Name	Index Number	Class

JURONG SECONDARY SCHOOL
2016 MID-YEAR EXAMINATION
Secondary 1 Express

Science 10 May 2016

Physics Module **Total Duration for Science: 2 hours**

Candidates answer on the question paper
Additional materials: Nil

READ THESE INSTRUCTIONS FIRST

Write your name and index number on the cover page in the spaces provided.

Do not open the booklet until told to do so.

Section A: Multiple-choice questions [10 marks]
Answers to Section A **must** be written in the table provided in page 5.

Section B: Structure questions [14 marks]
Answer **all** questions in the spaces provided in the question paper.

Section C: Data-based question [10 marks]
Answer **all** parts in the spaces provided in the question paper.

Section	Marks
A	
B	
C	
Total	34

This document consists of **10** pages including this page.

Section A: Multiple Choice Questions [10 marks]

Each question in Section A has 4 possible answers. Select the most suitable answer and write A, B, C or D in the boxes provided on page 5.

1 All physical quantities consist of

A a unit and a symbol.

B a numerical magnitude and a symbol.

C a numerical magnitude and a unit.

D a unit and a length

2 The speed is calculated as

$$\text{Speed} = \frac{\text{Distance travelled}}{\text{time taken}}$$

What is the SI unit of speed?

A km/h **B** m/s **C** km/s **D** m/h

3 Which of the following shows prefixes arrange according to the **increasing size** of what they represent?

A micro → centi → mega

B kilo → milli → centi

C milli → micro → mega

D kilo → centi → milli

4 A student wishes to measure the diameter of a pencil down to an accuracy of 0.0001 m. Which measuring instrument should he use?

A Metre rule

B Vernier calipers

C Thread and meter rule

D Measuring cylinder

5 A student wants to find out if his classmates with longer legs can run faster than those with shorter legs.

What measurements should he make to carry out his investigation?

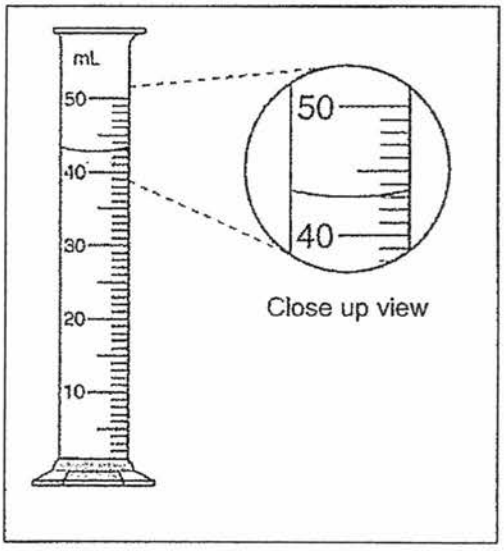
A The weight of his classmates and their running speed.

B The height of his classmates and their running speed.

C The length of his classmates' legs and their running speed.

D The length of his classmates' feet and their running speed.

6 The diagram below shows a close up view of a measuring cylinder used to measure the volume of the liquid.



What is the reading on the measuring cylinder?

A 40.3 ml B 40.4 ml C 43 ml D 44 ml

7 Mass is defined as

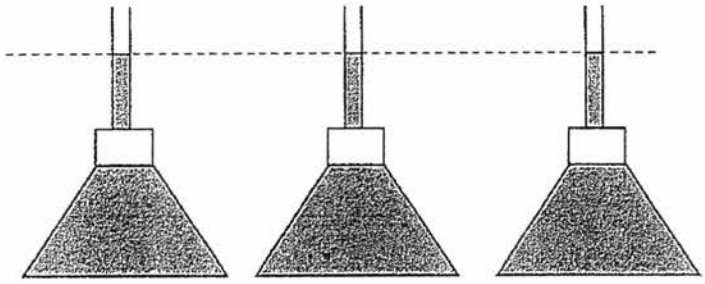
A the amount of space occupied by an object.

B the amount of matter in an object.

C the rate of change of speed.

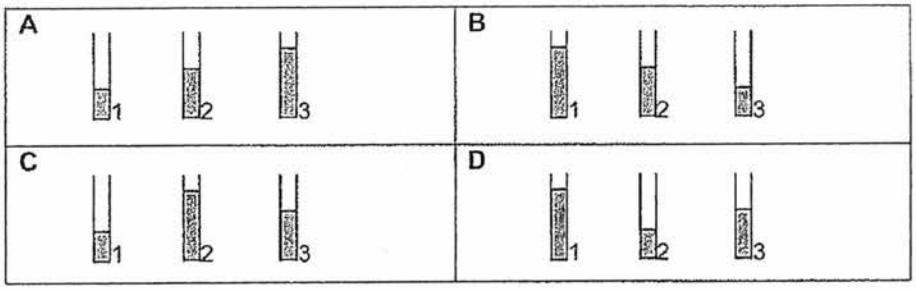
D the amount of gravitational pull acting on an object.

8 The diagram shows three identical conical flasks with stoppers and glass tubes. They are filled with coloured water to the same level in the glass tube as shown below.



Flask 1 is put in a container full of ice for 10 minutes, flask 2 is left at room temperature for 10 minutes and flask 3 is put in boiling water for 10 minutes. After that the three flasks are put next to each other again.

What will the water level in each flask look like?



9 When the temperature increases by 20 °C, which of the following will expand the most?

A 20 cm^3 of wood.

B 20 cm^3 of mercury.

C 20 cm^3 of oil.

D 20 cm^3 of oxygen

10 Which of the methods of thermal transfer does **not** require a medium to take place?

A Conduction

B Convection

C Radiation

D None of the above

Question	1	2	3	4	5	6	7	8	9	10
Answer										

Section B: Structured Questions [14 marks]

Answer all questions and show all relevant workings on the spaces provided.

11 Fig. 11.1 shows the zero error reading on a pair of vernier calipers while Fig. 11.2 shows the same pair of vernier caliper when the thickness of a book is measured.

