

Nanyang_p6_sa2_2024



NANYANG PRIMARY SCHOOL

2024
PRIMARY 6
PRELIMINARY EXAMINATION

SCIENCE
(BOOKLET B)

Total Time for Booklets A and B: 1 h 45 min

INSTRUCTIONS TO CANDIDATES

1. Write your name and index number in the space provided.
2. Do not open this booklet until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Write your answers to Questions 29 to 40 in the spaces provided.

Booklet A:		56
Booklet B:		44
Total:		100

Name: _____ ()

Class: Primary 6 ()

Parent's signature: _____

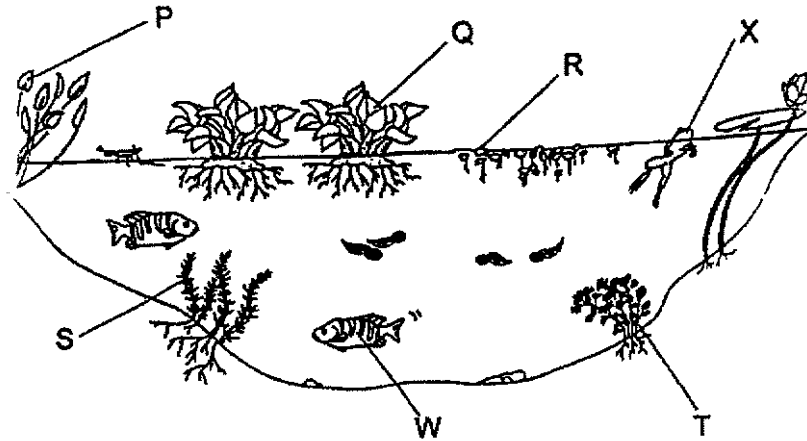
Please sign and return the paper the next day. Any queries should be raised at the same time when returning the paper.

Booklet B consists of 15 printed pages excluding this cover page.

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Section B: Open-Ended Questions (44 marks)

29. The diagram below shows a pond habitat.



Animals W and X lay eggs among the stems of plant S.

- (a) State one advantage of laying eggs among the stems.

[1]

During periods of hot weather, the population of plant R increases at a faster rate and they cover the entire surface of the pond.

- (b) Explain why plant S is more affected than plant Q when the population of plant R increased.

[2]

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(Continue from Q29)

Animal X has moist skin while animal W has scales.

(c)(i) Identify the animal groups that X and W belong to.

[1]

X: _____

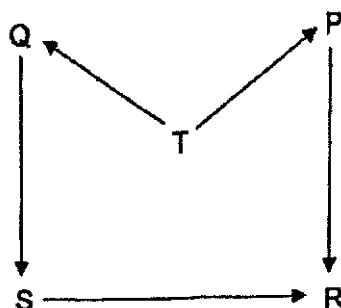
W: _____

(c)(ii) Based on the animal groups in (c)(i), give a reason why animal X is less affected than animal W after plants S and T are removed.

[1]

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30. The food web below shows the relationships between organisms P, Q, R, S and T.



- (a) Classify organisms P, Q, R, S and T under the correct headings in the table below. [2]

Producer	Plant-eater	Animal-eater

There was a sudden decrease in the population of organism R even though the population of the other organisms remained the same.

- (b) Give a possible reason for this decrease. [1]

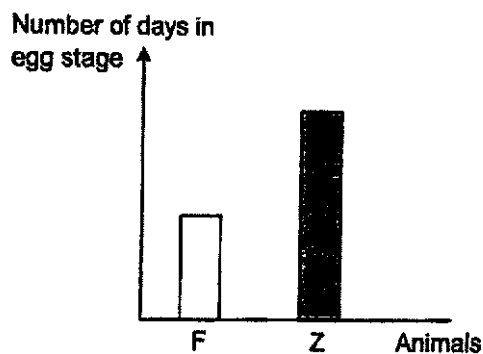
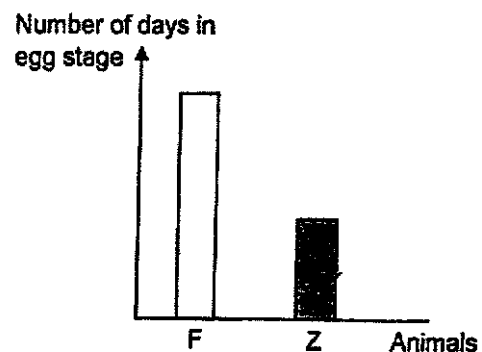
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31. Female animal F lays its eggs on green leaves. Male animal F will guard the eggs after they are laid. Male animal F has spots on its body that look like its eggs and has strong muscular legs. It was also observed that insect W feeds on the eggs of animal F



- (a) Explain how the spots on animal F's body and muscular legs increases the number of eggs hatching into young. [2]

It was observed that another insect Z lays its eggs among animal F's eggs. The larvae of insect Z feeds on the unhatched eggs of animal F. Study graph P and graph Q below.

