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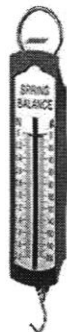


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**Section A**

Shade your answers on the Multiple Choice Answer Sheet provided

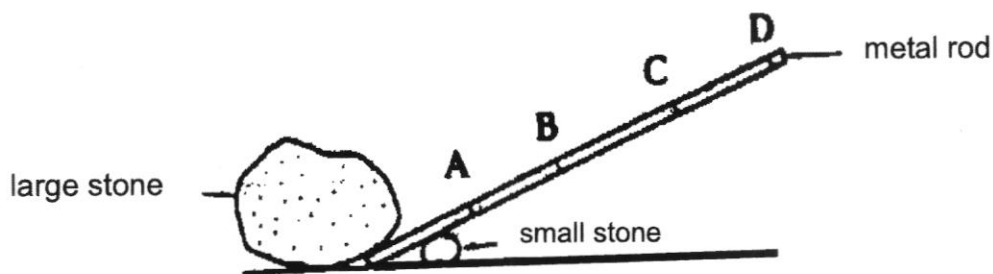
- 1 The diagram shows an instrument known as the spring balance.



State what the instrument measures and the SI unit of what it measures.

	what the instrument measures	SI unit
<b>A</b>	force	kilogram
<b>B</b>	force	newton
<b>C</b>	length	metre
<b>D</b>	mass	kilogram

- 2 A man uses a metal rod to raise a large stone as shown in the diagram below.



At which position **A**, **B**, **C** or **D** would he be pushing the metal rod to raise it most easily?

- 3 Which energy conversion takes place when a petrol-driven car is driven?

- A** chemical energy to kinetic energy
- B** chemical energy to heat energy
- C** electrical energy to heat energy
- D** electrical energy to kinetic energy

- 4 Which row contains only renewable sources of energy?

- A coal, oil, petrol
- B coal, solar, petrol
- C wind, oil, coal
- D wind, solar, hydropower

5 A glass filled with ice cubes was left on the table in the school canteen. After 15 minutes, the ice cubes melted.

Which statement correctly explains the phenomenon?

- A Heat was transferred from the ice cubes to the surrounding air.
- B Heat was transferred from the surrounding air to the ice cubes.
- C The ice cubes lost heat.
- D The surrounding air gained heat.

6 Railway tracks have gaps as shown in the diagram below.



The purpose of the gaps is to \_\_\_\_\_ .

- A allow for easy maintenance and replacement of the track
- B prevent damage to railway tracks due to expansion and contraction
- C prevent electricity from passing through railway tracks
- D reduce friction

7 Which row shows the correct unit for electric current and resistance?

	electric current	resistance
A	ampere (A)	ohm ( $\Omega$ )
B	ampere (A)	volt (V)
C	ohm ( $\Omega$ )	ampere (A)
D	volt (V)	ohm ( $\Omega$ )

8 Lemon juice has a sour taste and pure water has no taste. Which row correctly describes lime juice and pure water?

	lemon juice	pure water
<b>A</b>	acidic	alkaline
<b>B</b>	acidic	neutral
<b>C</b>	neutral	alkaline
<b>D</b>	neutral	acidic

**9** Siti collected a bucket of seawater filled with sand. How would Siti obtain pure water from the mixture?

- A** She should boil the mixture and collect what was left behind.
- B** She should filter the mixture and collect the filtrate.
- C** She should filter the mixture, boil the filtrate and collect the steam that condensed.
- D** She should filter the mixture, boil the filtrate and collect what was left behind when the water evaporated.

**10** Which of the following does **not** contain a suspension?

- A** a bottle of cough mixture
- B** a bowl of sugar syrup
- C** a cup of black coffee
- D** a glass of milk

