CHIJ ST. NICHOLAS GIRLS' SCHOOL



1 hour 45 minutes

60 marks 30 questions

INSTRUCTIONS TO CANDIDATES

12

Answer all questions.

This booklet consists of 25 printed pages.

Follow all instructions carefully.

Do not open this booklet until you are told to do so.

Total time for Booklets A & B:

Section A (30 x 2 = 60 MARKS)

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

<u>-</u>-The following table gives information on four plants, R, S, T and U, based on two characteristics. A tick (\checkmark) shows that the plant has the characteristic.

Plant Characteristic Bear fruit	ਸ	< s	Т	C
Bear fruit		<	<	
Grow in water	<		<	

From the information above, where do plants R, following classification chart? ŝ and U belong to in the



(4)	(3)	(2)	(1)		
C	A	C	D	Plant R	
B	D	A .	В	Plant S	
A	С	B.	С	Plant T	
D	B	D	A	Plant U	

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and consumers in two food chains. The diagrams below show the relationship between the number of producers

 $\dot{\mathbf{N}}$

Producer \checkmark Primary consumer \checkmark Secondary consumer

Food chain two	<u>Food chain one</u> Grass → slug → mynah
Trees Caterpillars	Grass Slug Mynah

Which one of the following statements is supported by the information above?

Tree

 \checkmark

caterpillar

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bird . :

Birds

Population size

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ECOE Primary consumers are usually insects that eat plants

Primary consumers are larger than secondary consumers.

There are more primary consumers than there are producers.

-0-

There are more primary consumers than there are secondary consumers.

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animals. The table below shows the characteristics of some flowers which attract specific

bat	bird	butterfly	beetle	bee		Animal
large	large	small	. large	small	Size	The characterist
white	red or yellow	white	white	bright blue or yellow	Colour	The characteristics of flowers that mainly attract the animals
fruity			spicy	1	Smell / Odour	attract the animals

characteristics. The flow chart below classifies six flowers A to F according to their



flowers A, C, D and E respectively? Which one of the following lists shows the animals that will be attracted to

	×	\times		
(4)	(3)	(2)	(1)	
bee	butterfly	bird	bee	Flower A
bird	3	bee	bird	Flower C
1	bird	beetle	beetle	Flower D
bat	bat	butterfly	bat	Flower E

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is/are correct? Which of the following comparison's between the life cycles of a cat and a frog

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	<u></u>	ιœ	<u>.</u>	
The young eats the same food as the adult	Resembles its parents when young	Moults several times as it grows	Has three stages in the life cycle	Characteristics
Yes	Yes	No	Yes	Cat
Yes	No	Yes	Yes	Frog

- (4)
- B only A and B only A and C only B, C and D only
- ပ္ပာ Penguins are warm-blooded animals.



cold Antarctic? Which of the following are structural adaptations that enable them to live in the

椿

- Wings modified into flippers Thick layer of fat under the skin
- Puffing up the feathers to trap air
- DOBY Closely-packed overlapping feathers
- 4024A and B only B and D only A, C and D only
- ĥ C and D only

ų

Mr Wong carried out different activities over a period of time. The graphs below show the different pulse rates while he was engaging in different activities.

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Which one of the following lists shows the activities that match the graphs A, B, C and D respectively?

••	book		run	
ū	Reading a	Jogging	Resting after a	(4)
	book			
Ðı	Reading a	Jogging	Sprinting	<u>ය</u>
-	run		book	
afte	Resting after a	Sprinting	Reading a	(2)
run 🗸	rui		book	
afte	Resting after a	gniggot	Reading a	3
E C	Graph C	Graph B	Graph A	

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each group there were exactly two animals. The diagram below shows four animals. Alan classified them into two groups. In

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each group? Which of the following ways of grouping could he get exactly two animals in

	Group 1	Group 2
A	Can fly	Cannot fly
B	Insects	Non-insects
ဂ	Breathe through skin	Breathe through breathing holes
ס	Body divided into segments	Body has no segment

 $\underline{\mathbb{C}}$

A and B only C and D only A, B and D only A, B, C and D

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three different plants, R, S and T. Mr Brown ploughed a field, removed all the weeds growing in the field and then left it for some time. On the edge of the field, untouched by the plough, were



diagrams shows the most likely way these plants were spread across his field? When Mr Brown returned a month later, the three plants had spread across his field. There were 9 Plant R, 7 Plant S and 5 Plant T. Which one of the following



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The table below gives information about the temperature at which crops will grow.