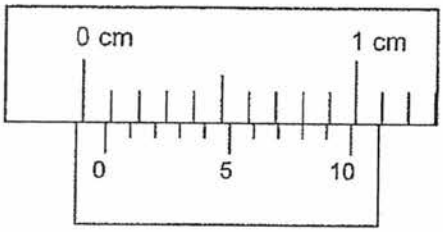


Fig. 11.1

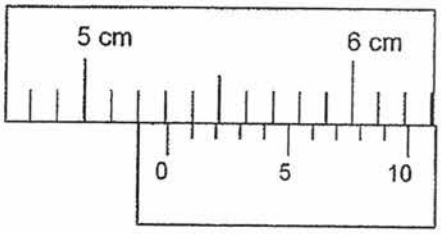


Fig. 11.2

(a) State the zero error as shown in Fig. 11.1

Zero Error = _____ [1]

(b) State the observed reading as shown in Fig. 11.2

Observed reading = _____ [1]

(c) Hence, determine the corrected reading of the thickness of the book.

Corrected reading = _____ [1]

12 Fig. 12.1 shows a bimetallic strip made of iron and brass at room temperature.
Fig. 12.2 shows the same bimetallic strip when it is heated.

Fig. 12.1

Fig. 12.2

(a) Explain why the bimetallic strip takes the shape as shown in Fig. 12.2 when it is heated.

_____

_____ [1]

(b) Draw a labelled diagram in the space below to show how the bimetallic strip would look like if it was cooled to below room temperature. [1]

(c) Give two examples of devices that make use of bimetallic strip to function.

_____

_____ [2]

For Examiner's Use

13 Fig. 13.1 shows how we can harness the thermal energy from the Sun to use in our everyday application.

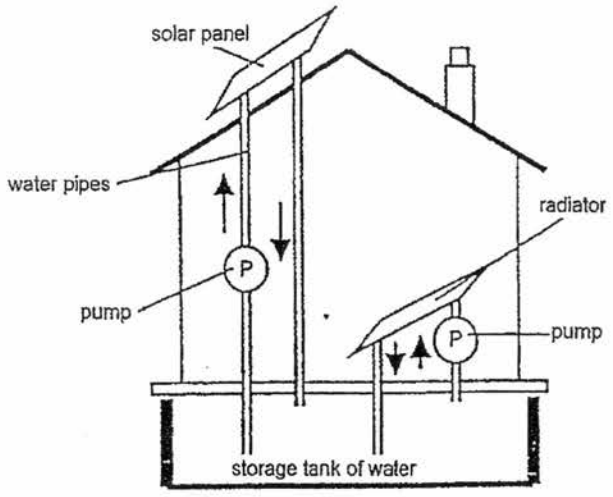


Fig. 13.1

(a) Explain why copper pipes are used for the water pipes in the solar panel rather than plastic ones although plastic pipes are cheaper than copper pipes. (Assuming both copper and plastics have the same melting point)

_____

_____

_____

_____ [2]

(b) Suggest a suitable color and texture for the piping of the radiator in order to keep the room warm during winter. Explain your choice of color and texture

_____

_____

_____

_____ [2]

For Examiner's Use

14 Fig 14.1 shows an electric kettle that uses a heating coil to perform its function.

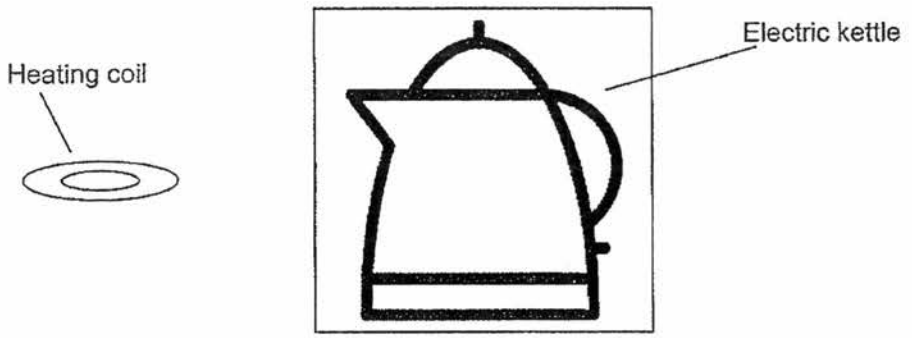


Fig. 14.1

(a) On Fig. 14.1, draw and label the position of the heating coil inside the electric kettle that would allow it to boil water more efficiently. [1]

(b) Suggest reason(s) for your answer in Qn 14(a).

_____

_____

_____

_____ [2]

For Examiner's Use

Section C: Data-based question [10 marks]

Answer all questions on the spaces provided. Show all relevant workings.

15 Fig. 15.1 shows an block of soft wood that was used to make a model car

Fig. 15.1

Table 15.2 shows the information of the soft wood.

Table 15.2

Mass of soft wood before carving	1000 kg
Mass of soft wood unused after carving	120 kg
Density of soft wood	240 kg/m^3

(a) State the meaning of *density*.

_____

_____ [1]

(b) Calculate the mass of model car.

Mass = _____ [1]

(c) Hence, determine the volume of the model car.

Volume = _____ [2]

For Examiner's Use

(d) Describe, with the aid of labelled diagram(s), an experiment that can be used to justify the answer that you have obtained in **Qn 15(c)**.

[3]

(e) A model boat was then made using a different material.
The mass of the model boat is 12.0 kg and it has the volume of 8.0 m^3.

(i) Calculate the density of model boat.

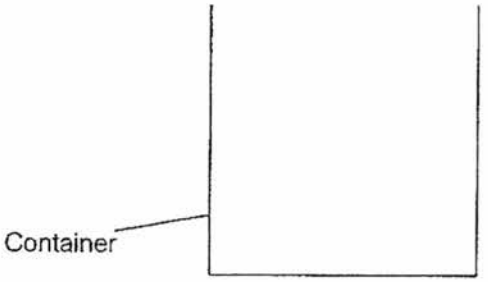
Density = _____ [1]

(ii) The boat is placed into a container together in a liquid **A** and liquid **B**. The density and volume of liquid A and B is shown in Table 15.3.