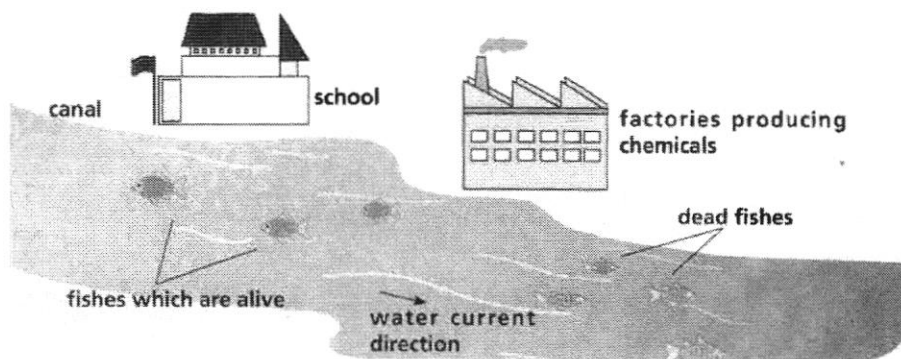
**11** The list below shows various ways of how clean water is used.

- I.** It is used to make medicines.
- II.** It is needed for cooking food.
- III.** It is needed to form clouds on a sunny day.
- IV.** Humans drink water to stay alive.

Which of the above ways correctly describe the importance of clean water to humans?

- A** I, II and III
- B** I, II and IV
- C** I, III and IV
- D** II, III and IV

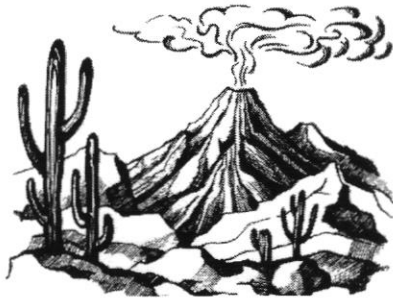
Refer to the diagram below for questions **12** and **13**.



- 12 What is the most likely reason for dead fishes found in the canal further from the school?
- A Fishes have to swim against the direction of the water current.
  - B Fishes live longer near the school.
  - C The temperature of water in the canal is not suitable for the fishes.
  - D The waste from the factory discharge has polluted the canal.
- 13 As students, which action would be the most suitable to take regarding the dead fishes?
- A Help to feed the fishes in the canal.
  - B Inform the school principal that the factory workers are killing the fish.
  - C Put in fishes of different species into the canal.
  - D Test the water to investigate if it was water pollution that killed the fishes.
- 14 Which of the following is **not** one of the four National Taps in Singapore?
- A desalinated water from the sea
  - B imported water from Malaysia
  - C rainwater directly from the clouds
  - D stormwater in reservoirs
- 15 Which of the following is a colourless and odourless toxic gas released by car exhaust fumes?
- A carbon dioxide
  - B carbon monoxide
  - C nitrogen oxide
  - D sulfur dioxide
- 16 A student wants to help to reduce the air pollution in his neighbourhood. However, he will **not** achieve his aim when he .....

- A hires a taxi instead of cycling to the shopping mall.
- B suggests to his parents to switch from petrol to electric vehicles.
- C uses fans instead of air-conditioners.
- D walks instead of getting his parents to drive when travelling for short distances.

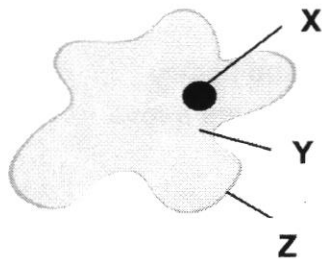
17 The diagram below shows a volcano eruption where gases are released. One of the gases is an air pollutant.



Which row correctly identifies the air pollutant released and its effect on the environment?

	air pollutant released	effect on the environment
A	carbon dioxide	causes acid rain to form
B	carbon dioxide	causes skin and eye irritations
C	sulfur dioxide	causes acid rain to form
D	sulfur dioxide	causes skin and eye irritations

Refer to the diagram of a typical animal cell below for questions 18 and 19.



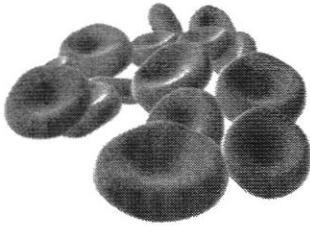
- 18 What is the function of the part labelled X?
- A controls substances leaving and entering the cell
  - B controls the activity of the cell
  - C controls the amount of food leaving the cell
  - D controls the amount of oxygen in the cell
- 19 Which of the following is **not** a function of part labelled Z?