Wheat 5 20 - 25	18	Potato 12 15 – 20	re (°C)	Crop Minimum Optimal	
		-20 34	 ត	timal Maximum	

Which one of the graphs below best represents potato?

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10 The diagram below shows how living things exchange gases with the environment.



Which one of the following statements is not correct?

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- $\underline{E}(\underline{0},\underline{0},\underline{4})$
 - Organism X could be algae. Process A takes place all the time.
 - Process B takes place all the time.
- Water is needed for process B to take place
- <u>1</u> The graph below shows the stages in the life cycle of an insect and the length of time the insect remains at each stage of its life cycle.



hatched? How many days does the insect take to become an adult after the egg has

- \underline{E} (3)(3)(4)18 days 22 days 28 days 16 days

3 The chart below shows Siti's family tree.



Based on the chart above, which one of the following statements about Siti's family tree are we sure of?

- 4302Siti has two uncles.X Siti's father has three sisters.
- Siti's great-grandparents have three children.

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 $\frac{1}{3}$ over a period of time shows the number of Bacteria M present in the milk at different temperatures number of bacteria M to make Bacteria M are added to turn milk into yoghurt within eight hours. The ideal yogurt ranges from 65 to 85. The table below

Temperature	Number of Bacteria M	Number of Bacteria M present in the mixture
	0h	d8
20 °C	10	33
25 °C	10 .	
30 °C	10	40
35 °C	10	73
40 °C	. 10	08
45 °C	10	76
50 °C	10 .	43

order for it to turn into yoghurt within 8 hours? which temperature range should Alan keep Alan added some Bacteria M into a bottle of milk. Based on the table above, the milk and bacteria mixture in

 Ξ (2)(2)(4)

25 °C to 30 °C

36 °C to 40 °C 44 °C to 48 °C

4. shown in the diagram, to study water pollution. Four cages of fish, W, X, Y and Z, were placed in different parts of a river, as



The table below shows the results obtained from the study.

<u>,</u> ,				
	. 25	12	20	Number of fish alive at the end of study
1 metre	2 metres 2 metres	2 metres	1 metre	Depth at which the cage was placed in the river
				study
20	30	20	<u>з</u> 0	Number of fish at the start of
Cage Z	Cage Y	Cage X	Cage W	

conclusions is correct? Based on the results obtained from the study, which one of the following 1.

- Water upstream is not polluted.
- Water deeper in the river is less polluted.
- £000£ Water downstream is as polluted as upstream.
- Water downstream is more polluted than water upstream.

, G The graphs below show the concentrations of different pollutants detected in air samples at six monitored sites.



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Monitored sites

Monitored sites

- (4)Chemical W Chemical X Chemical Y
- Chemical Z

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3



Which set of items correctly matches the exit points A, B, C, D and E?

(4) styrc	(3) pape	(2) froste	(1) ceran	
styrofoam	paper towel	frosted glass	ceramic pot	A
alcohol	water	tissue paper	clear plastic frosted glass	Ø
transparency	mirror	water	frosted glass	j.
iron nail	steel rod	zinc rooftop	fron nail	J
copper rod	aluminium tray	copper wire	iron rod	Ę

17. Study the following diagram.



Sonia tested the strength of five materials by dropping a 1kg weight from a height of 1m. The materials were of the same size and shape. She noted the number of times results are shown below. the weight was dropped before the materials broke. Her

Π	D	C	B	A	Material
46	19	52	28	40	Number of hits to break the material

Based on the results in the table above, Sonia made the following conclusions:

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- $\cap \square$ Material C is a metal.
 - Material A is stronger than material E.
- Material B is hard enough to scratch material D. v
- repeat the experiment. Material D is the first one to break if a 2-kg weight is used to

Which of the above conclusions made by Sonia is/are correct?