Table 15.3

Liquid	Density	Volume
A	1.0 kg/m^3	20.0 m^3
B	2.0 kg/m^3	20.0 m^3

In Fig. 15.4, draw and label the position of the boat and both liquid **A** and **B** when they have settled



[2]

Fig. 15.4

- End of Paper -

Secondary 1 E [2016 MYE Physics]

Question	1	2	3	4	5	6	7	8	9	10
Answer	C	B	A	B	C	C	B	A	D	C

Wrong unit, no unit, wrong capitalization of unit, fraction instead of decimal: [–1 mark] maximum

Section B – Structured Questions

11	(a)	0.08 cm	[1]
	(b)	5.31 cm	[1]
	(c)	5.23 cm (allow ecf from (a) and (b)	[1]
		Sub-total	3
12	(a)	Different metals expands at different rates Or different rates of expansion	[1]
	(b)	 Strip bends upwards on its edges Must be labelled (top level – brass; bottom level – iron)	[1]
	(c)	Iron, air conditioners, water heater, hair dryer, refrigerator, microwave oven, rice cooker, fire alarm etc	[1] ea
		Sub-total	4
13	(a)	- better conductor of thermal energy - able to conduct thermal energy faster	[1] [1]
	(b)	- dull black - better <u>emitter</u> of infra red radiation	[1] [1]
		Sub-total	4
14	(a)	Location of heating coil near the bottom of the kettle	[1]
	(b)	- <u>Hot fluid less dense</u>, <u>float up/rises</u> to displace the cooler fluids near the top - <u>Cold fluid more dense</u>, <u>sinks</u> to the bottom of the kettle Penalise 1 mark if student writes about hot *air* / cool *air*	[1] [1]
		Sub-total	3

Section C – Free Response Questions

15	(a)	Mass per unit volume	[1]
	(b)	m = 1000 – 120 = 880 kg	 [1]
	(c)	V = m/D = 880/240 = 3.67 m^3	 [1] [1]
	(d)	- diagram of displacement can method - fill can with water to the brim of displacement can - place object in can and collect the displaced water with a measuring cylinder Or - diagram of measuring cylinder with water - measure initial volume of water without object and then place object in measuring cylinder - measure final volume, volume of object = final vol – initial vol - place object in measureFill measuring cylinder with water	 [1] [1] [1] Or [1] [1] [1]
	(e)	(i) D = m/V = 12/8 = 1.5 kg/m3	 [1]
	(e)	(ii) liquid A on top Object in middle Liquid B below Allow ecf from e(i)	2 √ = [1] 3√ = [2]
		Total	[10]

Name	Index Number	Class

Jurong Secondary School
2016 Mid–Year Examination
Secondary 1 Express

Science (Chemistry) 10th May 2016

Candidates answer on the question paper.
Additional materials: Nil

Total duration for Science : 2 hours

Read these instructions first

Write your name and index number on the cover page in the spaces provided.

You are only allowed to use a ball pen (either of dark blue or black ink) to write neatly.
(Neither a pencil nor highlighter may be used).

All diagrams or labelling must be drawn neatly and clearly with a pencil (words must be written with a ball pen).

A calculator may be used if required.

Do not open the booklet until told to do so.

Section A: Multiple-choice questions [10 marks]
Answers to Section A **must** be written in the table provided on page 5.

Section B: Structured questions [13 marks]
Answer all questions in the spaces provided in the question paper.

Section C: Data-based questions [10 marks]
Answer **all** parts in the spaces provided in the question paper.

Section	Marks
A	
B	
C	
Total	/33

This document consists of 10 pages including this page.

A4 The hardness of three rocks, **X**, **Y** and **Z** were tested. When each rock was rubbed against one another, rock **X** scratched rock **Y** while rock **Z** was scratched by rock **Y**.

Which statement about the rocks is correct?

A Rock **X** is the hardest and rock **Y** is the softest.
B Rock **Z** is the hardest and rock **Y** is the softest.
C Rock **Y** is the hardest and rock **X** is the softest.
D Rock **X** is the hardest and rock **Z** is the softest.

A5 Which statement describes glass most accurately?

A It is a shiny material that conducts heat well.
B It can be transparent, brittle and has a high melting point.
C It is generally soft and does not corrode.
D It conducts electricity well and is malleable.

A6 50 cm^3 of alcohol is mixed with an equal volume of water in a measuring cylinder.

Which statement is correct?

	final volume	explanation
A	100 cm^3	Alcohol and water cannot be mixed, hence alcohol will float on top of water.
B	103 cm^3	The liquids expand when mixed, hence they occupy more space.
C	98 cm^3	The alcohol molecules will occupy the spaces between the water molecules.
D	100 cm^3	The sum of the volumes of alcohol and water mixed is 100 cm^3.

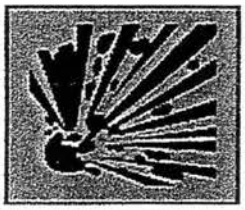
A7 Why are gases compressible?

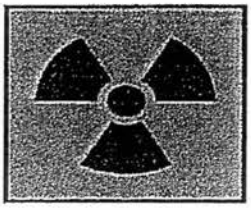
A The bonds between the particles are weak and can be broken easily.
B The particles are moving freely at high speeds.
C The particles are far apart.
D The volume occupied by the particles is small.

Section A: Multiple-choice Questions [10 marks]

Choose the correct answer for each question and write its letter in the table given on **page 5**.

A1 Which symbol is most likely to be found on the label of a bottle of strong acid?

A 

B 

C 

D 

A2 A student took a small amount of alcohol in a 10 cm^3 beaker and placed it near a lighted Bunsen burner on her bench. She then walked away to collect another chemical.

Which statement describes how she should handle chemicals in a safer way?

A A larger beaker should be used to collect alcohols.
B All chemicals should be collected at the same time.
C A conical flask should be used to collect alcohols.
D Alcohols should never be placed near heat or fire.

