2021 PRIMARY 6 MID-YEAR EXAMINATION

Name : _____ ( )

Class : Primary 6 ( )

Date: 11 May 2021

Time: 9.30 a.m. - 11.15 a.m.

Duration: 1 hour 45 minutes

Parents's Signature: _____

SCIENCE

BOOKLET A

INSTRUCTIONS TO CANDIDATES

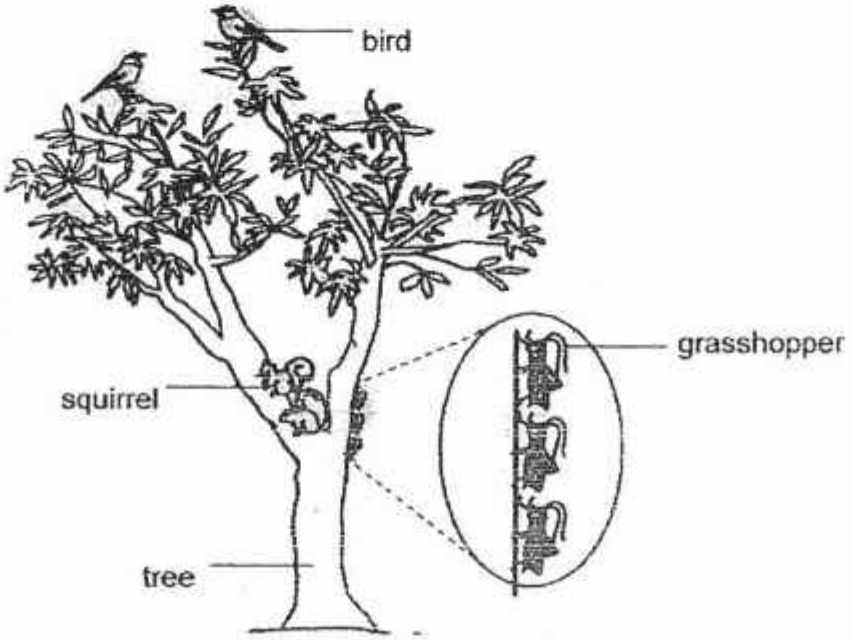
1. Write your name, class and register number.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answers on the Optical Answer Sheet (OAS) provided.

Booklet A (28 x 2 marks)

For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4) and shade your answer on the Optical Answer Sheet.

(56 marks)

1. The diagram below shows a tree habitat.



Which of the following shows the correct number of communities and number of populations in this tree habitat?

	Number of communities	Number of populations
(1)	1	3
(2)	1	4
(3)	3	3
(4)	4	4

2. Which of the following statements is true about the food made during photosynthesis?

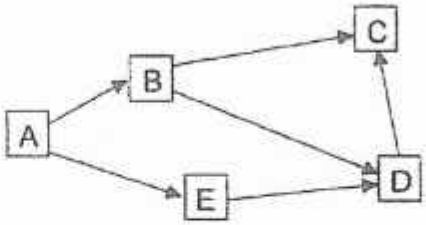
(1) Excess food can only be stored in the roots.

(2) Excess food made through photosynthesis is stored as starch.

(3) Food is absorbed from the soil when the plant carries out photosynthesis.

(4) Food made in the leaves is only transported to all parts of the plant above the roots.

Study the food web below and answer Questions 3 and 4.



3. Which one of the following is correct?

	Prey only	Predator only	Prey and Predator	Food Producer
(1)	C	B and E	D	A
(2)	B and D	A	E	C
(3)	B and E	C	D	A
(4)	B	C	D and E	A

4. Which of the following can be concluded from the above food web?

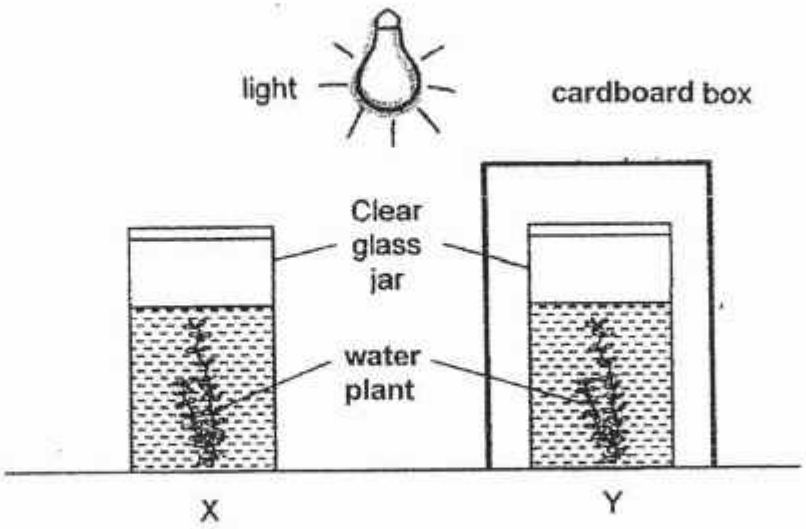
(1) B and D are plant-eaters.

(2) C is the only animal-eater.

(3) A is the only food producer.

(4) D is a plant-and-animal-eater.

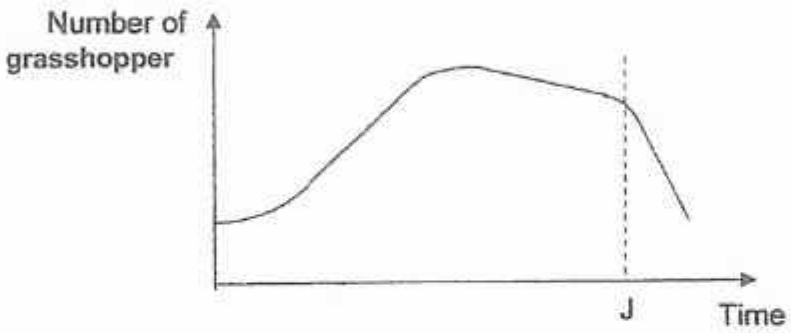
Gina carried out an experiment as shown below.



How will the amount of oxygen in the water change after a few hours?

	Amount of oxygen	
	X	Y
(1)	increase	no change
(2)	increase	decrease
(3)	decrease	increase
(4)	no change	increase

6. The graph below shows the number of grasshoppers in a field community.



What could have happened after point J that had caused the change in the number of grasshoppers?

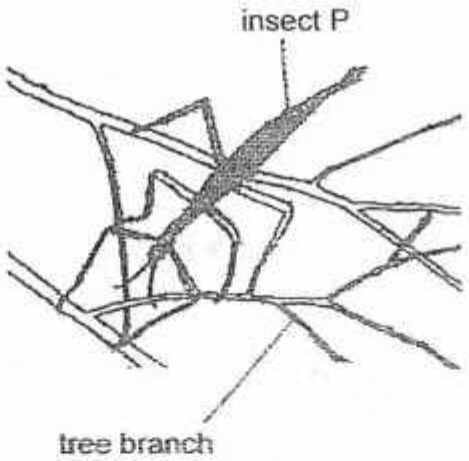
(1) Fertilizer was added to the soil.

(2) More grass was planted in the field.

(3) Grasshoppers reproduce more quickly.

(4) More predators of grasshoppers were released into the field.