- $E \mathcal{O} \mathcal{O} \mathcal{A}$ A only
 - D only
- O >and B only
- and D only

100 respectively. The table below shows the melting and boiling points of substances P, Q and R

Substa P Q R	S
nce	Substance P
Melting point (°C) 42 28 58	Melting point (°C) 42
Boiling point (°C) 83 64 93	Boiling point (°C)

at the same state? At which one of the following temperatures are the three substances P, Q and R

- (4) (2) (1)31°C
 - 61°C 48°C

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- 80°C
- 19. recorded her results and plotted them on a graph. Hannah put three identical towels containing the same amount of water in the balcony to dry. Each towel was folded such that the exposed surface areas of the towels were different. After 4 hours, each towel was weighed. Hannah then



of the graph? Which one of the following pairs of labels is most suitable for the X and Y axes

Surface area of towels	Time taken	(3)
Time taken	Surface area of towels	(2)
Mass of towels	Time taken	(1)
Yaxis	X.axis	

The diagram below shows a metal rod with four similar blobs of wax, E, F, G and H, attached to it.

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When the metal rod was heated by a candle flame placed below it, the blobs of wax melted in the order, G, F, H and then E.

At which part of the metal rod, V, W, X or Y, was the candle flame placed?

(2)	(1)
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(4) $\prec \times$

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She wanted to light up only two bulbs, which switches should she close?

432Ś A, B and D only C and D only

Ğ m ̈́ , B, D and E only , C, D and E only

22. circuit below. electrical conductivity by placing them at positions P, Q and R, as shown in the Zoe had three rods, X, Y and Z, of unknown materials. She tested their



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The results of the experiment were shown in the table below.

_			
Bulb lights up?	Bulb	Rod	Position
Yes	B1	X	: סי
No	B2	Y	Q
Yes	B3	Z	R

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shown in the table below. She then repeated the experiment by placing the rods at different positions as

Rod	Position
Y	ס
Z	Q.
×	R

Rod	
\prec	
Z	¢
×	7

Which one of the following shows correctly whether the bulbs light up or not?

No	Yes	Yes	Yes	Bulb 1
No	Yes	No	Yes	Bulb 2
No	Yes	Yes	No	Bulb 3

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as shown in Figure 2, is made end of the bar, A, pointing north as shown in Figure 1 below. Another bar GH, definite direction. A metal bar AB is suspended by a thin thread. of the same metal as AB and it settles in no It always comes to rest with one

23.



What happens when the two metal bars are brought near to each other?

- $\underline{6}$
 - Both ends, A and B, attract end G. End B repels end G but attracts end H.
- End A attracts end G but repels end H. End B neither attracts nor repels end G.

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24. shown. A pole is placed in front of a flight of steps. A lamp is shining onto the pole as



Which diagram below shows the correct shadow of the stick?





recorded the length of the spring and plotted a graph as shown below. Each time a different number of marbles was placed on the pan, Ronald



Based on the graph drawn by Ronald, what would the extension of the spring be if Ronald had placed 12 marbles on the pan?

3	ය	2	3
Succo	30cm	20cm	15cm

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26 The table below shows the expansion of certain metals when heated to 100°C.

	r		
			Key
R	Q	70	Metal
100mm	100mm	100mm	Length of metal at room temperature
106mm	102mm	. 111mm	Length of metal at 100°C

immersed into water at 100°C for 10 minutes. Metals P, Q and R were used to make rings as shown below. The rings were

Which of the inner rings could be easily removed at the end of 10 minutes?



Aaron carried out the experiment as shown below. Water in the container drips out from a hole at the base onto a wheel held below it. Which wheel will turn the fastest?

27.



The diagram below shows a water container filled with 4500cm³ of water. The capacity of the container is 10 litres. (1litre = 1000cm³)

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Joe turns on the tap of the container to fill his cup with 500cm³ of water.

What is the final volume of the air in the container?

					,
				-	(4) (4) (2) (1)
	¢				5000 5500 9500
					5000 cm ³ 5500 cm ³ 6000 cm ³ 9500 cm ³
	•		·		
		·			
				•	
				×.	

floor. Inez carried out an experiment to find out how far a toy car would move on a tiled surface when the elastic band is pulled back to different distances. She stretched the elastic band before releasing it to slide the toy car across the tiled

29.



distance moved by the toy car and the distance the elastic band is pulled back? Which one of the following graphs best describes the relationship between the



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30. Some processes involving energy changes are listed below.