A3 The steps to lighting a Bunsen burner are stated below.

1. Turn on the gas tap.
2. Close the air hole.
3. Adjust the air hole to obtain the appropriate intensity of flame.
4. Light up the Bunsen burner.

Which option shows the correct order of lighting a Bunsen burner?

A 1, 2, 3, 4
B 2, 1, 4, 3
C 4, 3, 2, 1
D 1, 2, 4, 3

A8 **Table A8.1** shows the melting points and boiling points of some substances.

Table A8.1

substance	melting point / °C	boiling point / °C
iron	1535	3000
oxygen	−218	−181
water	0	100
copper	1083	2595
nitrogen	−210	−196
mercury	−39	357

Which substance(s) is/are liquid(s) at room temperature?
(Take room temperature to be 25 °C)

A water only
B water and mercury only
C oxygen and nitrogen only
D iron and copper only

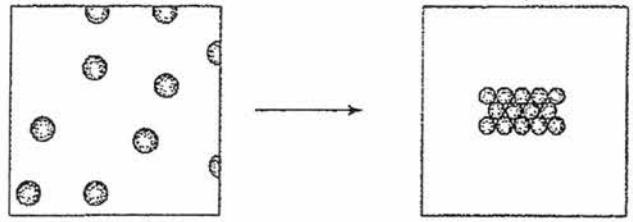
A9 Molten lava flows down the slopes of the volcano and gradually solidifies.

Which of the following has **not** occurred?

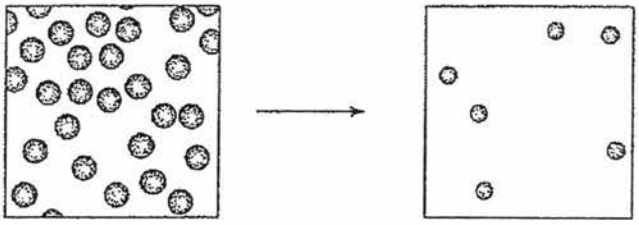
A A new substance has formed.
B Heat has been lost from the lava to the surrounding.
C A change of state has taken place.
D Molecules in the lava have moved closer to each other.

A10 Which pair of particle diagrams best shows what happens when oxygen particles in an air tank are released into the surrounding?

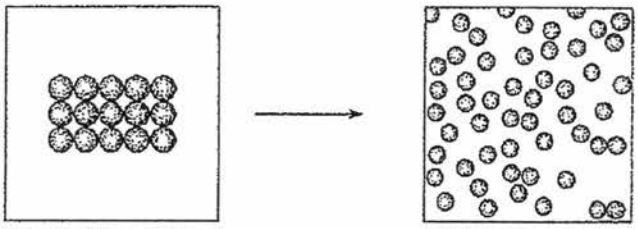
A



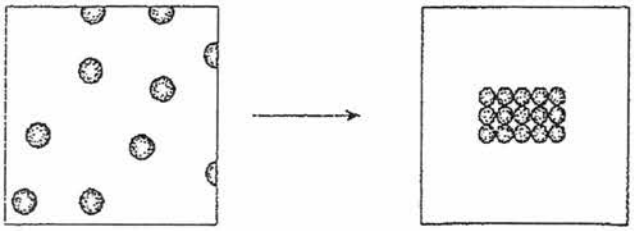
B



C



D



Qn	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
Ans										

B2 **Fig. B2.1** shows an anchor attached to a ship.

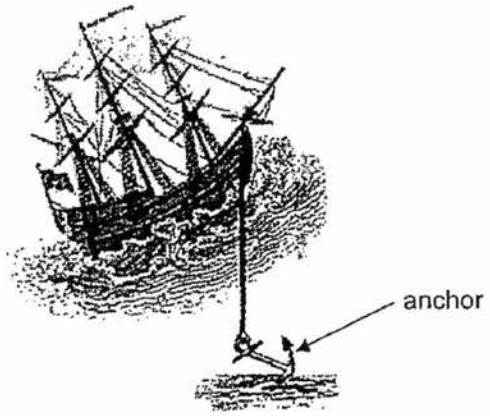


Fig. B2.1

(a) Suggest a suitable material used to make the anchor.

..... [1]

(b) (i) State **one** physical property which makes the material suggested in **(a)** suitable for this use.

..... [1]

(ii) Explain how the physical property in **b(i)** makes the material suggested in **(a)** suitable for this use.

.....

..... [1]

B3 Identify the physical processes (i.e. change of states) responsible for the following phenomena.

(a) Dry ice left in the open disappears after a while.

..... [1]

(b) A wet towel hung outside to dry.

..... [1]

(c) The glasses on a pair of spectacles fog up when removed from a cool environment.

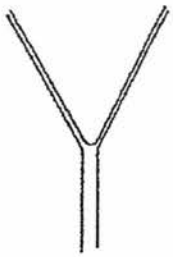
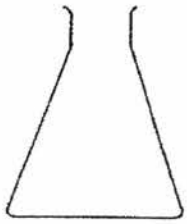
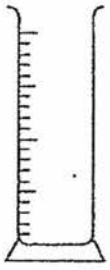
..... [1]

Section B: Structured Questions [13 marks]

Answer **all** questions in this section in the spaces provided.

B1 Name the following apparatus in **Table B1.1**.

Table B1.1

	diagram of apparatus	name of apparatus
(a)		
(b)		
(c)		
(d)		

[2]

B4 State two differences between a luminous and a non-luminous flame.

.....

.....

.....

..... [2]

B5 **Fig. B5.1** shows an experimental set-up used to investigate diffusion. A piece of cotton wool soaked with concentrated hydrochloric acid solution was placed at one end of the tube while another piece of cotton wool soaked with concentrated ammonia solution was placed at the other end. Fumes from both cotton wools moved towards each other and reacted to produce a white cloud of ammonium chloride.

