TOPICAL TEST 4A:

30

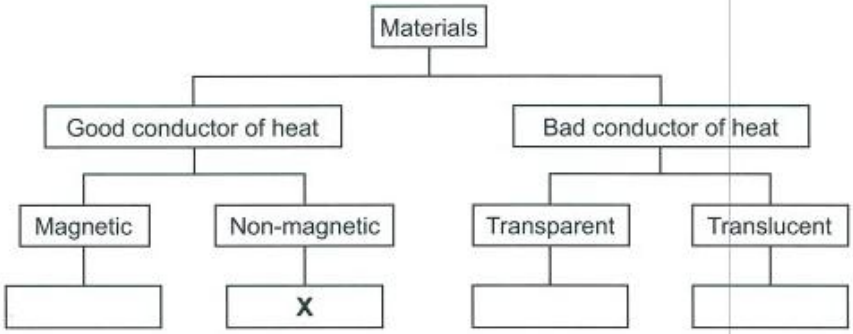
Section A (10 x 2 marks)

For each question from 1 to 10, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4) and write the answers in the brackets provided.

1. The properties of the four materials, A, B, C and D, are shown in the table below.

	A	B	C	D
Magnetic material	Yes	No	No	No
Good conductor of heat	Yes	No	Yes	No
Good conductor of electricity	Yes	No	Yes	No
Allow light to pass through	No	Yes	No	some

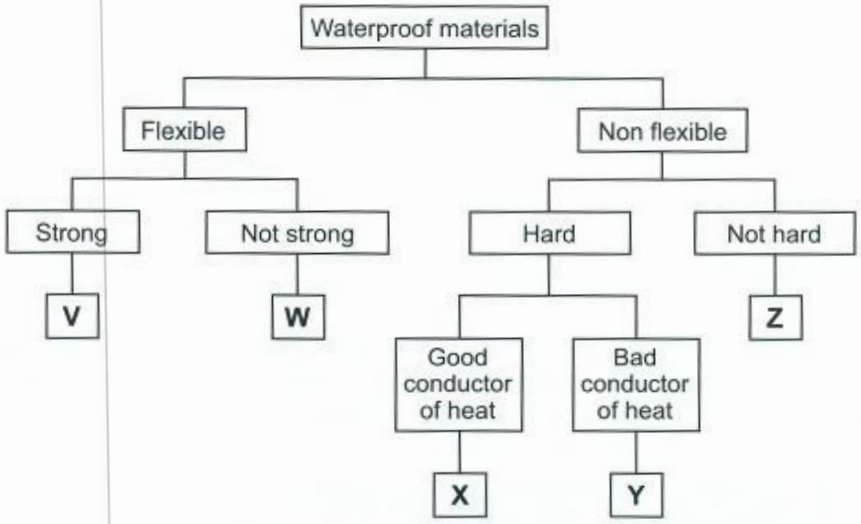
The materials are grouped using the classification chart below.



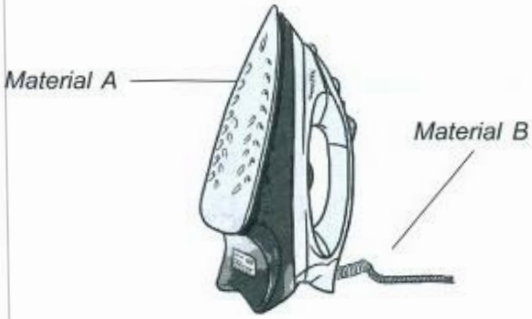
Which materials should be grouped with X?

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

2. Study the classification chart below carefully.



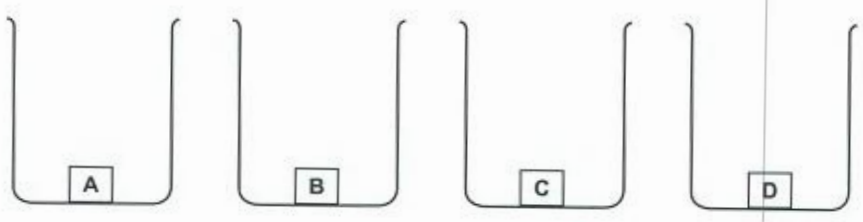
Which of the materials, V, W, X, Y and Z, are most suitable for making the parts of the iron shown below.