7. The diagram below shows insect P on a tree branch.



Insect P feeds only on the leaves of tree branches. They are often eaten by birds and reptiles but do not hide from its predators. How does keeping very still on a branch help insect P in its survival?

(1) It helps the insect to find food.

(2) It helps the insect to attract mates.

(3) It prevents the insect from falling off a tree branch.

(4) It prevents the insect from being detected by its predators.

8. Which of the following is an example of behavioural adaptation?

(1) Wolves hunt together in packs.

(2) Moles have claws to dig the soil.

(3) Jellyfish have venom to sting its prey.

(4) Ducks have webbed feet to paddle in the water.

9. A population of W was introduced into a habitat. As a result, the population of X increased while the population of Y decreased. Which of the following food chains shows the correct food relationship between the organisms?

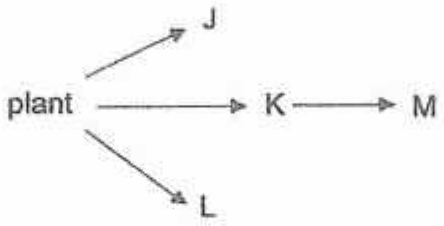
(1) Plant → X → Y → W

(2) Plant → X → W → Y

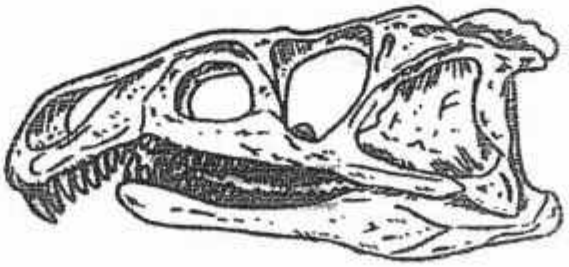
(3) Plant → W → Y → X

(4) Plant → Y → X → W

10. The food web below shows the relationship between organisms J, K, L and M in a community.



The jawbone of one of the organisms is shown below.



Which organism in the food web above is likely to have such a jawbone?

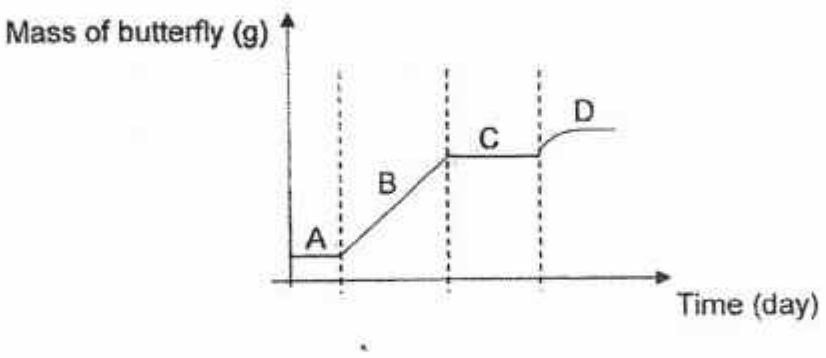
(1) J

(2) K

(3) L

(4) M

11. The graph below shows the mass of a butterfly during different stages of its life cycle.



Which of the following best represents the butterfly at its pupal stage?

(1) A

(2) B

(3) C

(4) D

12. Diagrams 1 and 2 below show the reproductive systems of a flower and a female human respectively.

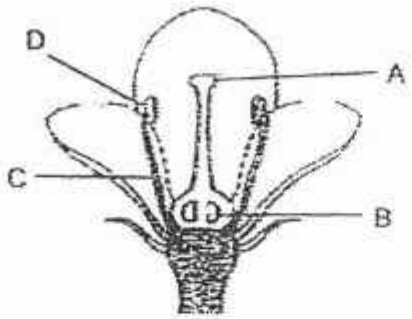


Diagram 1

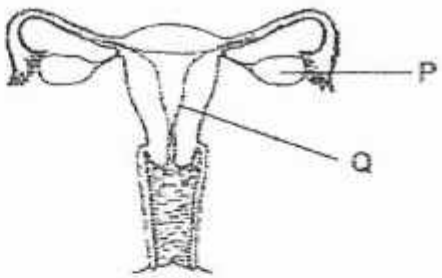


Diagram 2

Which two reproductive parts have a similar function?

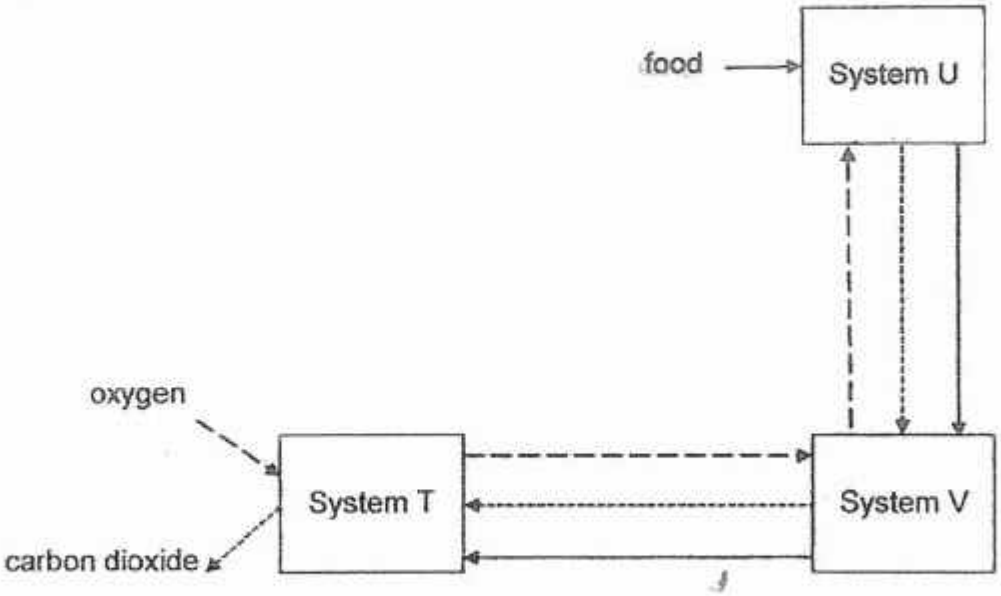
(1) A and Q

(2) B and P

(3) C and P

(4) D and Q

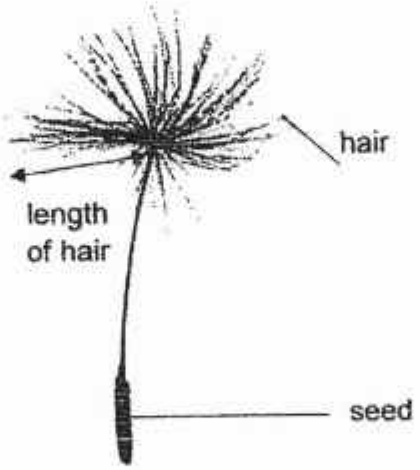
13. The diagram below shows how some of the systems in the human body work together.



Which of the following systems are correctly identified?

	System T	System U	System V
(1)	digestive	respiratory	circulatory
(2)	respiratory	circulatory	digestive
(3)	circulatory	digestive	respiratory
(4)	respiratory	digestive	circulatory

14. The diagram below shows a seed of a plant.



Siti investigated how the length of hairs of a seed affects the time taken for the seed to reach the ground The experiment was conducted in a room and the seeds were dropped from the same height. The results were shown below.