- Burning of fossil fuels

- $\Box \cap \Box >$ A durian dropping from a tree Rubbing of a rubber seed on the ground Using wind to spin a windmill connected to a generator

the processes above? Which one of the following diagrams correctly shows the energy changes in



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energy Kinetic

energy

Heat



energy

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 \mathbf{P}

energy

C

Potential



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CHIJ ST. NICHOLAS GIRLS' SCHOOL



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PRELIMINARY EXAMINATION

2010

P6 SCIENCE

(BOOKLET B)

26 August 2010

Total time (CLASS	NAME
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booklets /	Primary 6	
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ä		
Total time for booklets A & B: 1 hour 45 minutes		(
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INSTRUCTIONS TO CANDIDATES

40 marks 14 questions

- Do not open this booklet until you are told to do so.
- Follow all instructions carefully.

Answer all questions and write your answers on this booklet.

Parent's Signature/Date

2 1

152

Total **Booklet A** Booklet B 100 40 60

2

This booklet consists of 15 printed pages.

Section B (40 marks)

For questions 31 - 44, write your answers in this booklet. The number of marks available is shown in brackets [] at the end of each question or

part question.

3 The diagram below shows the movement of water in a plant.



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Wenjie placed a cell as shown in figure 1 below into a beaker of solution W. He then removed the cell and tested part X of the cell for the presence of solution W. He did not find any trace of solution W in part X.



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ယ္သ The diagram below shows the life cycle of a mealworm beetle.



34 . The graph below shows the percentage of carbon dioxide within a greenhouse for two separate days.



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- (a) Name the food source(s) in the food web.
- (d organisms each. From the food web above, write down two food chains with five types of [2]

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(ii)

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37. need to live in water. The table below shows some aquatic animals and the amount of oxygen they

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Rat-tailed maggot	Caddisfly larva	Mayfly nymph	Bloodworm	Animal
Very little	Moderate	Large	Little	Amount of oxygen needed

below. examined the animals in the water. He recorded his observations in the table Hanwei collected four samples of water from a stream at different locations and

Z	Y	X	V.	Water sample
Bloodworm	Rat-tailed maggot	Mayfly nymph	Caddisfly larva	Animal found

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Using the information provided above, arrange the four samples of water, W, X, Y and Z, from the least polluted to the most polluted in the boxes below. [2]





below. The water absorbed by the materials would travel upwards and smudge towel. Strips of materials, A, B, C and D, of the same size were all dotted with water soluble ink and left to hang in a trough of water as shown in the diagram the dots along the length of the strips creating blotches of ink. An experiment was set up to find out which material is most suitable for making a



The diagram below shows what was observed after a period of time.



Based on the observation, which material would be least suitable for 2



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their investigation plans. retaining heat. Chung Ling and Sum Yu wanted to find out which material, M or N, is better at They set up the experiments as shown below and wrote down





Steps \sim 4 ω every 3 minutes Record the reading on the thermometer by taking out the thermometer Place a thermometer into each beaker of water. made of material N Place one beaker in a box made of material M and the other in a box Fill 2 similar glass beakers with boiling water. Chung Ling's Plan

ഗ		4	ယ		2	1	Steps
Repeat the experiment 3 times.	out the thermometer.	Record the reading on the thermometer every 3 minutes without taking	Place a thermometer into each beaker of water.	made of material N.	Place one beaker in a box made of material M and the other in a box	Fill 2 similar glass beakers with boiling water.	Sum Yu's Plan

(a) Whose plan is it? There are some errors in the steps taken in one of the investigation plans. Ξ



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were placed into a huge tank of water. and Z. The following diagram shows what she observed when the five containers placed different numbers of similar pebbles into five similar containers, V, W, X, Y Mandy wanted to find out the relationship between the number of pebbles in a container and how low this container would sink when it was put in water. She

40.



(a) How many pebbles do you think Mandy has placed into container Y?





41. Leny carried out an experiment as described below. <u>_</u>____1_____

placed some ice cubes into the container of water. She poured some water that was heated to 45°C into a container. She then



(a) What would happen to the temperature of the water after Leny had added the ice cubes? Give a reason for your answer. [1]

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heated to 70°C into the container of water as shown below. After all the ice cubes had melted, Leny immersed a metal ball that had been



What would be the final temperature of the metal ball after two hours?