	Material A	Material B
(1)	Z	W
(2)	X	Z
(3)	X	V
(4)	Z	V

( )

3. A, B, C and D are all cubes with a volume of 40cm^3. All of them sink in water but are made of different materials. All 4 cubes were dry before the experiment. They were each placed in a small beaker as shown in the diagram below.



100 ml of water was then poured into each beaker. After 2 minutes, it was noted that the water levels of each beaker were not the same. The following table gives the water levels for each beaker.

Cube	Water level
A	140 ml
B	125 ml
C	130 ml
D	119 ml

Which one of the cubes is waterproof?

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

( )

4. Three rods, P, Q, and R, were tested to find out what materials they were made of. The table below shows the results of the test.

Observation	P	Q	R
Did the bulb light up when it was connected to the circuit tester?	No	Yes	Yes
Was it attracted to a magnet?	No	Yes	No
Did it shatter when dropped on hard ground?	Yes	No	No

What could P, Q and R be?

	P	Q	R
(1)	Copper	Glass	Iron
(2)	Glass	Copper	Iron
(3)	Plastic	Copper	Iron
(4)	Glass	Iron	Copper

( )

5. The following items are classified into two groups.

Group X	Group Y
 Mirror  Television  Scissors	 Fish tank  Spectacle lens  Wine glass

Choose a set of suitable headings for Groups X and Y respectively.

	X	Y
(1)	Opaque	Transparent
(2)	Magnetic	Non-magnetic
(3)	Electrical conductors	Electrical insulators
(4)	Natural	Man-made

( )

6. Which of the following is made of the weakest material?

(1) Plastic

(2) Metal

(3) Wood

(4) Melamine

( )

7. Yuki tested two bags, A, and B, made of different materials. She put 3 similar cans of drinks in each bag.

Based on her observation shown above, Yuki can conclude that _____.

(1) Bag A is lighter than Bag B.
(2) Bag A is stronger than Bag B.
(3) Bag A is more flexible that Bag B.
(4) Bag A is waterproof while Bag B is not waterproof. ( )

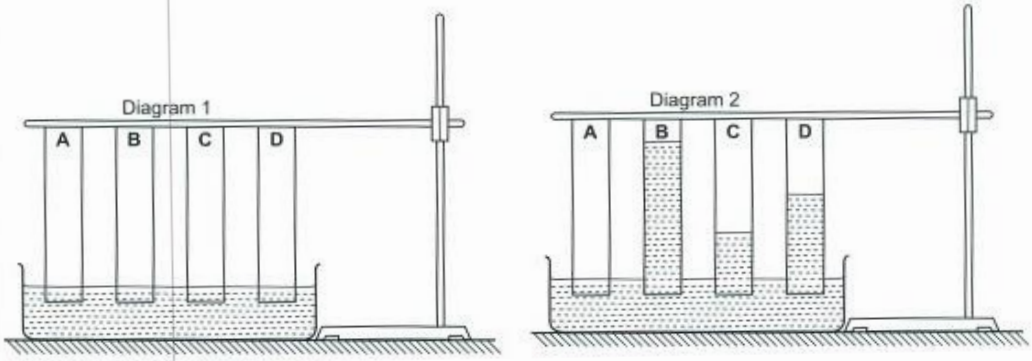
8. Zoe listed the properties of 4 materials, W, X, Y and Z, as shown below.

Property	W	X	Y	Z
Flexible	✓	✓	✗	✗
Waterproof	✗	✓	✗	✓
Strong	✗	✗	✓	✓

Which material is most suitable for making the part labelled A?

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

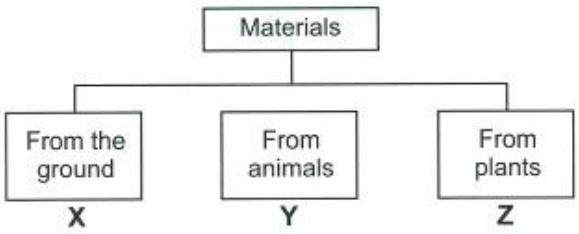
9. The set-up below is used to find out which material, A, B, C or D, absorbs water the fastest.



Based on the observations shown in Diagram 2, which of the materials, A, B, C or D, is most suitable for making a diaper?