Seed	Average length of hairs (cm)	Time taken for the seed to reach the ground (s)
A	1.5	4.8
B	1.0	4.0
C	0.5	2.6

What can be concluded from the results above?

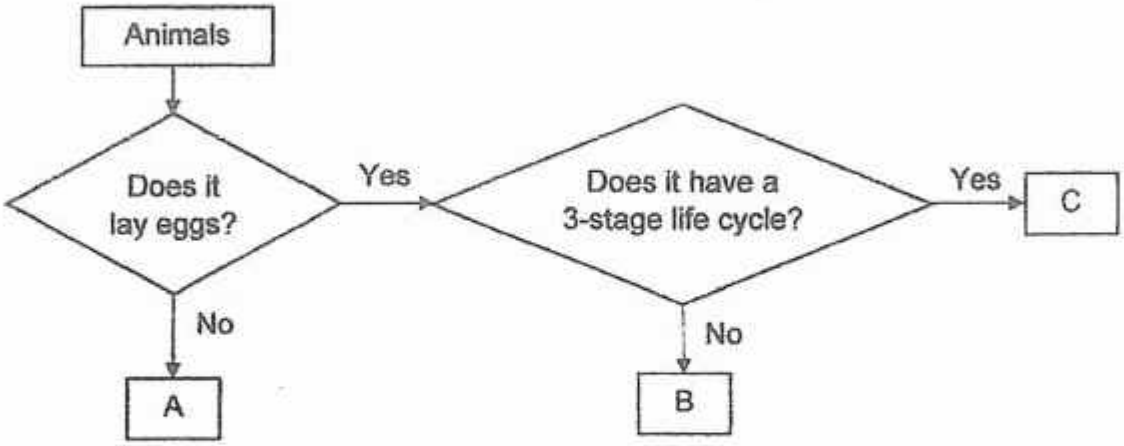
(1) The seeds are dispersed by water.

(2) Seed B took a longer time to reach the ground than seed A.

(3) The seeds can be dispersed further if the average length of hair is decreased.

(4) As the average length of hairs increases, the time taken for the seed to reach the ground increases.

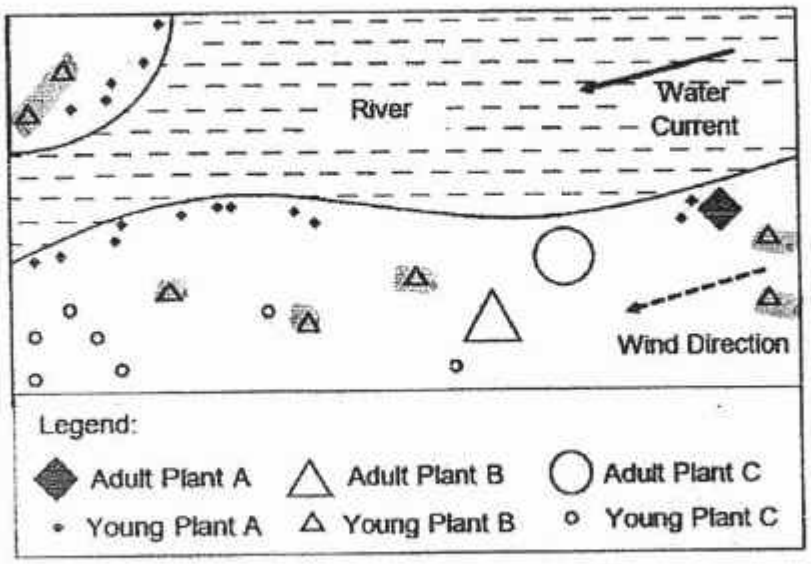
15. Study the flow chart below.



Based on the information above, which of the following correctly represents animals A, B and C?

	A	B	C
(1)	tiger	butterfly	grasshopper
(2)	tiger	grasshopper	butterfly
(3)	eagle	butterfly	grasshopper
(4)	eagle	grasshopper	butterfly

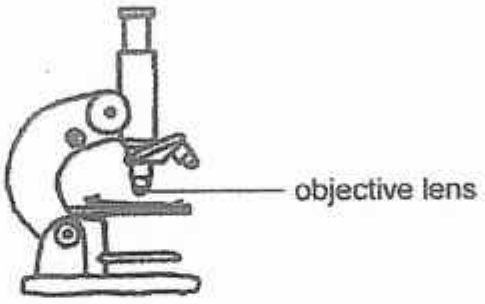
16. The map below shows the location of the adult plants, A, B and C, and the distribution of their young plants.



Which of the following shows the correct methods of seed dispersal for plants A, B and C?

	By Water	By Animal	By Wind
(1)	◆	△	○
(2)	△	○	◆
(3)	△	◆	○
(4)	◆	○	△

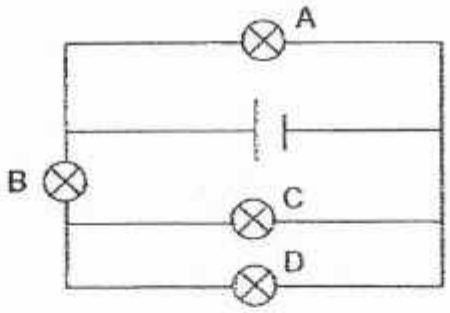
17. A microscope is used to view cell specimens.



Which of the following materials is most suitable to make the objective lens that allows the specimens to be seen most clearly?

	Material	Amount of light that passes through the material (units)
(1)	E	0
(2)	F	500
(3)	G	2000
(4)	H	4500

18. Study the circuit diagram below.



Which of the bulbs, if fused, would allow only one bulb to light up?