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42. The diagram below shows a bicycle dynamo which is used to generate electricity. The friction driver is attached to the wheel of the bicycle which will rotate the driver when it is in motion and produces electricity.



The circuit below is connected to the dynamo above to light up a bulb.



State the energy conversion from A to C.

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5

12

[2]

<u>b</u> dynamo failing to work. When a dynamo is used to generate electricity in a bicycle, an additional power source will be used as a backup to guard against the case of the

adding in: Draw a clearly labelled circuit diagram to improve on the above circuit by

- 33 a battery as a backup energy source, and a switch used to change the power source from the dynamo to the battery in the event that the dynamo fails to work. [7]



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43. diagram below. Chloe shone a torch on an object from two different positions as shown in the The shadows were cast on two screens, A and B.



- (a) Draw the shape of the shadows formed on the two screens, A and B, [2] respectively.
- **b** Chloe noticed that the shadows formed on both the screens were not sharp. Suggest how Chloe could make the shadows sharper. [1]

1		Γ	
	What ar formed?		
	are		•
	the		,
	What are the properties of light that causes formed?		
	Ś		•
	f light		
	that		
	caus		
	d-the allowed		
	shadows to be [1]		
	5 be		•

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the slope before eventually coming to a stop. they decided to have a competition as they approached a slope. They pedalled as hard as they could from point A to point B (just before the slope) and then they stopped pedalling. They then lifted their feet from the pedals and coasted down Jayson and his classmates were cycling on a bridge at North Coast Park when

A drawing of the path they had taken was shown below.



- (a) fastest? At which point down the slope (C, D, E or F) did the bicycles travel the Ξ
- Ξ What is the energy conversion when Jayson starts to cycle?

[]



0 State two other forms of energy that are also present as the bicycles travel from point A to point F. [1] [1]

~ End of Paper ~~

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1.	4	11.	2	21.	1
2.	4	12:55	200	22.2.3	4
3.	4	13.	3	23.	1
4.	3	14.	2	24.	2
5.	3	15.	3	25.	3
6.	- ジン () () () () () () () () () () () () ()	16.	4	26.	3
7.	S 15/	17.	2	27.	4
8. 🟹	× 龙翼 - 642	18.	3	28.	3
9. Ž	必须 [2	19.	4	29.	4
10. <i>Č</i>		20.	3	,30,	3

31a.i).lt will come out/escape from the leaves through the stomato.it will help to cool the leaves

31a.ii).ltinelps the plant to keep rooted to the ground

31.b)A plant's transport system start from a one way direction after it is given to the leaves it remains. However, after the blood is pumped to the other parts the body is returned to the heart.

32.i)Cell membrane. 32ii)No. The cell membrane that controls the movement of substance in and out of the cell is still present so solution W still cannot enter the cell

33a. They feed on seedlings and grains so they are regarded as best to the farmer. However mealworms can be used as load for fish or bird so they are reparded as useful to the period oners

33b.i.F ii.T iii.T

iv.NP

34.i.At 3pm ii.ii.It was a rainy day so, there is no sunlight.

35.a) A:.stomach

35.b)Similarity: Both breakdown the food into simple substance.

Difference:The food in stomach is still digesting but digestion stop at small intestine.

36.a)c and k b)i. $K \rightarrow D \rightarrow A \rightarrow B \rightarrow F$

b)ii.K→D→A→H→F

B:small intestine

37.least poulluted :-x w z y

41.b)R 38.c)Becauseimetales a material that will not absorb liquid: 38.b)The ink dots will not be absorded by the metal strips. 42b) 42.a)kin 41.a)Tį 40.b) 39a)Chung 38.a)B. It is the least absorbent 0 from of thê 39b)Chừng 40.a)9read the The D. Ling's plan ebbles pperature and make the experiment inaccurate. at Ling did not repeat her experiment and she takeout the phship is that the move pebbles in the container, rature / temperature of the water. ater will-lose hea water will decrease. electrical ene ¢, Surrou Becaŭs light energ ndings ~ine,ice the deeper the depth eat energy at C ubes thermometer to will gain heat