Graph PGraph Q

- (b) Which graph, P or Q, correctly shows the duration of the egg stages of animals F and Z such that the larvae of Z has more food. Explain your answer. [2]

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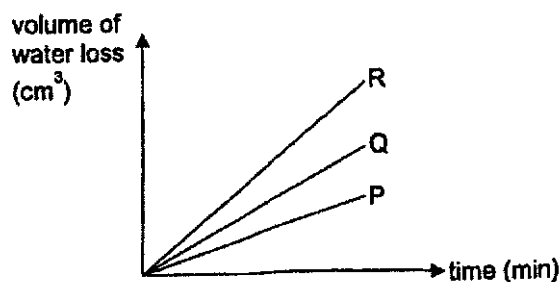
32. Tom set up an experiment using three similar leaves, P, Q and R, on the same plant. These leaves have tiny openings on both their upper and lower surfaces. Leaves lose water as water vapour through these tiny openings.

(a) Other than for losing water, state another function of the tiny openings on a leaf. [1]

He coated some surfaces of the leaves with oil as shown in the table below.

Leaf	Coated with oil	
	Upper surface	Lower surface
P	yes	no
Q	no	yes
R	no	no

The plant was placed under bright sunlight for two hours. Tom measured the volume of water loss at regular time intervals. His results are shown in the graph below.

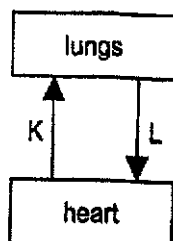


Tom concluded that there are more tiny openings on the upper surface than the lower surface of the leaves of this plant.

- (b) With reference to the data in the graph and table, explain how he arrived at this conclusion. [2]

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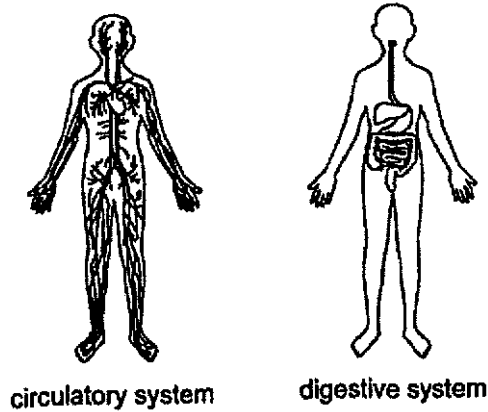
33. Study the diagram below.



- (a) Identify a gas which is at a higher amount in the blood at K than L. [1]
-
- (b) Other than the part given in the diagram, state all the other part(s) of the circulatory system. [1]
-

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34. Study the diagrams below.



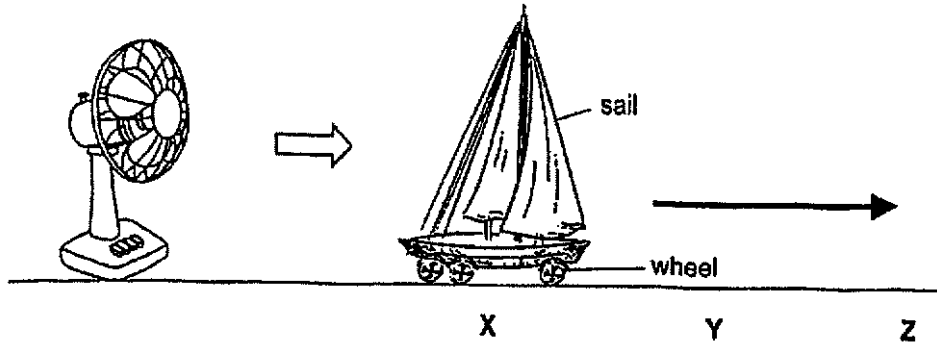
- (a) Describe how the circulatory system works together with the digestive system. [2]

John accidentally swallowed a piece of meat without chewing.

- (b) Explain why it would take a longer time for his body to digest the meat. [1]

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35. The diagram below shows a toy boat with a sail. When Ben turned on the fan at the lowest speed, the wind from the fan caused the toy boat to move forward from point X to point Y.



At point Y, the fan was switched off, but the toy boat continued to move forward before stopping at point Z.