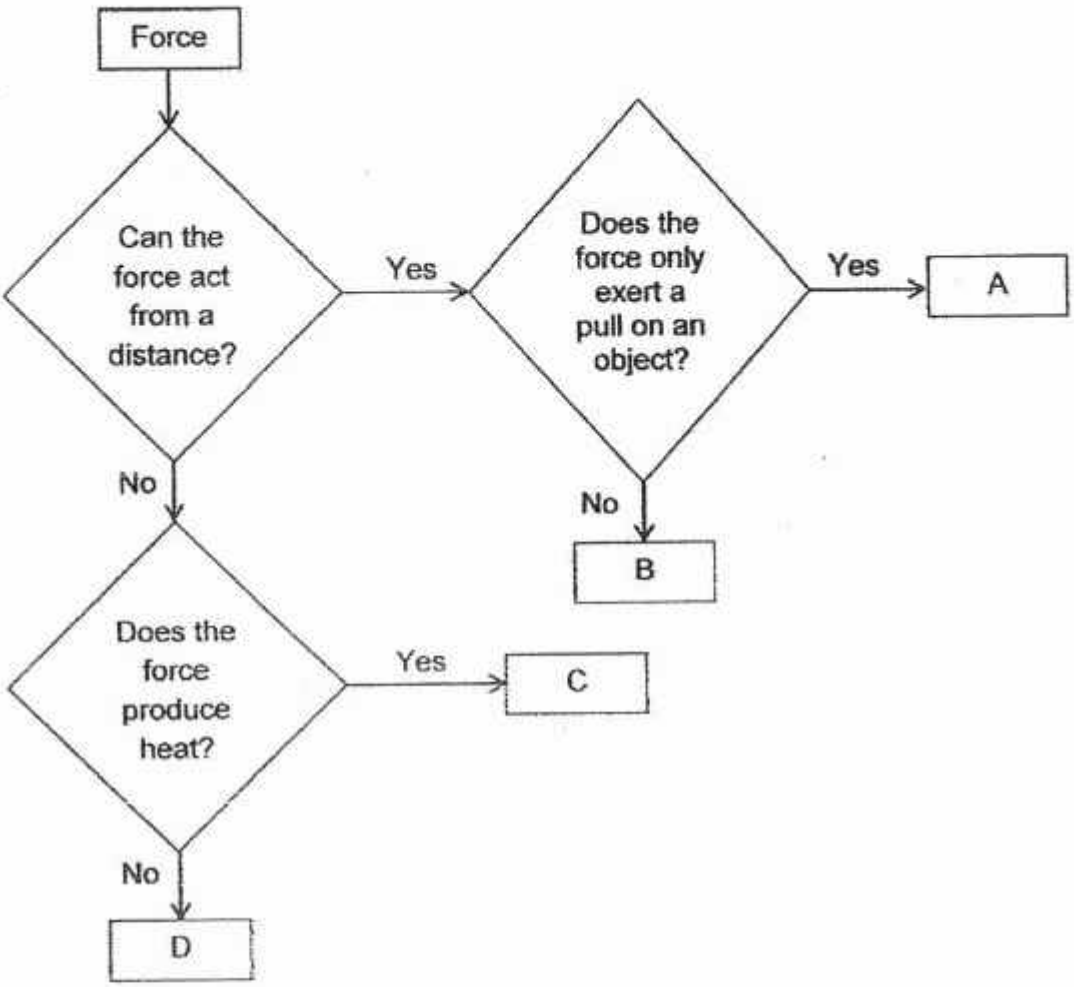
(1) Bulb A

(2) Bulb B

(3) Bulb C

(4) Bulb D

Study the flow chart below and answer Questions 19 and 20.



19. Which of the forces, A, B, C or D, best represents frictional force?

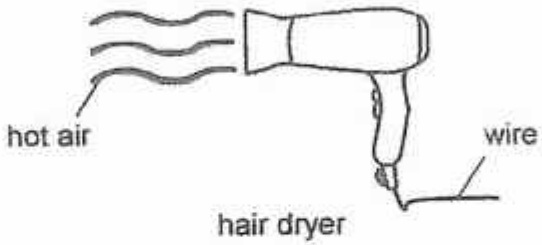
(1) A

(2) B

(3) C

(4) D

22. The diagram below shows a hair dryer that is switched on with hot air blowing out.



Which of the following best shows the type(s) of energy that is present when the hair dryer is switched on?

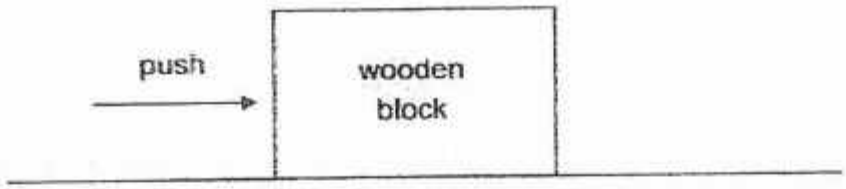
(1) Heat energy only

(2) Heat energy and sound energy only

(3) Kinetic energy and sound energy only

(4) Heat energy, kinetic energy and sound energy

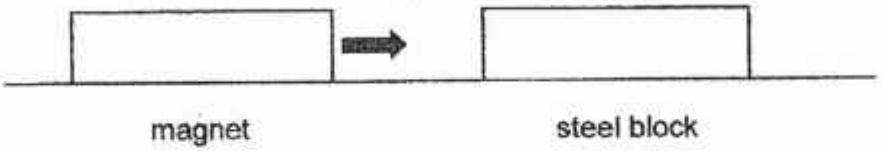
23. A push was applied to move a wooden block as shown below.



Which of the following correctly shows the directions of gravity and friction exerted on the wooden block when it is pushed?

	Gravity	Friction
(1)	→	→
(2)	↓	↑
(3)	↓	←
(4)	←	↓

24. The diagram below shows a magnet brought near a steel block.



What will happen to the steel block?

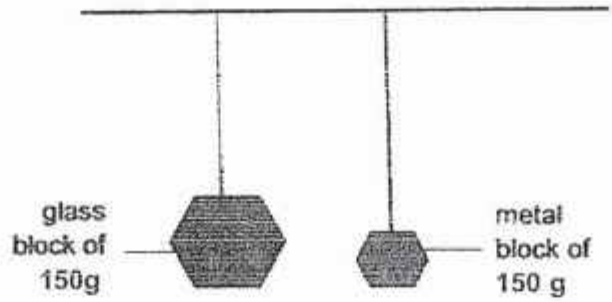
(1) It will move up.

(2) It will not move.

(3) It will move towards the magnet.

(4) It will move away from the magnet.

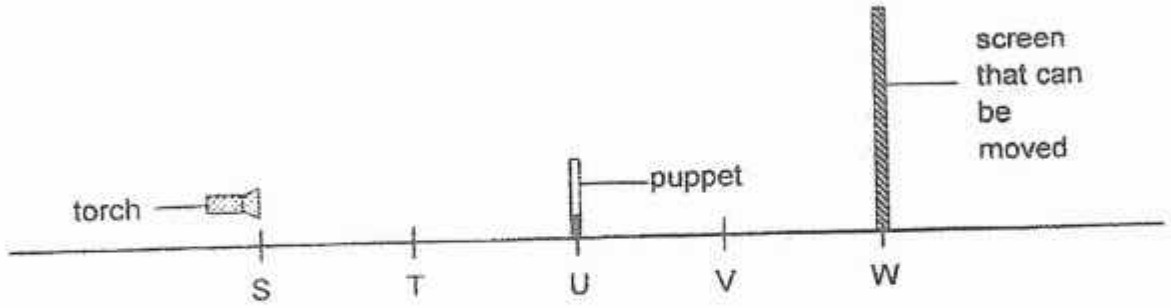
25. The diagram below shows two blocks being hung at the same height from the ground.



Which of the following correctly shows the energy possessed by both blocks and its amount in comparison with the other block?

	Type of energy in both blocks	Amount of energy of the glass block when compared to the metal block
(1)	potential	more
(2)	potential	same
(3)	kinetic	more
(4)	kinetic	less

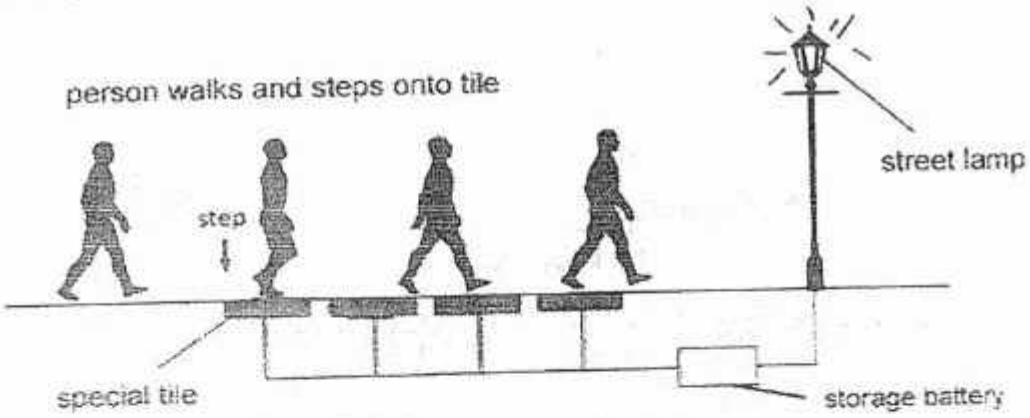
26. Jack creates a shadow using the set-up as shown below.