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

10. Study the classification chart below.



Which of the following could X, Y and Z be?

	X	Y	Z
(1)	Iron	Rubber	Silk
(2)	Wool	Clay	Cotton
(3)	Cotton	Silk	Wood
(4)	Iron	Wool	Rubber

( )

Section B (10 marks)

Read each question carefully and write the answers in the space provided.

11. The table below shows the properties of 3 materials, A, B and C.

Property \ Material	A	B	C
Breakable	No	Yes	Yes
Transparent	Yes	Yes	No

(a) Which material is likely to be ceramic? Explain your answer. (1m)

_____

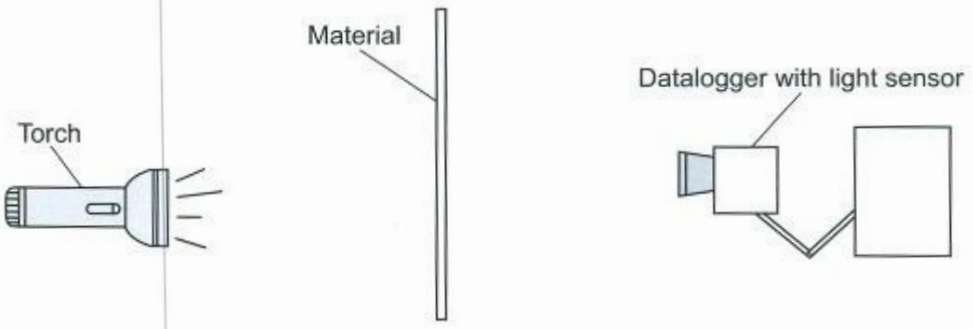
_____

(b) Which material, A, B or C, is most suitable to be used to make milk bottles for babies? Explain your answer. (2m)

_____

_____

12. Jia Jia conducted an experiment to investigate the ability of materials to allow light to pass through. Jia Jia switched off all the lights and the experiment was conducted in a dark room.



The table below shows the data Jia Jia recorded.

Material	Brightness of light / (lux)
P	90
Q	60
R	0
S	120

(a) Which material, P, Q, R or S, could be classified as opaque? (1m)

_____

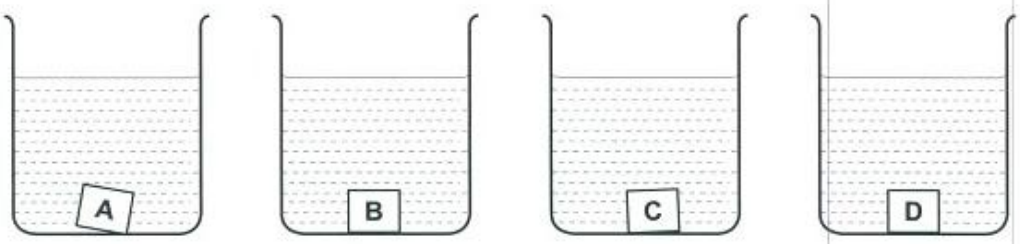
_____

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

_____

_____

13. Catherine carried out an experiment to find out how much water each material can absorb. She placed four different materials, A, B, C and D, into 4 identical containers as shown in the diagram below. Each container was then filled with 50 ml of water.



She removed the materials and recorded the amount of water left in each container after 20 minutes as shown in the table below.

Material	Amount of water left in the container (ml)
A	45
B	33
C	50
D	22

(a) Which material, A, B, C or D, is most suitable to be used to make Part X of the umbrella shown above? (1m)

(b) Which material, A, B, C or D, is most suitable to be used to make the bundle of coarse strings in a mop head? Give a reason for your choice. (2m)

14. The diagram below shows a pair of spectacles.

(a) Name two suitable materials that can be used to make the part labelled X. (1m)

_____

_____

(b) State one difference between the two materials suggested in (a). (1m)

_____

_____

TOPICAL TEST 4B:

30

Section A (10 x 2 marks)

For each question from 1 to 10, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4) and write the answers in the brackets provided.