- (a) State the **source** of energy present that caused the toy boat to move. [1]

- (bi) In terms of **energy**, give a reason why the toy boat continued to move forward from point Y to point Z. [1]

- (bii) In terms of **energy**, explain why the toy boat stopped moving at point Z. [1]

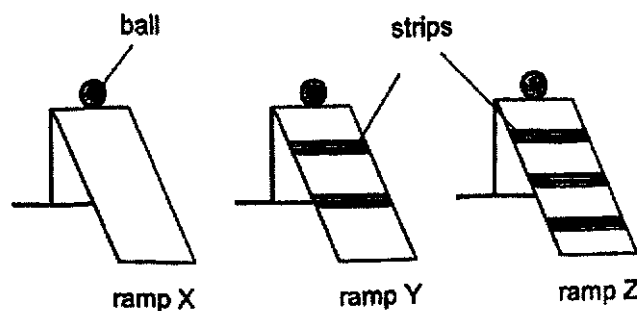
- (c) Using the same equipment in the setup, suggest one way to make the toy boat move a longer distance. Give a reason for your answer in terms of **energy**. [2]

Suggestion: _____

Reason: _____

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36. Trisha conducted an experiment with three similar ramps X, Y and Z as shown in the diagram below.



She placed different numbers of strips of the same length and thickness across ramps Y and Z. She released a ball from the top of the ramp and recorded the time taken for the ball to reach the bottom of the ramp.

She repeated the experiment with ramps Y and Z. The readings are recorded in the table below.

	Time taken for the ball to reach the bottom of the ramp (seconds)
Ramp X	2
Ramp Y	5
Ramp Z	8

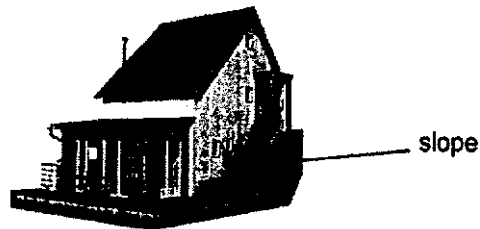
- (a) What is the relationship between the number of strips and the time taken for the ball to reach the bottom of the ramp? [1]

- (b) Identify the two forces acting on the ball as it rolls down the ramp. [1]

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(Continue from Q36)

The diagram below shows a slope at the side of Trisha's house.

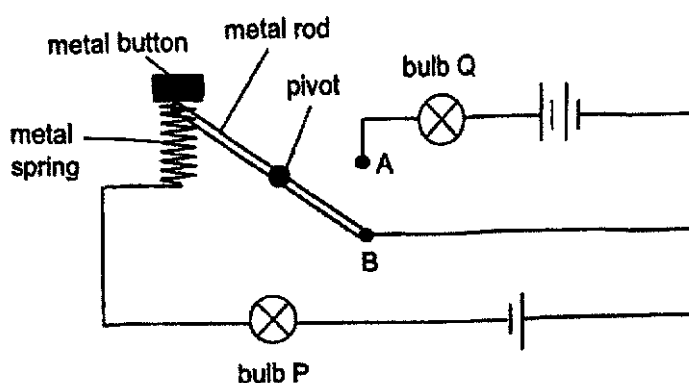


- (c) Based on the results above, give a reason **in terms of forces**, how placing more strips on the slope will prevent Trisha from slipping on a rainy day. [1]

- (d) How can Trisha increase the reliability of the results of her experiment? [1]

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37. Mdm Tan set up a circuit using two identical bulbs, P and Q, and three identical batteries as shown in the diagram below. All the bulbs and batteries are in good working conditions. The metal rod can swing freely about the pivot.



The diagram above shows the metal rod touching point B.

- (a) Put a tick in the box below to indicate the expected observation.

[1]

	Did the bulb light up?	
	Yes	No
Bulb P		
Bulb Q		

When Mdm Tan pressed the button down, the metal spring will be compressed and the metal rod will move up and touch point A.

- (b) State and explain the change in her observation for each bulb when she pressed the button. [2]

(i) Change observed for bulb P: _____

(ii) Changed observed for bulb Q: _____

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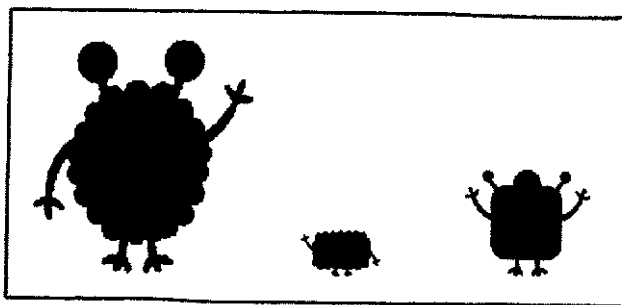
38. Evangeline has three puppets, X, Y and Z, of the same height as shown in the diagram below.