Which positions, S, T, U, V and W, should Jack place the torch, puppet and screen at to create the **biggest shadow?**

	torch	puppet	screen
(1)	S	T	U
(2)	S	T	W
(3)	T	V	W
(4)	U	V	W

27. The diagram below shows a man walking along a path lined with special tiles. When the man steps on these tiles, electricity is generated and stored in a battery. This stored energy is used to light up street lamps at night.



Which of the following best shows the correct conversion of energy?

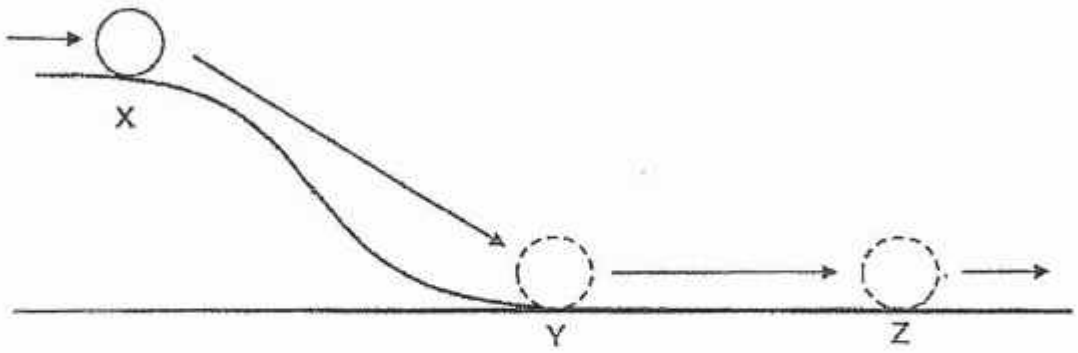
(1) kinetic energy → light energy

(2) kinetic energy → potential energy → light energy

(3) potential energy → electrical energy → kinetic energy → light energy + heat energy

(4) kinetic energy → electrical energy → potential energy → electrical energy → light energy

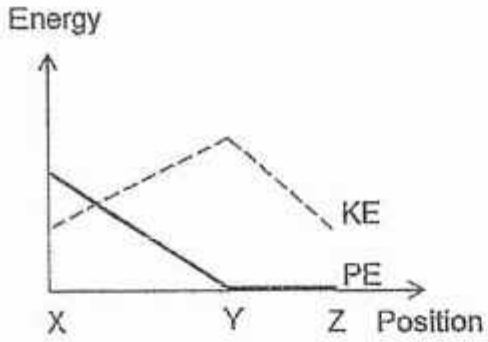
28. The diagram below shows a ball moving along the top of a hill towards X and then it rolled down from X to Y then to Z. The ball continued moving after Z.



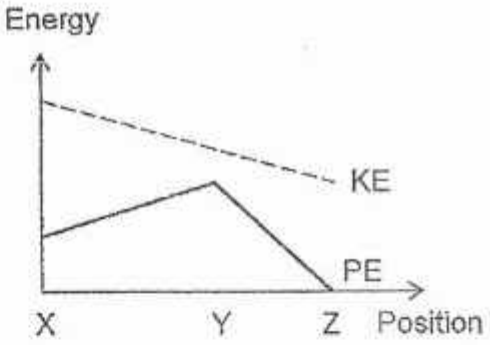
Which of the following graphs best represents the energy changes of the ball from position X to Z?

Key
- ----- KE: Kinetic Energy
- ——— PE: Potential Energy

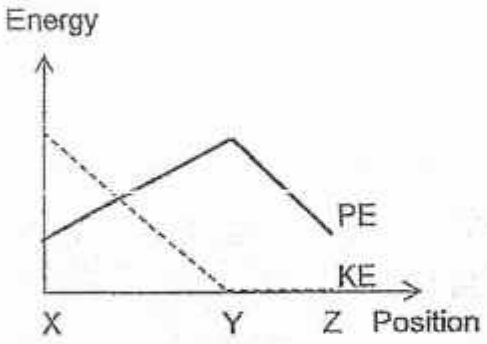
(1)



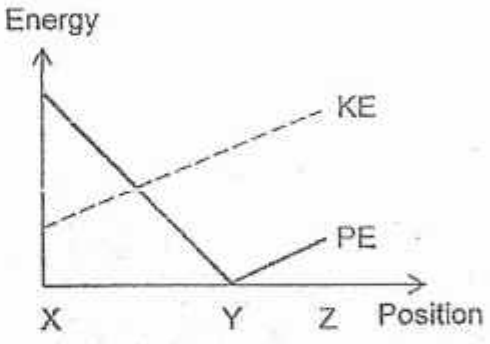
(2)



(3)



(4)



End of Booklet A

TAO NAN SCHOOL 道南学校

SINCERITY & PERSEVERANCE

2021 PRIMARY 6 MID-YEAR EXAMINATION

Name : _____ ( )

Class : Primary 6 ( )

Parent's Signature : _____

Date: 11 May 2021

Time: 9.30 a.m. – 11.15 a.m.

Duration: 1 hour 45 minutes

SCIENCE

BOOKLET B

INSTRUCTIONS TO CANDIDATES

1. Write your name, class and register number.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Write your answers in the booklet.

Booklet A	56
Booklet B	44
Total	100

Booklet B

For questions 29 to 40, write your answers clearly in this booklet.

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

(44 marks)

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29. The diagrams below show different parts of a plant.

Diagram 1

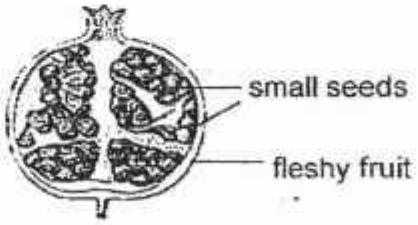


Diagram 2

(a) Based on Diagram 1, explain how pollination can be carried out for this plant. [1]

_____

_____

(b) Based on Diagram 2, describe how the seeds of the plant above can be dispersed over a wide area. [1]