1. Which of the following materials is most suitable to be used for making the ring of a basketball hoop shown below?

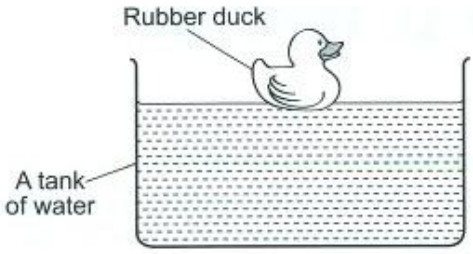
(1) Glass
(2) Steel
(3) Cloth
(4) Cardboard ( )

2. James needs a belt to hold his pants up.

Which of the following properties of the material is most important to be taken into consideration for it to be chosen to make Part X of a belt?

(1) Flexible
(2) Waterproof
(3) Breaks easily
(4) Transparent ( )

3. Melissa has a rubber duck as shown in the diagram below.



The table below shows a few other things that are classified into two different groups.

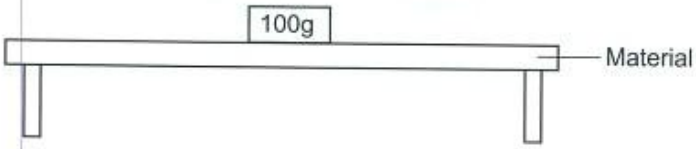
Group X	Group Y
Copper coin	Plastic bottle
Needle	Wooden cork

Which of the following best explains why the rubber duck is classified into that group and the reason for it?

	Group	Reason
(1)	X	Rubber duck is waterproof.
(2)	X	Rubber duck floats on water.
(3)	Y	Rubber duck floats on water.
(4)	Y	Rubber duck is flexible.

( )

4. Silvia carried out an experiment to investigate the strength of three bars of different materials, X, Y and Z, as shown below.



She placed 100-g weights onto each material, one by one, until the material broke. She recorded the results in the table below.

Material	Amount of weight needed before the material broke
X	400 g
Y	700 g
Z	200 g

Based on the results in the table above, what can Silvia conclude about Materials X, Y and Z?

(1) Material Z is the strongest.
(2) Material X is stronger than Material Y.
(3) Material Z is stronger than Material X.
(4) Material Y is stronger than Material X and Material Z. ( )

5. The properties of three objects are recorded in the table as shown below.

Property	Spectacle lens	Mop	Plastic chopsticks	Socks
Waterproof	✓	✗	✓	✗
Fragile	✓	✗	✗	✗
P	✗	✓	✗	✓

Which of the following best represents characteristic P?

(1) Float
(2) Flexible
(3) Opaque
(4) Transparent ( )

6. Study the characteristics of Materials A, B, C and D.

Material	Waterproof	Flexible	Heavy	Strong
A		✓	✓	
B	✓			
C	✓			✓
D		✓	✓	✓

Which material, A, B, C or D, is most suitable to be made into a motorcycle helmet?

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

7. The following objects are classified according to their properties.

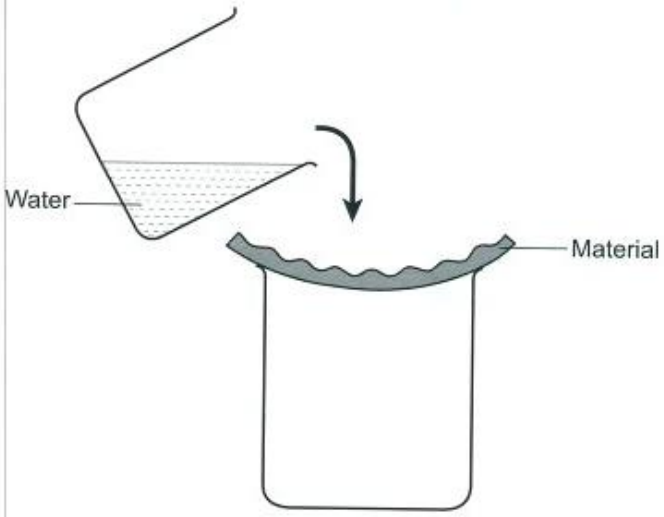
X	Y
Wine glass	Towel
Car windscreen	Paper
Magnifying glass lens	Metal fork

Based on the table above, which object is classified **wrongly**?

(1) Car windscreen
(2) Metal fork
(3) Towel
(4) Magnifying glass lens ( )

8. Lily wanted to choose a material with which to make rain boots. She conducted an experiment to find out which material, P, Q, R or S, is most suitable for making rain boots.