- (a) Which property of light enables us to see the three puppets?

[1]

She placed the three puppets between a torch and a screen and the shadows of the puppets cast on the screen are as follows.



- (b) How are shadows formed?

[1]

- (c) Based on the shadows cast on the screen above, which puppet, X, Y or Z, was placed furthest from the torch? Give a reason for your answer.

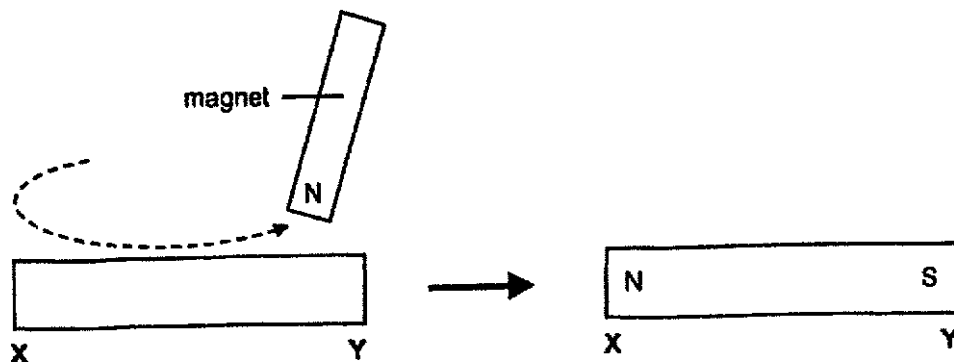
[1]

- (d) Without changing the positions of the three puppets, suggest one change that can be made to increase the size of all the three shadows cast on the screen.

[1]

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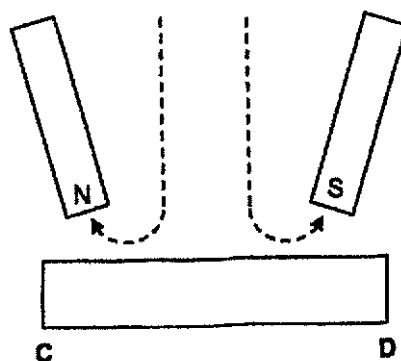
39. Jim magnetised steel bar XY using the 'stroke' method. The poles of the magnetised steel bar XY is as shown below.



- (a) State one property of steel bar XY that allows it to be magnetised.

[1]

He magnetised another steel bar CD using two magnets as shown below.



- (b) Using information from part (a), state the poles of magnet CD.

[1]

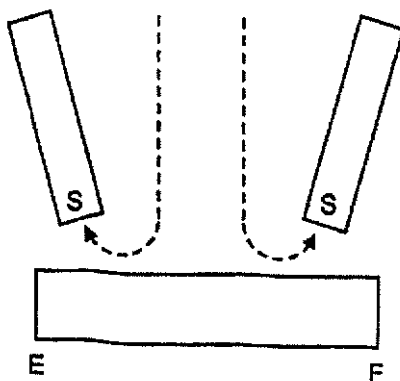
At C: _____

At D: _____

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(Continue from Q39)

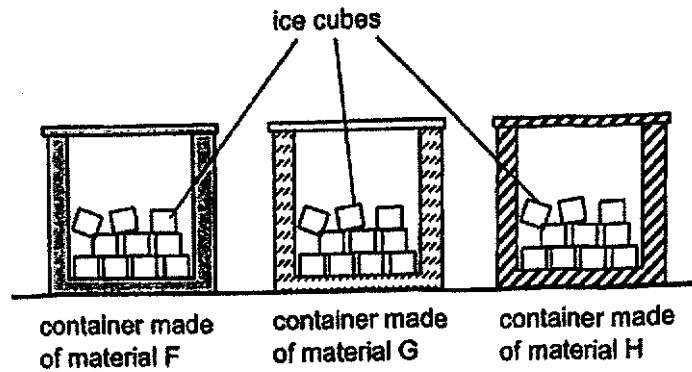
Jim wanted to magnetise steel bar EF using the South poles of two magnets as shown below.



- (c) Explain using the properties of magnets why steel bar EF cannot be magnetised using the method above. [2]

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40. Ethan set up the experiment as shown in the diagram below.



He placed the same amount of ice cubes into the each of the three containers and measured the time taken for all the ice to melt completely. He recorded the readings in the table below.

Material	Time taken for all the ice cubes to melt (min)
F	35
G	25
H	40

- (a) What was the aim of his experiment? [1]

- (b) Give a reason why Ethan used the same number of ice cubes in the three set-ups. [1]

Ethan wants to bring some hot chicken soup to his mother's house.