_____

_____

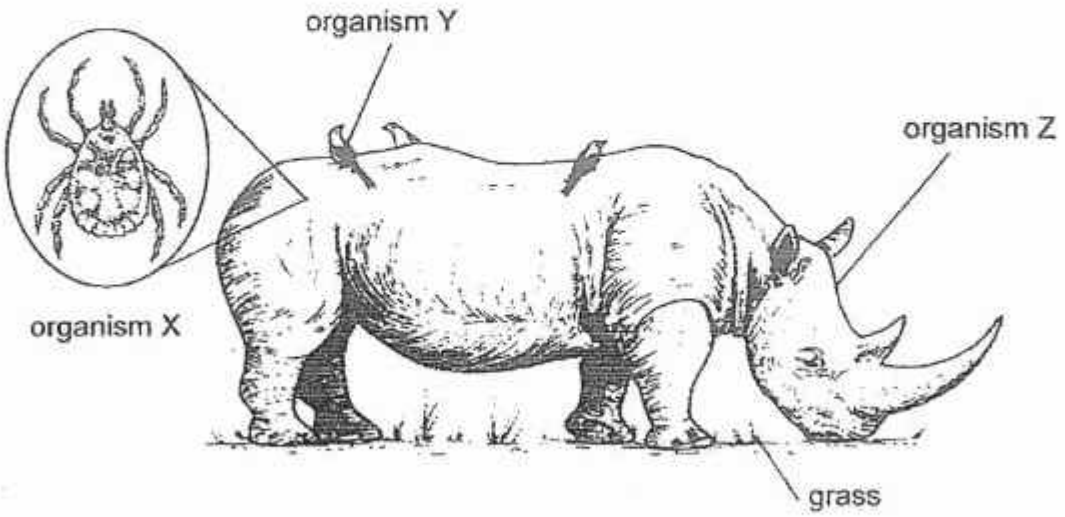
(c) How does being further away from the parent plant help the young plants to grow better? [1]

_____

_____

Score	/ 3

30. Organism X feeds on the blood of animals and can spread diseases. Organism Y feeds on organism X. Organism Y is often found riding on the back of organism Z.



(a) Based on the information above, how does organism Z benefit from its interaction with organism Y? [1]

_____

_____

(b) How does organism Y benefit from its interaction with organism Z? [1]

_____

_____

(c) Is organism X an insect? Explain your answer. [1]

_____

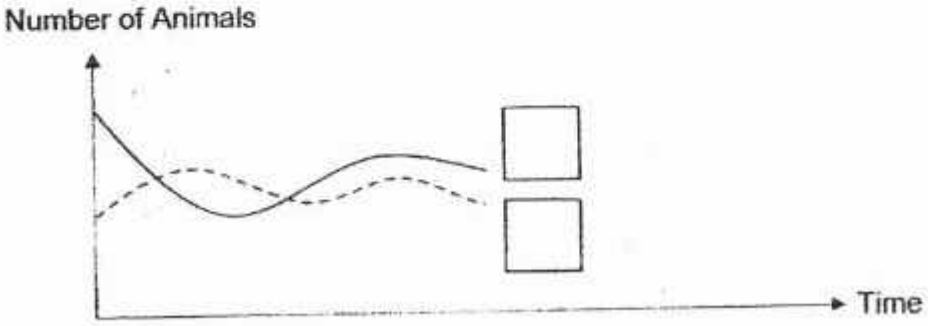
_____

Score 3

31. Study the food chain of a habitat shown below.

Plant ⟶ Organism J ⟶ Organism K

The population of organism J contracted a disease which affected its numbers. The graph below showed how the population of organisms J and K changed over a period of time.



(a) Fill in the appropriate boxes above with the letters 'J' and 'K'. [1]

(b) How would the population of organism K change when the number of plants in the habitat decreases. Explain why. [2]

_____

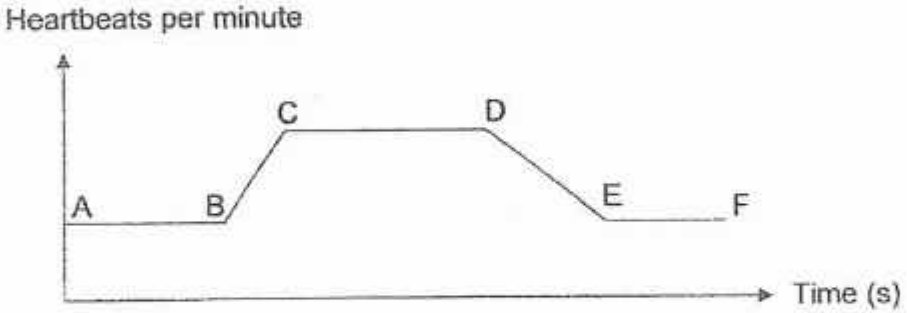
_____

_____

_____

Score	3

32. Justin drank an energy drink before his swimming competition. The graph below shows his heart rate when he was at the pool.



(a) Based on the graph, fill in the blanks below with A, B, C, D, E or F.

(i) Justin started swimming at _____ [1/2]

(ii) Justin stopped swimming at _____ [1/2]

(b) Explain why Justin's heart rate was higher when he swam faster? [2]

_____

_____

_____

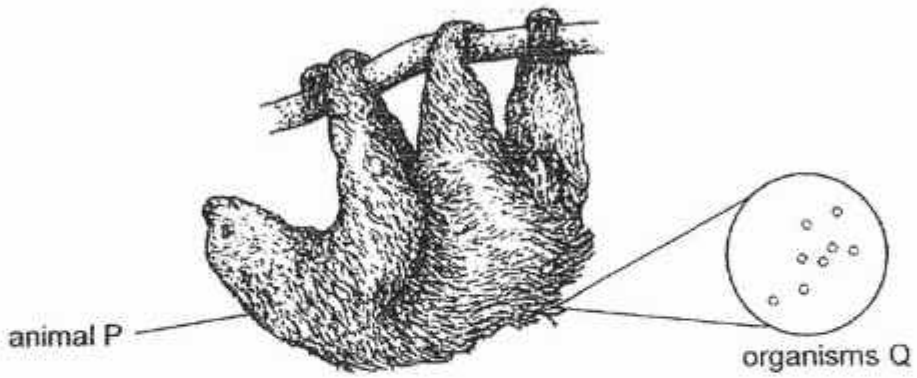
_____

(c) Which of the following body systems worked together to enable him to lift his head above the water surface during swimming? Put a tick (✓) in the correct boxes. [1]

System	Used to lift his head
Skeletal	
Muscular	
Digestive	
Circulatory	
Respiratory	

Score / 4

33. The diagram below shows Animal P on a tree.



Animal P is a plant-eater which has long limbs and sharp claws. It moves slowly and its fur is often green due to organisms Q growing on it. Once a week, animal P will climb down and pass out its droppings at the bottom of the tree. It also has a flexible neck and spine and can rotate its head almost all the way around.

(a) How does having organism Q growing on the fur benefit animal P in its survival? [1]

_____

_____

(b) Explain one way how the trees benefit from animal P living on them. [1]

_____

_____

(c) Animal P cannot move fast enough to run away from its predators. Besides the benefit mentioned in (a), from the information given, explain how the two other adaptations help animal P in its defence. [2]

Adaptation 1: _____

_____

Adaptation 2: _____

_____

Score	/ 4

34. Melissa used object M to sharpen her knife as shown below.

(a) Identify the force that sharpened the knife. [1]

_____

(b) The knife blade felt warm after it was moved over object M several times. Give a reason for this observation. [1]