- A changes the shape of the cell
- B contains jelly-like substances that fill the cell
- C controls food substances entering the cell
- D controls water from leaving the cell

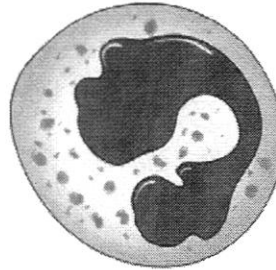
20 Rajoo and his brother have big eyes and straight hair. Which part of the cell determines these traits that Rajoo and his brother have?

- |                 |             |
|-----------------|-------------|
| A cell membrane | B cell wall |
| C cytoplasm     | D nucleus   |

21 The diagram below shows two different blood cells.



red blood cells



white blood cell

Which statements are true of the cells shown above?

- I. The red blood cell does not have a nucleus.
- II. The white blood cell has a cell membrane.
- III. The red blood cell contains haemoglobin.
- IV. The white blood cell has a nucleus.

- |                       |                    |
|-----------------------|--------------------|
| A I and II only       | B I and III only   |
| C II, III and IV only | D all of the above |

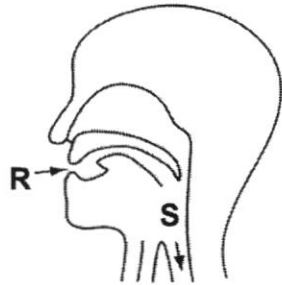
22 What is the reason why the foods we eat have to be digested?

- A They are solid substances.
- B They cannot be absorbed into our bloodstream.
- C They cannot pass through the digestive system.
- D They contain nutrients.

23 Inhaled air contains more ..... and less ..... as compared to exhaled air.

- A carbon dioxide, nitrogen
- B carbon dioxide, oxygen
- C nitrogen, oxygen
- D oxygen, carbon dioxide

24 Solid food enters the body at **R** and continues further to the part at **S**.



How does the food at **R** differ from the food at **S**?

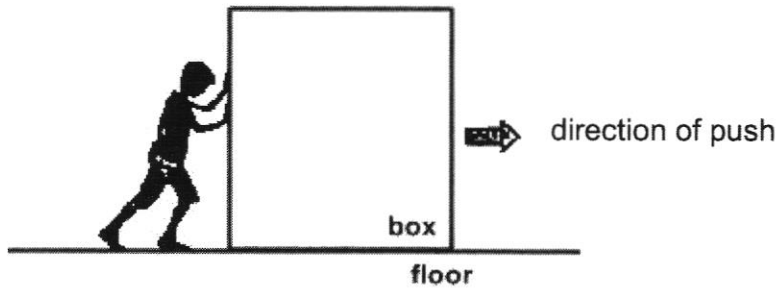
- A It contains less protein.
  - B It contains less starch.
  - C It has a larger food particle size.
  - D It has a larger surface area.
- 25 What is an enzyme?
- A Enzyme is a substance that helps to chew our food.
  - B Enzyme is a substance that helps to digest food.
  - C Enzyme is a substance that helps to pass out undigested food.
  - D Enzyme is a substance that helps to swallow food.

**End of Section A**

**Section B**

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

1 Jay is pushing a box across the room in the direction as shown.



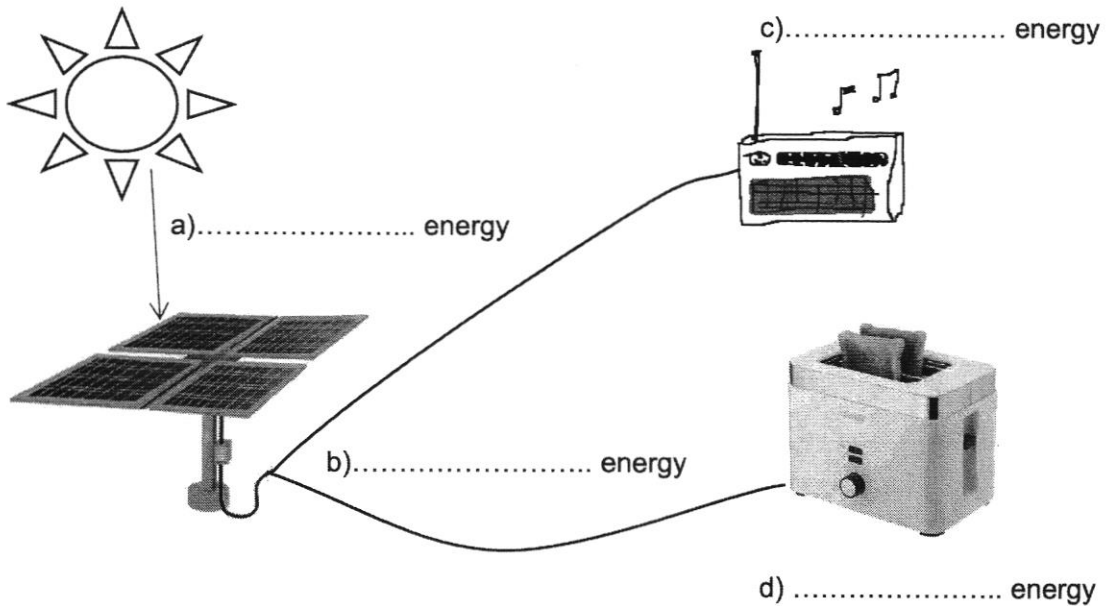
(a) State the name of the force that opposes the motion of the box.