- (c) Based on the results above, explain which material, F, G or H, is most suitable for making a container to keep the chicken soup hot for a longer time. [2]

- End of Paper -

Nanyang Primary School P6 SCIENCE Prelim 2024 Suggested Answers

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

Qn.	Acceptable Answers						
29a.	Protect the eggs from predators/ Shelter the eggs from the rain or sun/ When the eggs hatched, the young has a ready source of food.						
29b.	R blocks light from reaching S so S traps less light/ cannot trap light. Hence S makes less/ no food.						
29c.	(i) X: Amphibian, Y: Fish (ii) When there is less oxygen / less food/ less shelter in water, X can go on land (to get oxygen/ food/ shelter) but not W.						
30a.	<table border="1"> <thead> <tr> <th>Producer</th><th>Plant-eater</th><th>Animal-eater</th></tr> </thead> <tbody> <tr> <td>T</td><td>Q, P</td><td>S, R</td></tr> </tbody> </table>	Producer	Plant-eater	Animal-eater	T	Q, P	S, R
Producer	Plant-eater	Animal-eater					
T	Q, P	S, R					
30b.	New predator of R/ Outbreak of disease that infected and killed R/ Migration of R.						
31a.	W was tricked/ confused the spots as eggs and when W attempts to eat the eggs/ spots, Male F kicks W away so less eggs get eaten.						
31b.	Choice: Graph Q. Data: Z eggs hatch faster or hatch in a shorter time / F eggs hatch later than Z Explain: The larvae of Z can feed on the F's eggs before the eggs hatch.						
32a.	To carry out gaseous exchange/ To take in carbon dioxide/ oxygen and give out oxygen/ carbon dioxide.						
32b.	Data: Upper surface of Q not coated with oil and lower surface of P not coated with oil./ Lower surface of Q coated with oil and upper surface of P coated with oil. Leaf Q loses more water than P/ P loses less water than Q. Explain: Less water lost through lower surface of leaves/ More water lost through upper surface of leaves.						
33a.	Carbon dioxide						
33b.	Blood and blood vessels/ veins/ arteries/ capillaries.						
34a.	The digestive system breaks down food into simple(r) substances that is absorbed into the blood/ bloodstream at the small intestine. The circulatory system transports this blood to different parts of the body.						
34b.	There is less (exposed) surface area of meat in contact with digestive juices.						

35a.	Wind/ moving air/ fan											
35b.	(i) The toy boat still has (some) kinetic energy. (ii) All the kinetic energy has been converted to heat and sound energy.											
35c.	Suggestion: Increase fan speed/ place boat nearer to fan/ blow at boat/ give boat a push/ open the sail wider. Reason: The boat has more kinetic energy to move further.											
36a.	As the number of strips increases, the time taken for the ball to reach the bottom of the ramp increases.											
36b.	Friction / frictional force and gravity / gravitational force											
36c.	There is more friction between the Trisha's feet and the slope.											
36d.	Repeat the experiment at least 3 times and calculate average/ check that the results are consistent results.											
37a.	<table border="1"><thead><tr><th rowspan="2"></th><th colspan="2">Did the bulb light up?</th></tr><tr><th>Yes</th><th>No</th></tr></thead><tbody><tr><td>Bulb P</td><td>✓</td><td></td></tr><tr><td>Bulb Q</td><td></td><td>✓</td></tr></tbody></table>		Did the bulb light up?		Yes	No	Bulb P	✓		Bulb Q		✓
	Did the bulb light up?											
	Yes	No										
Bulb P	✓											
Bulb Q		✓										
37b.	(i) Bulb P: Change: Brighter. Explain: More batteries so there will be more electric current/ electricity in the circuit. (ii) Bulb Q: Change : Light up. Explain: It is a closed circuit./ Electrical current can flow through.											
38a.	Light can be reflected.											
38b.	Shadows are formed when light is blocked.											
38c.	Puppet Y. Its shadow is the smallest.											
38d.	Move the torch nearer to the puppets / move the screen further away from the puppets.											
39a.	It is magnetic.											
39b.	At C: South. At D: North											
39c.	Both E and F will be North pole/ same pole. Magnets should have a North and South pole / 2 different poles/ 2 unlike poles.											
40a.	To find out how the different materials affect the time taken for the ice cubes to melt completely. OR To find out which material is the best/ poorest conductor of heat.											
40b.	Result is only caused by the different materials used.											
40c.	Choice: Material H Data: The ice cubes in container H took the longest time to melt. Explain: Material H is the poorest conductor of heat hence it conducts heat from the soup to the surrounding air the slowest.											