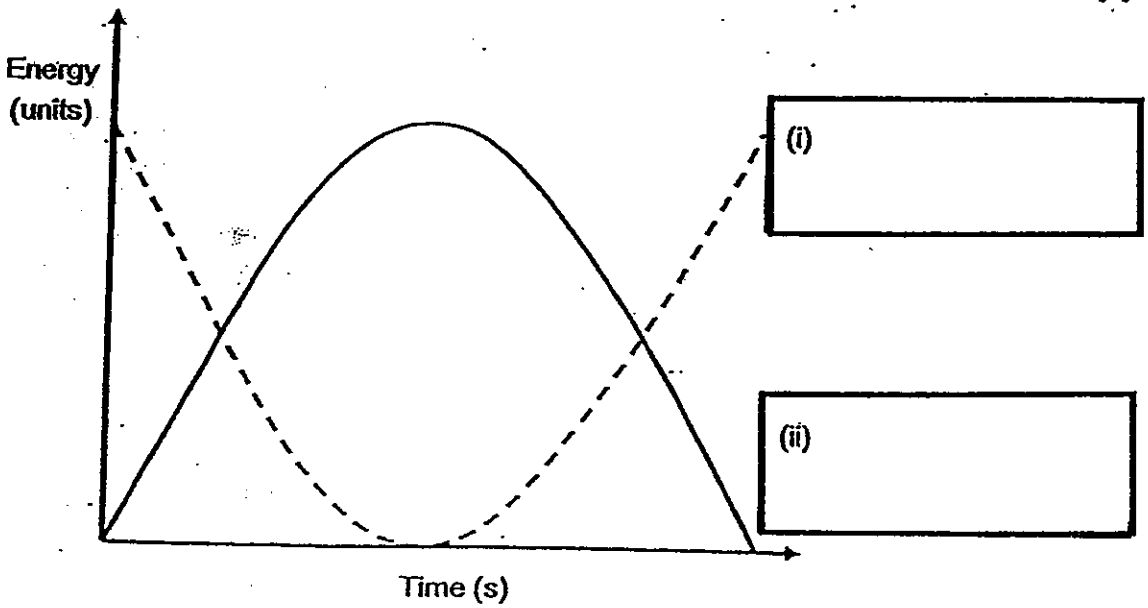
b) Xiao Yu's classmate, Shawn, looked at the graph and commented that the torch shone more brightly with brand J batteries than with brand K batteries.
Do you agree with Shawn? Explain why. [1]

39. The diagram below shows a pendulum bob at five different positions. The pendulum bob was released at position 1.



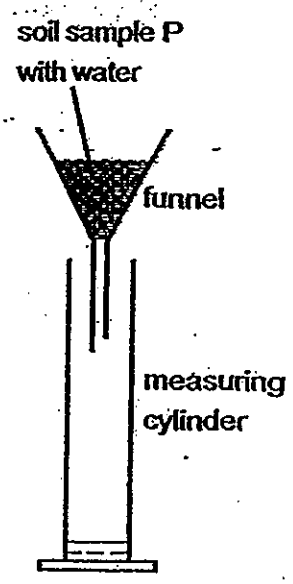
a) At which positions, 1, 2, 3, 4 or 5, would the pendulum have the greatest gravitational potential energy? Give a reason for your answer. [2]

b) The graph below shows how the gravitational potential energy and kinetic energy of the pendulum changes as it moves from position 1 to 5. Label the curves to indicate the type of energy it represents. [2]



40. Nisha carried out an experiment using the steps shown below.

Step 1:	Place a piece of filter paper in a funnel and fill the funnel with soil sample P.
Step 2:	Place the funnel of soil over an empty measuring cylinder.
Step 3:	Pour 50 cm^3 of water slowly into the funnel, making sure that the water does not overflow.
Step 4:	Measure and record the volume of water collected in the measuring cylinder after ten minutes.
Step 5:	Repeat step 1 to 4 with soil sample R and Q respectively. The one with the most amount of water in the measuring cylinder will be the soil sample which retains the least amount of water.



The table below shows the results of her experiment.

Type of soil	Sample P	Sample Q	Sample R
volume of water collected after 5 minutes (cm^3)	5	45	30

a) What is the aim of her experiment? [1]

b) Based on the results, which type of soil is the most suitable for a plant that grows well in a dry and sandy habitat? Give a reason for your answer. [2]

c) Which of the following variables must Nisha keep the same to ensure a fair test? Put a tick (✓) in the appropriate boxes. [1]

size of funnels used	
mass of soil sample placed in each funnel	
volume of water collected in each measuring cylinder	

For Questions 41 to 44, please refer to Booklet K.

End of Section B

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

31a) The light from the headlights shines on cyclist A and is reflected to the driver's eyes.
31b) Black shirt does not reflect light.

32a) i) It does not reproduce by spores. ii) It can make its own food.
32b) Similarity: Organism M and organism P have a 3-stage life cycle.
Difference: Organism M can move about freely but organism P cannot.

33a) The flask gains heat and expands so there is more space. The air in the flask gained heat and expanded.
33b) The air in the paper lantern gains heat and rises.

34a) When he is sprinting, the rate of blood flow in blood vessels in his skin increases, that is why his face turned red.
34b) More oxygen and digested food is transported to the muscle through the blood flow, so respiration can take place to have more energy.

35a) A, B or AB.
35b) Presence of dimples √
Attached or detached earlobe √

36a) To prevent water vapour from escaping.
36b) Water in the bowl evaporated to form warm water vapour. The warm water vapour touches the cooler surface of the plastic tent, loses heat and condenses to form tiny water droplets. The water droplets flowed down the side of the plastic tent due to gravity.

37a) Force X: Gravity Force Y: Air resistance
37b) A. The time taken for parachute A to reach the ground is longer so it falls at a slower speed. There will be a lighter impact when the egg hits the ground.

38a) Using batteries of different brands in a torch would affect the duration that the torch could stay lit.
38b) No. The graph only shows the duration that the light in the torch could stay lit, but not how bright the light from the torch.

39a) Position 1 and 5. They are at the highest points.
39b) i) Gravitational potential energy. ii) Kinetic energy.

40a) To find out which soil sample retains the least amount of water.
40b) Sample Q. The volume of water collected after 5 minutes is the most.
40c) Size of funnels used √
Mass of soil sample placed in each funnel √