..... [1]

(b) Describe what Jay can do to make it easier to push the box by reducing the force in (a).

.....  
 ..... [1]

2 The diagram shows how energy is converted in different electrical appliances. Complete the diagram by naming the form of energy at each part. [4]



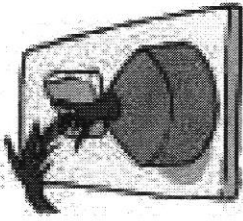
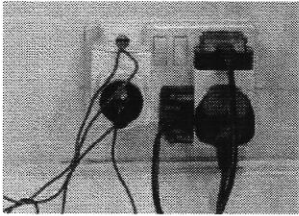
3 Fill in the boxes by naming the change of state using the helping words given.[4]



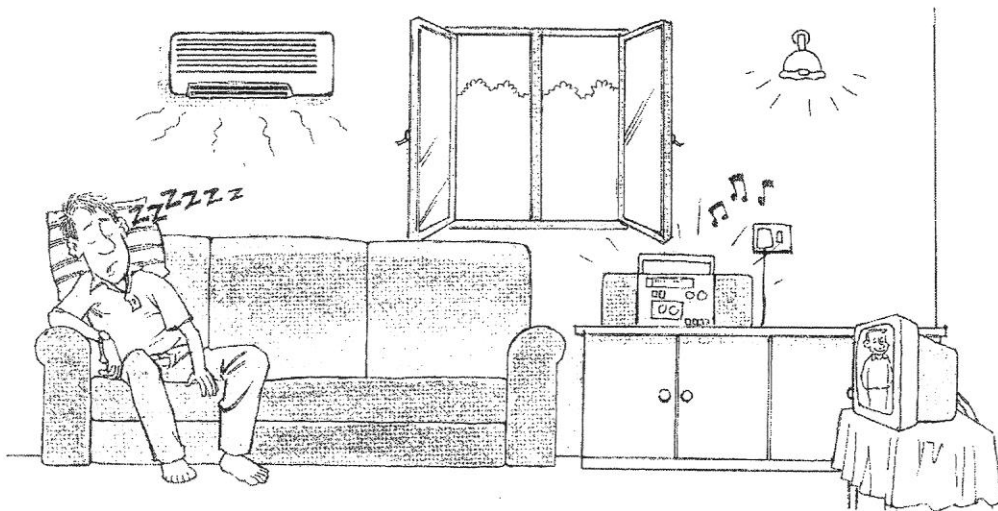
**damaged insulation**

**damp condition**

**overloading of sockets**

diagram	name of electrical hazard
	.....  
	.....  

**(b)** Study the picture in Fig. 5.1 below.



**Fig 5.1**

Suggest two ways in which electricity can be conserved in this case. [2]

1. ....

2. ....