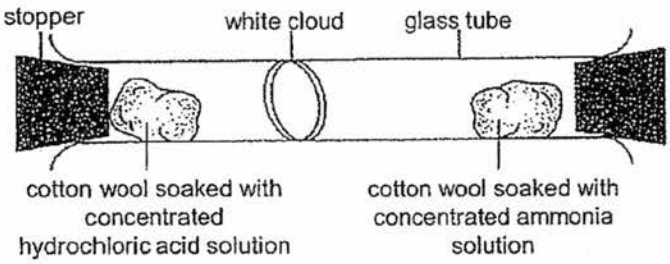


Fig. B5.1

[Molecular mass of concentrated hydrochloric acid = 36.5;
Molecular mass of concentrated ammonia solution = 17]

(a) Why did the white cloud form nearer to the hydrochloric acid than the ammonia solution?

.....

..... [1]

(b) How would using warmed concentrated hydrochloric acid solution and concentrated ammonia solution affect the experiment? Explain your answer.

.....

..... [2]

Section C: Data-based Question [10 marks]

Answer **all** questions in this section in the spaces provided.

C1 **Fig. C1.1** shows a partially drawn cooling curve of ethanol. Ethanol has a boiling point of 78 °C and a melting point of −114 °C. Ethanol was cooled from a temperature of 100 °C for 3 minutes until it reached its boiling point (region *AB*). It underwent change in state for 4 minutes while temperature remained constant until the 7-min mark (region *BC*).
After that, temperature decreased again for 4 minutes until it reached its melting point. Temperature remained constant for 5 minutes as ethanol underwent its second change in state. Upon completion of change in state, temperature was decreased to −120°C. This took 3 minutes.

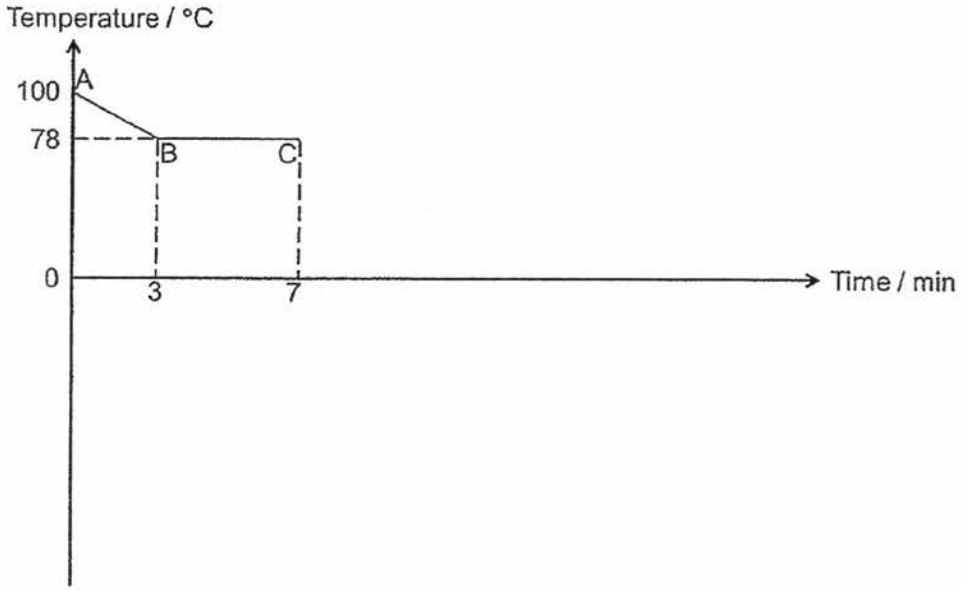


Fig. C1.1

(a) **(i)** Using the information provided above, complete the cooling curve. [3]

(ii) On the cooling curve, write down the states present in each region of the curve. [2]

(b) **(i)** Explain why the temperature remains constant in region *BC*.

.....

..... [2]

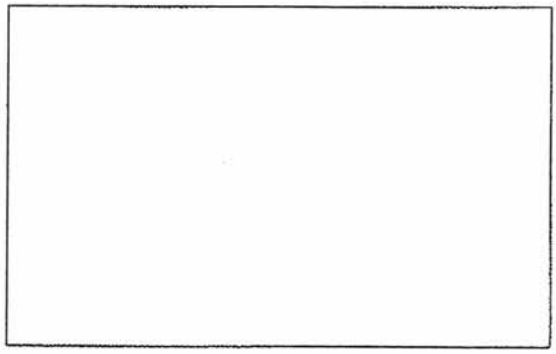
(ii) Describe the change in movement and arrangement of the particles in region *BC*.

.....

.....

..... [2]

(iii) Draw the particle diagram in region *BC*.



[1]

End of Chemistry Paper

Jurong Secondary School
1E Science Chemistry
2016 MYE
Marking Scheme

Section A: Multiple-choice Questions [10 marks]

Question	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
Answer	C	D	B	D	B	C	C	B	A	B