She poured 100 ml of water over each material as shown in the diagram below and then measured the amount of water collected in the beaker.



She recorded the results in the table below.

Material	Amount of water collected in the beaker
P	0
Q	10
R	20
S	30

Which of the tested materials is most suitable for making rain boots?

(1) P
(2) Q
(3) R
(4) S

( )

9. Which of the following objects are made of only 2 materials?

Eraser

Stamp

Needle

Cooking pan

(1) Cooking pan only
(2) Needle and cooking pan only
(3) Eraser and needle only
(4) Stamp and eraser only ( )

10. The properties of a new material are listed below.
- It is flexible.
- It is waterproof.
- It does not allow light to pass through.
- It does not break easily when dropped from a height.

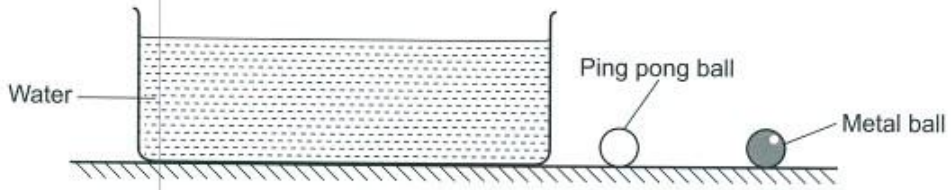
This new material is suitable for use to make a _____.

(1) towel (2) window pane
(3) car tyre (4) cupboard ( )

Section B (10 marks)

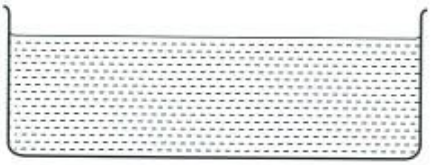
Read each question carefully and write the answers in the space provided.

11. Daniel had two objects, a ping pong ball and a metal ball as shown in the diagram below.

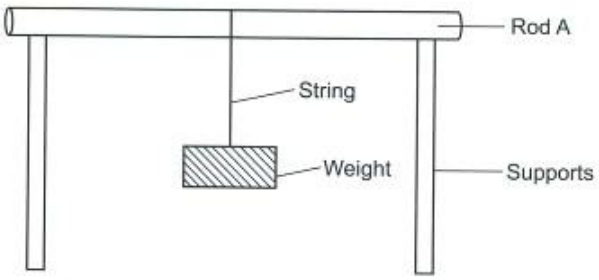


He dropped both objects into the tank of water.

(a) In the diagram below, **draw** to show the positions of the ping pong ball and the metal ball after they have been dropped into the tank of water. (1m)



Daniel had 4 rods made of Materials A, B, C and D. He hung some weights on Rod A, adding them one at a time, as shown in the diagram below. He recorded the mass of the weights added before the rod broke. He then repeated the experiment using Rods B, C and D.



The table below shows the result of the experiment.

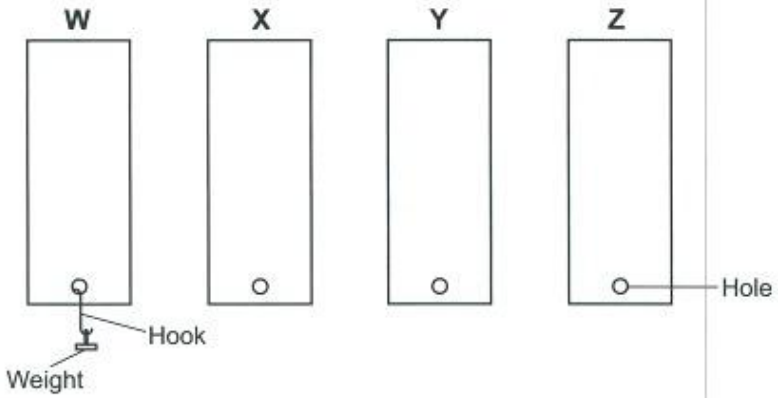
Material	Mass of weight added to the material before it broke (g)
A	1200
B	700
C	250
D	910

(b) Based on the results recorded in the table above, which material, A, B, C or D, is most suitable for making a box used to carry 1 kg of apples? (2m)