_____

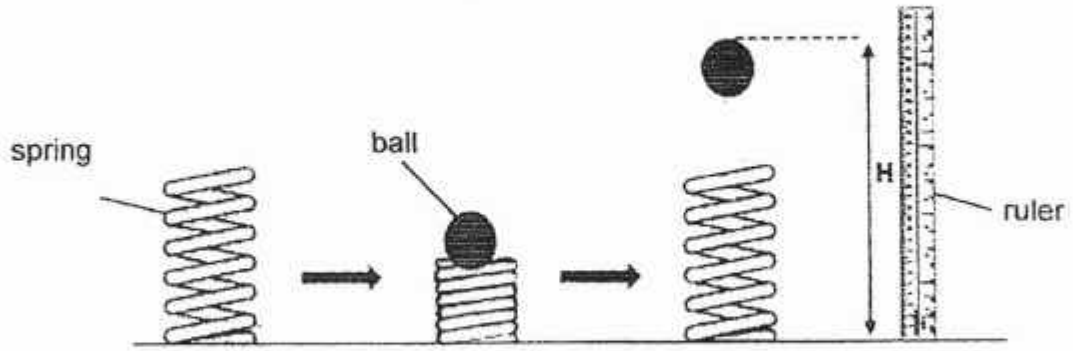
_____

(c) The knife blade is made of an inflexible material. Suggest another property that the material must have in order to cut an apple. Give a reason for your answer. [1]

_____

Score 3

5. Farah wanted to find out the relationship between the mass of a ball and the greatest height reached by the ball. The ball was placed on a spring which was then compressed fully before being released. The ball jumped up to a maximum height of H cm as shown below.



She repeated the procedure with balls of different masses. The table below shows her results.

Mass of ball (g)	Greatest height reached by ball, H (cm)			
	Trial 1	Trial 2	Trial 3	Average
20	20	22	21	21
40	19	17	18	18
60	16	15	14	15
80	12	11	10	11

(a) What is the relationship between the mass of the ball and height H? [1]

_____

_____

(b) Why did Farah repeat her experiment? [1]

_____

_____

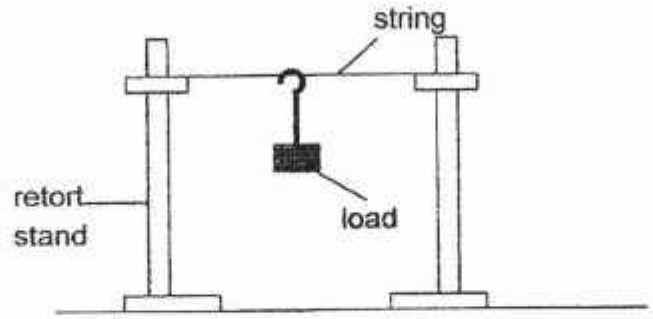
Score	/ 2

(c) Suggest one change to Farah's set-up to make the ball of 20g bounce to a greater height. [1]

(d) Explain your answer in (c) [2]

Score 3

36. Ray used the set-up as shown below.



He used strings made of different materials, X, Y and Z. He increased the mass of the load that was hung onto the string until the string broke. His results are shown below.

Material	Smallest mass of the load that caused the material to break (kg)
X	0.5
Y	5.0
Z	3.0

(a) State the property of the strings that Ray is testing. [1]

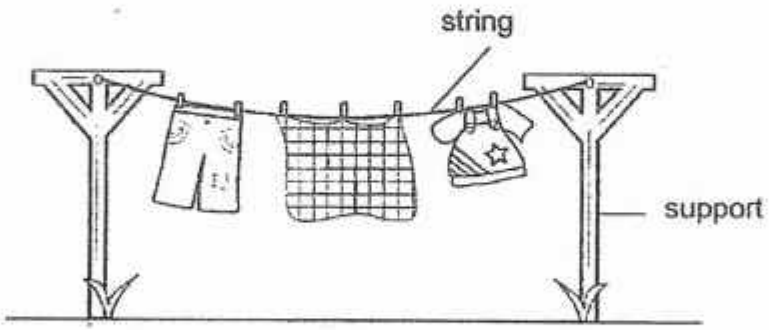
_____

(b) Which of the following variables should Ray keep constant in order to ensure a fair test? Put a tick (✓) in the correct box(es). [1]

	Variables	To be kept constant
i.	Material of string	
ii.	Number of string(s)	
iii.	Mass of load hung onto each string until it breaks	
iv.	Distance between the two retort stands	

Score 2

The diagram below shows a set-up for drying wet clothes.



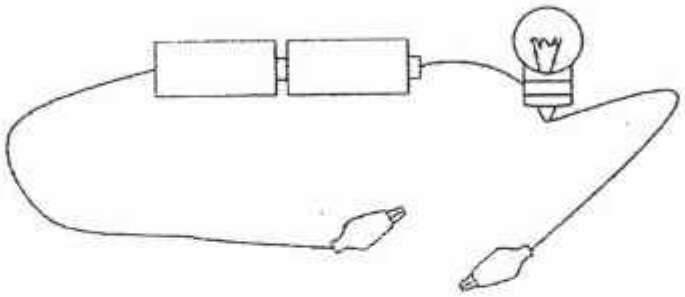
(c) Based on his results, which material, X, Y and Z, is most suitable to make the string for the wet clothes to be hung? Explain your answer. [1]

_____

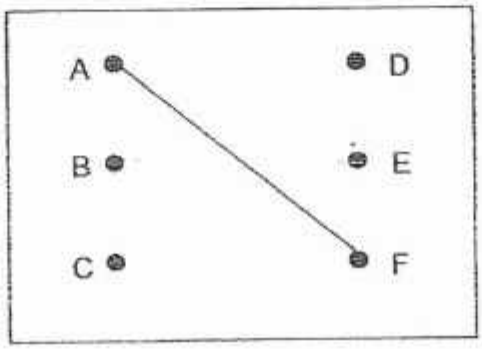
_____

Score 1

37. Jerry set up a circuit tester as shown.



He connected the circuit tester to a circuit card as shown below.

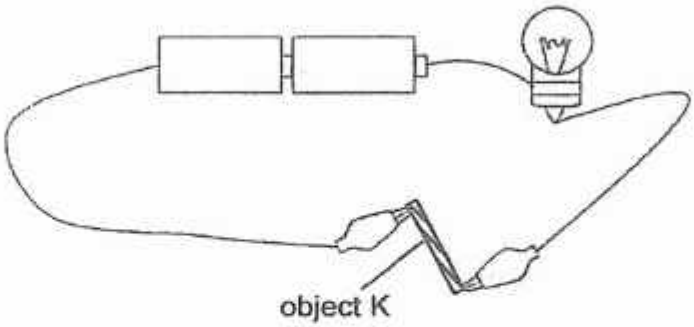


(a) Put a tick (✓) in the correct box(es) to indicate whether the bulb of the circuit tester will light up when it is connected to the following points in the circuit card above. [1]

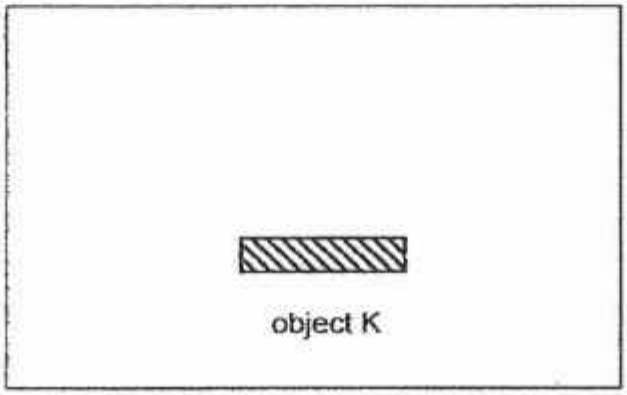
Clips tested	Bulb of circuit tester lighted up
A and C	
A and E	
B and D	
B and F	

Score 1

Jerry then connected object K to the circuit tester as shown below.