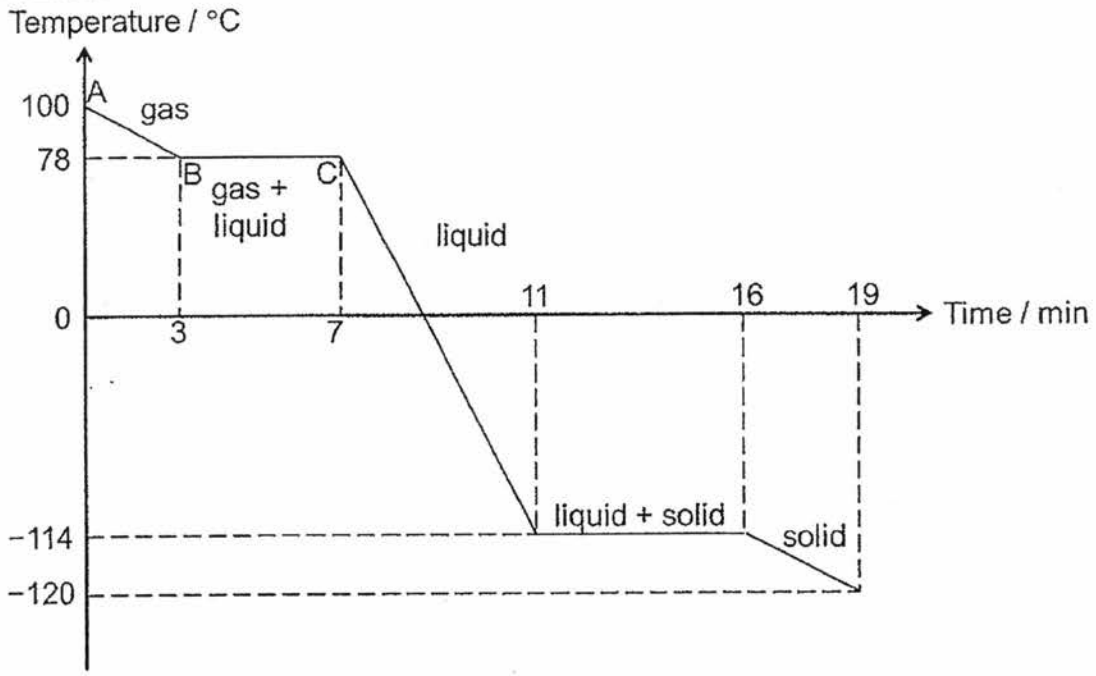
Section B: Structured Questions [13 marks]

Qn	Answer	Remarks
B1a)	Filter funnel	Reject: spelling errors **Award 1 mark for 2 correct answers**
B1b)	Conical flask	
B1c)	Evaporating dish	
B1d)	Measuring cylinder	
B2a)	Metal / Steel **[1]**	Accept any metal named
B2b(i)	Hard / high density / strong / durable **[1]**	Reject: heavy / high mass / able to sink
B2b(ii)	Hard: so that the anchor is able to withstand scratches after repeatedly being thrown against the seabed High density: so that the anchor is able to sink to the seabed Strong: so that it can withstand the forces/pressure of the waves or being hit against rocks/seabed without breaking **[1]**	Accept words to the same effect
B3a)	Sublimation **[1]**	Reject: spelling error
B3b)	Evaporation **[1]**	Reject: spelling error
B3c)	Condensation **[1]**	Reject: spelling error

B4	Luminous flame	Non-luminous flame	
	Yellow / orange flame	Colourless / blue flame	**Max 2 marks** 1 mark for each correct comparison
	Unsteady flame	Steady flame	
	Not so hot	Hot	
	Closed air-hole	Opened air-hole	
	Not suitable for strong heating	Suitable for strong heating	
	Produces soot after burning	Does not produce soot after burning	
B5a)	Concentrated hydrochloric acid has a **higher mass / is heavier**, hence it **moves slower / covers a shorter distance** [1] in the same amount of time		Or vice versa
B5b)	The experiment would take place **faster** [1]. A higher temperature causes the particles to have **more energy** and **move faster** [1].		

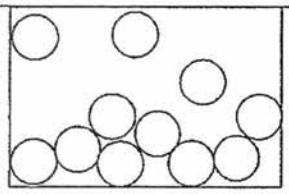
Section C: Structured Questions [10 marks]

C1a



(i) [1] – Correct shape of curve
[1] – Correct labels on the y-axis + clear link to curve (using dotted lines)
[1] – Correct labels on the x-axis + clear link to curve (using dotted lines)

(ii) [2] – 5 correct states at the correct positions
[1] – 2 to 4 correct states at the correct positions
[0] – 0 or 1 correct state

C1b(i)	Energy is **lost** [1] to the surrounding, **strengthening the forces of attraction** [1] in order for change in state to occur.	Accept: *released / given off* in place of *lost*
C1b(ii)	Movement: from **high speeds in all directions** to **slide past each other** [1] Arrangement: **closer together** [1]	Allow ecf from a(ii) but answer must still obey 'cooling' process
C1b(iii)	 [1]	There must be an obvious change in state (arrangement changes from close together to far apart)

Name	Index Number	Class

JURONG SECONDARY SCHOOL
2016 MID YEAR EXAMINATION
Secondary 1 Express

Science (Biology) 10 May 2016

Candidates answer on the question paper.
Additional materials: Nil

Total Duration : 2 hours

Read these instructions first

Write your name and index number on the cover page in the spaces provided.

You are only allowed to use a ball pen (either of dark blue or black ink) to write neatly.
(Neither a pencil nor highlighter may be used).

All diagrams or labelling must be drawn neatly and clearly with a pencil (words must be written with a ball pen).

A calculator may be use if required.

Do not open the booklet until told to do so.

Section A: Multiple-choice questions [10 marks]
Answers to Section A **must** be written in the table provided on page 2.

Section B: Structured questions [13 marks]
Answer all questions in the spaces provided in the question paper.

Section C: Data-based question [10 marks]
Answer **all** parts in the spaces provided in the question paper.

Section	Marks
A	
B	
C	
Total	/ 33

This document consists of 10 pages including this page.

Section A: Multiple-choice Questions

[10 marks]

Choose the correct answer for each question and write its letter in the table below.

Qn	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
Ans										

A1 Which specialised cell is biconcave in shape?

A red blood cell

B root hair cell

C xylem cell

D nerve cell

A2 Which of the following statements about photosynthesis is **false**?

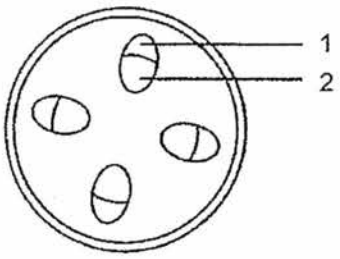
A Photosynthesis only occurs in the presence of light.

B Only the leaves of a plant can photosynthesis.

C Water is essential for photosynthesis.

D Carbon dioxide is a source of carbon for photosynthesis.

A3 The roots of a plant were placed in a coloured dye. The diagram below shows the transverse sections of the stem after one day.