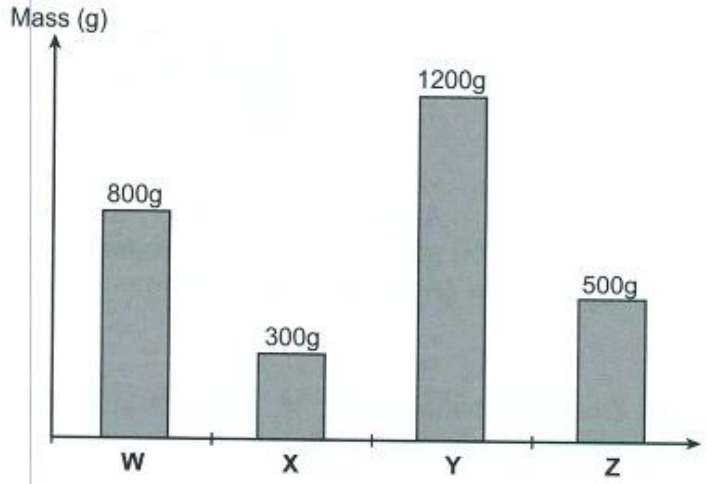
_____

_____

12. Fenny wanted to find out the strength of four boards, W, X, Y and Z with the set-up shown below.



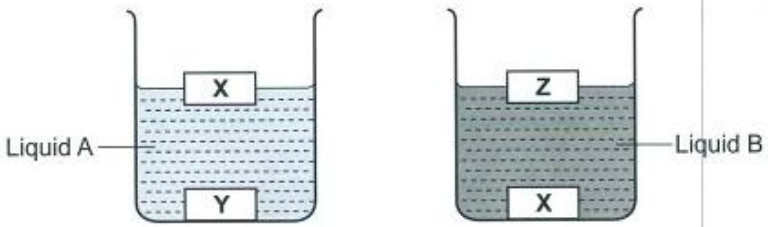
She kept on adding weights to the boards until the boards broke. She repeated the experiment on all four boards and observed the maximum mass each board could hold before breaking. She recorded her observations in the graph below.



(a) Based on the information in the graph above, arrange the boards, W, X, Y and Z, in order, from the strongest to the weakest. (1m)

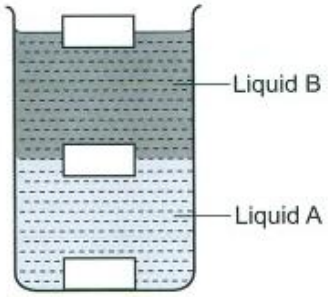
(b) Which material is most suitable to be used to make a book shelf? Explain your answer. (2m)

13. Simila-sized blocks of different materials, X, Y and Z, were placed in Liquids A and B. The blocks stayed in the positions as shown below.



Liquid A and Liquid B do not mix together. When they are poured into a container, Liquid B floats on top of Liquid A. If similar blocks of Material X, Y and Z were added to this container, how would the positions of the blocks be?

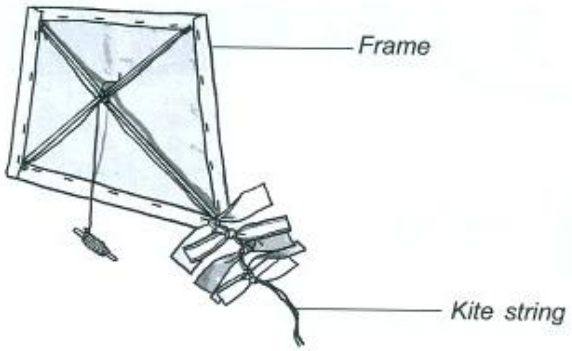
(a) Fill in the blocks with the letters, X, Y and Z in the diagram below to show the materials they are made of. (1m)



The diagram below shows a toy sailboat to be placed in Liquid B.

(b) Which material, X, Y or Z, should be used to make the toy sailboat? Explain why. (1m)

14. Hannah wants to make a kite. The diagram below shows the different parts of a simple kite.



(a) The table below shows the functions of the different parts of the kite. **Circle** the suitable materials that Hannah should use to make the different parts of the kite. (1m)

Parts of the kite	Function of the part	Material to be used
Frame	Forms the shape and provides support for the kite.	Wood / Rubber
Kite string	To allow the person to control and fly the kite.	Glass / Cotton

(b) Explain your choice of material for the frame of the kite. (1m)

_____

_____