(b) Based on the set-up above, complete the circuit diagram using circuit symbols in the box below. [2]

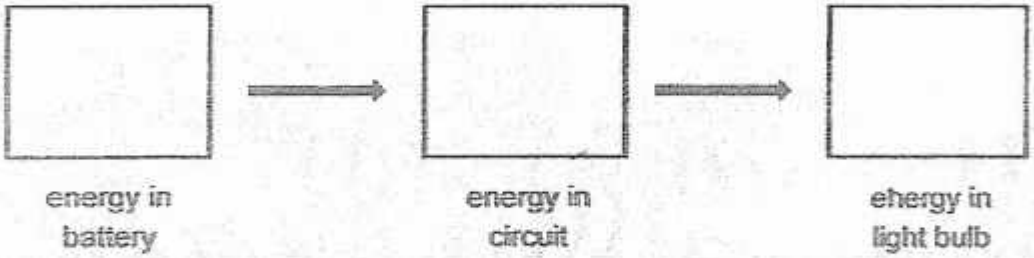


(c) What can you conclude about object K when the bulb lit up? [1]

_____

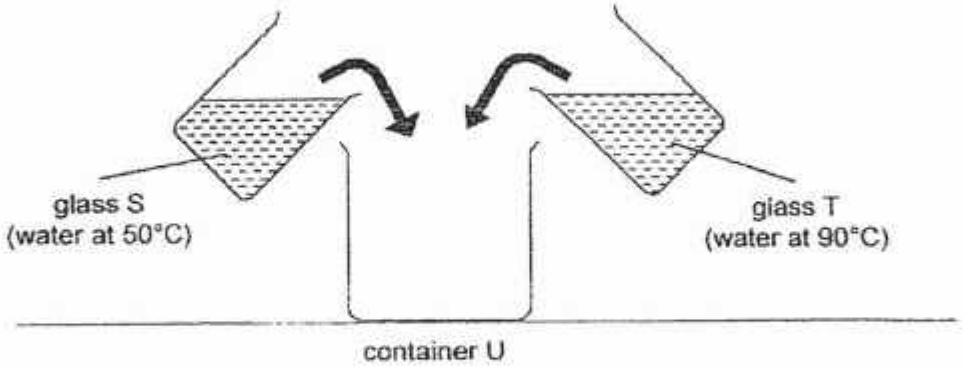
_____

(d) Fill in the boxes to show the energy changes in (c). [1]



Score 4

Jessica conducted an experiment using two glasses with equal volumes of water. The room temperature was 26°C.



(a) What is the likely temperature of the water in container U **immediately after all the water from both glasses was poured in?** **[1]**

_____

(b) Explain your answer in (a). [1]

_____

_____

(c) What is the likely temperature of the water in container U after 6 hours? [1]

_____

(d) Explain your answer in (c). [1]

_____

_____

Score / 4

39. The diagrams below show a pair of goggles Matthew used for swimming. He observed his lens fogging up while wearing it underwater, preventing him from seeing clearly.

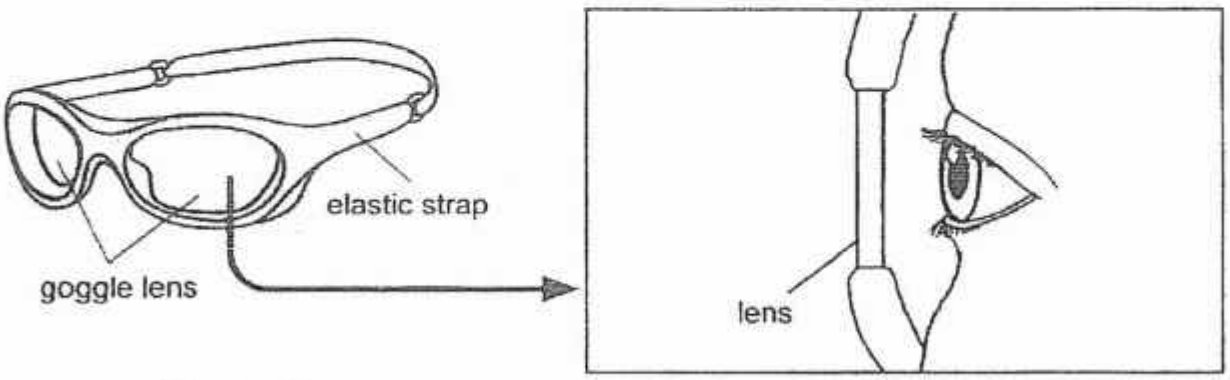


Diagram 1 Diagram 2

(a) Draw in Diagram 2 above to show which side of the lens the water droplets are formed on. [1]

(b) Explain how the water droplets were formed. [2]

_____

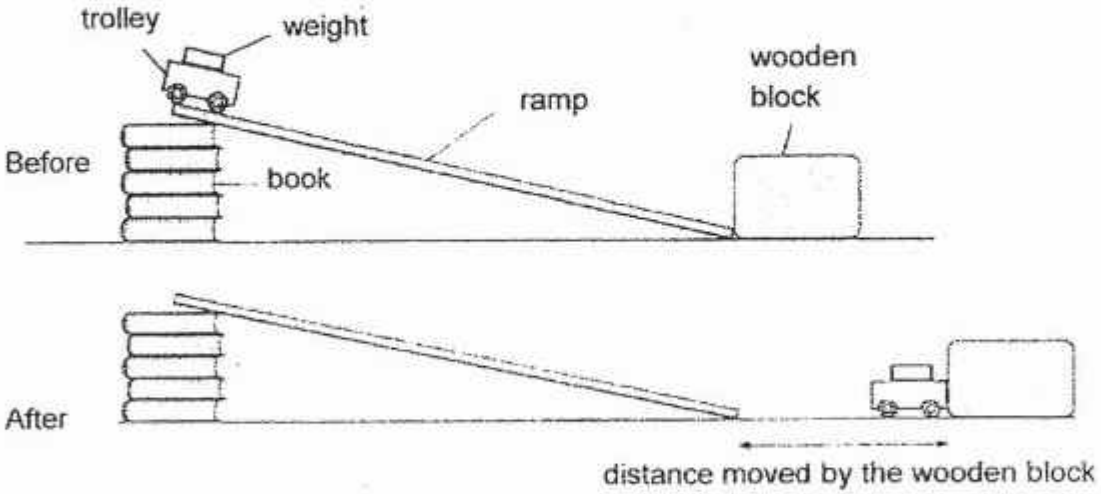
_____

_____

_____

Score 3

40. Mark wanted to find out how the number of weights placed in a toy trolley affected the distance moved by a wooden block. He added a 50 g weight to the trolley each time before releasing it and measured the distance travelled by the block.



(a) Mark used the same wooden block throughout his experiment. How does this ensure a fair test? [1]

_____

_____

(b) Mark found out that the toy trolley with the greatest mass had the most gravitational potential energy at the top of the ramp. What result did Mark obtain to conclude this? [1]

_____

_____

(c) Suggest another way Mark can make the same wooden block move a greater distance without changing the toy trolley. Explain how. [2]

_____

_____

_____

_____

Score 4

END OF PAPER