Which of the numbered tissue(s) of the stem would be most heavily stained by the dye?

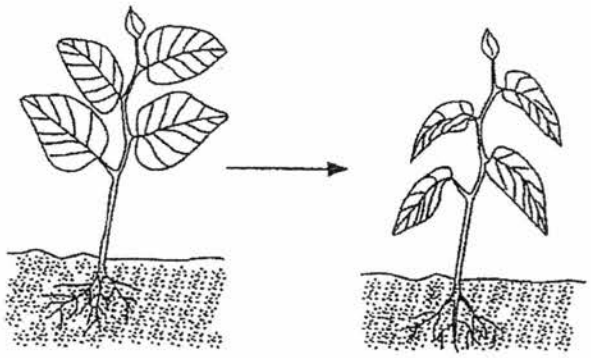
A 1 only

B 2 only

C 1 and 2

D none of the above

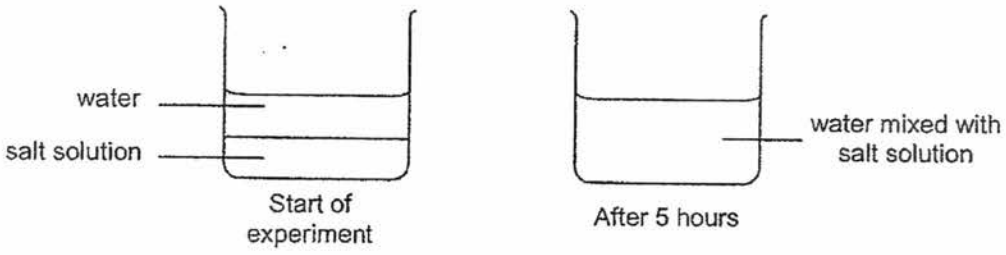
A4 The diagram shows how a young plant changes in appearance after a few weeks.



Which conditions will result in this change?

	temperature	humidity
A	high	low
B	low	high
C	high	high
D	low	low

A5 The diagram shows a mixture of water and salt solution.



Which process is responsible for the mixing of the two liquids?

A conduction

B absorption

C osmosis

D diffusion

A6 Which of the following processes involves osmosis?

A uptake of oxygen in the lungs

B circulation of blood in the blood vessels

C carbon dioxide entering a photosynthesizing leaf

D absorption of water by the root hair cells

A7 Which of the following minerals are required for the healthy growth of plants?

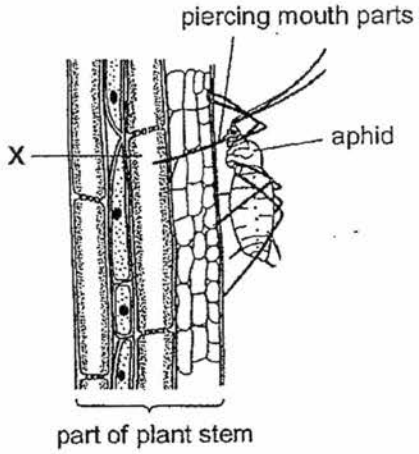
A zinc, cobalt and magnesium

B nitrogen, phosphorous and potassium

C mercury, iron and calcium

D iodine, nickel and chlorine

A8 Some insects use piercing mouth parts to obtain sugars from plants.
The diagram shows an aphid feeding on a plant stem.



What is structure labelled **X**?

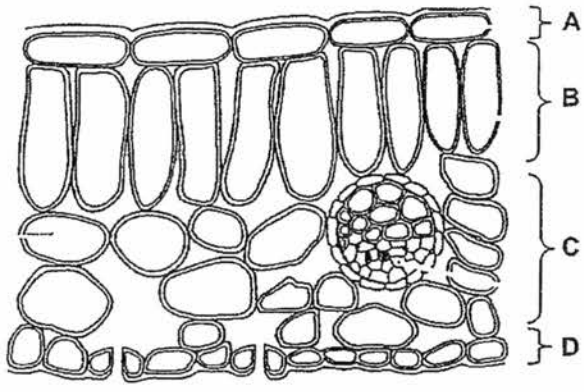
A xylem

B phloem

C cell sap

D cytoplasm

A9 The diagram shows the structures of a leaf. Which layer has the most number of stomata?



A10 Which of the following is **not** part of the human circulatory system?

A veins

B heart

C lungs

D arteries

Section B: Structured Questions

[13 marks]

Answer **all** questions in this section in the spaces provided.

B1 **Fig. 1.1** shows a plant cell.

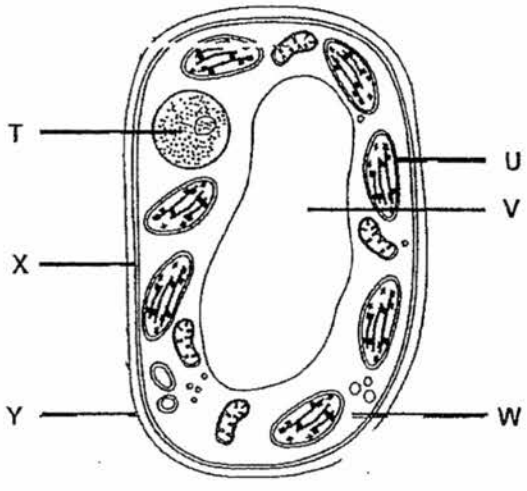


Fig. 1.1

(a) Name the cell structures **U** and **V**. [2]

U: _____

V: _____

(b) State one function for the following cell structures [2]

(i) **T:** _____

_____

(ii) **W:** _____

_____

(c) State the difference in property between structures **X** and **Y**. [1]

(d) How is the cell in **Fig. 1.1** similar to a typical animal cell? [2]

B2 **Fig 2.1** shows an experiment set up to study the effect of osmosis.

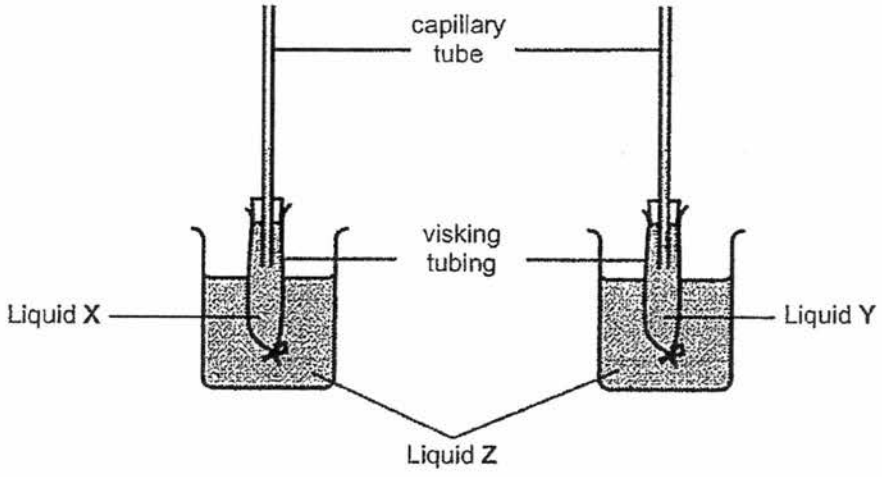


Fig. 2.1

After 30 minutes, the level of liquid **X** in the capillary tube raised, while the level of liquid **Y** in the capillary tube dropped.

(a) Define osmosis. [3]

(b) (i) Which of the three liquids, 10% starch solution, 20% starch solution and water, correctly represents **X**, **Y** and **Z**? [2]

X: _____

Y: _____

Z: _____

(ii) Which one of the three liquids (**X**, **Y** and **Z**) has the lowest water potential? [1]

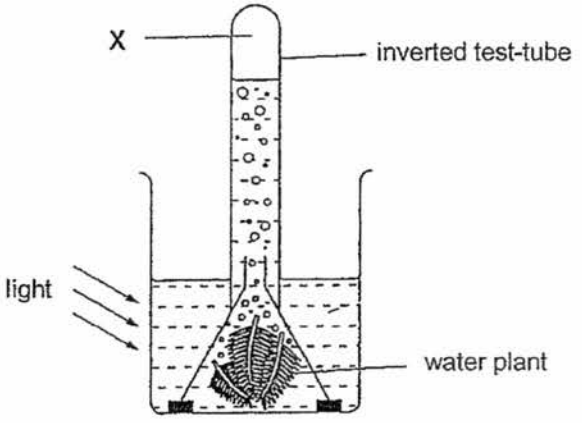
_____

Section C: Data-based Question

[10 marks]

Answer **all** questions in this section in the spaces provided.

C1 The diagram below shows an experimental setup to investigate the effect of different light intensities on the rate of photosynthesis.



Light of five different intensities, increasing from **A** to **E**, was used. The number of gas bubbles given off in one minute at each light intensity was counted. The experiment was repeated several times and average readings were taken as shown in the table below.

light intensity	average number of bubbles per minute
A	9
B	15
C	21
D	23
E	23

(a) Name the gas collected at **X**. [1]

_____

(b) At which light intensity does the rate of photosynthesis **first** reaches its maximum? [1]

_____

(c) How many bubbles per minute would you expect to be collected if the light intensity is more than **E**? [1]

(d) (i) With reference to the table, describe how does light intensity affects the rate of photosynthesis. [2]

(ii) In the space below, draw a graph to show the effect of temperature on the rate of photosynthesis. Explain your graph clearly. [4]

(e) A student commented that "starch is produced during photosynthesis". Why is this statement incorrect? [1]

End of Biology Paper

Name	Index Number	Class

JURONG SECONDARY SCHOOL
2016 MID YEAR EXAMINATION
Secondary 1 (Express)
Mark scheme

Science 13 May 2016

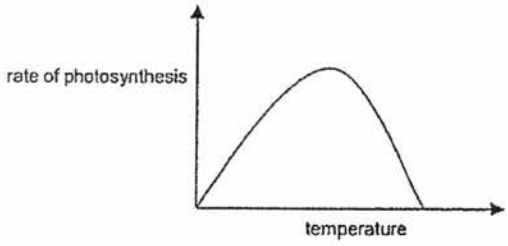
Biology Module **Total Duration for Science: 2 hours**

Section A: Multiple-choice Questions [10 marks]

Choose the correct answer for each question and write its letter in the table below.

A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
A	B	B	A	D	D	B	B	D	C

Qn.	Answers	Part marks	Marker's annotations
B1			
(a)	U: chloroplast; V: vacuole	1 1	
(b)(i)	Controls cell activities / keep the cells alive / cell reproduction	1	
(ii)	site for chemical reactions	1	R: jelly-like substance / contain chemicals
(c)	Make ref. to X is partially permeable + Y is fully permeable	1	
(d)	Any two of the following: **MP1:** presence of nucleus; **MP2:** presence of cytoplasm; **MP3:** presence of cell membrane	Max. 2	

Qn.	Answers	Part marks	Marker's annotations
B2			
(a)	Make ref. to **MP1:** movement of water molecules; **MP2:** directional movement (e.g. from high to low <u>water potential</u>); **MP3:** partially permeable membrane	1 1 1	R: water concentration
(b)(i)	X: 20% starch solution; Y: water; Z: 10% starch solution	Max. 2	1 mark if 2 answers are correct only
(ii)	X	1	
C1			
(a)	oxygen	1	
(b)	D	1	
(c)	23	1	
(d)(i)	Make ref. to **MP1:** increase in light intensity + increase rate of photosynthesis **MP2:** rate of photosynthesis remains constant at high light intensity	1 1	
(ii)	 Make ref. to **MP1:** increase in temperature + increases the rate of photosynthesis; **MP3:** further increase in temperature decrease the rate of photosynthesis	Max. 2 1 1	1 mark for correct labelling of axis R: if student did not mention "rate / speed" 1 mark for correct curve
(e)	Make ref. to glucose/sugar produced	1	