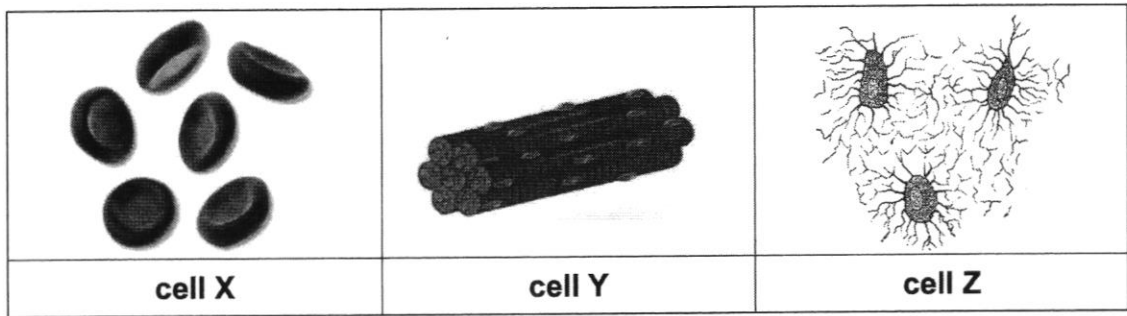
**6** The list shows the names of some pollutants found in the water bodies.

oil spills	litter	pesticides	sewage	factory waste
------------	--------	------------	--------	---------------

State the pollutants which cause the following situations.  
Each pollutant can only be used **once**. [4]

- (a) poison plants and aquatic animals when washed by rain into rivers  
.....
- (b) coats the feathers of birds and prevent them from flight  
.....
- (c) traps marine animals and chokes them to death  
.....
- (d) contains bacteria that may cause diarrhoea  
.....

7 The diagrams show three different types of cells. These cells are bone cells, muscle cells and red blood cells (not listed in order of the diagrams).



(a) Identify cells X, Y and Z in the diagrams. [3]

cell X	
cell Y	
cell Z	

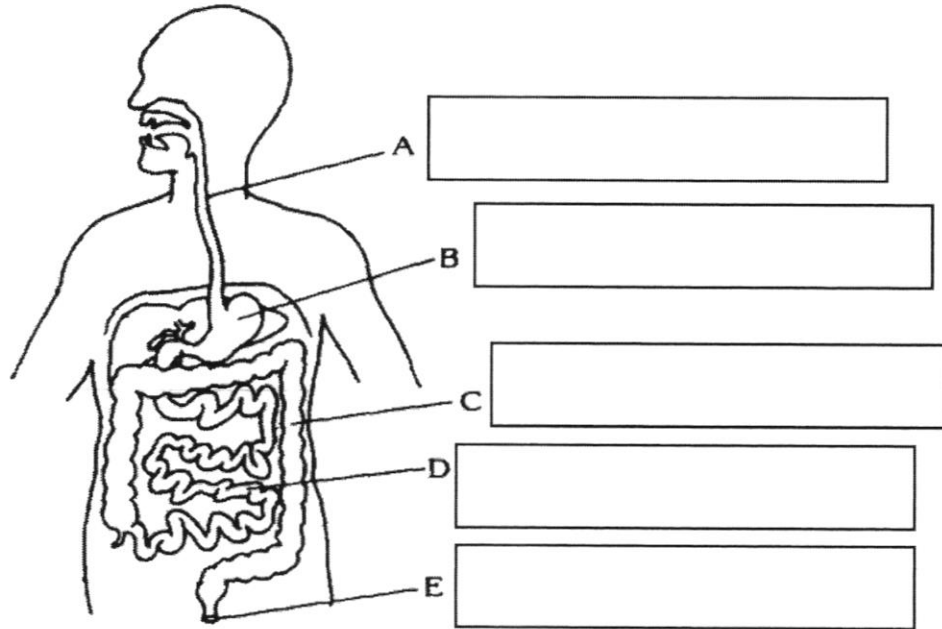
(b) Describe one function of each type of cell. [3]

- bone cells: .....
- muscle cells: .....
- red blood cells: .....

8 The diagram below shows the human digestive system.

- (a) Label the parts from **A** to **E** using the helping words given below. Each word can only be used **once**. [5]

**large intestine    anus    small intestine    stomach    oesophagus**



- (b) Use the letters **A – E** from the diagram to identify the parts described below.
- i. Part ..... absorbs water and mineral salts. [1]
  - ii. Part ..... contains acid. [1]
- (c) Digestion takes place right at the mouth. Explain how each part of the mouth helps in the digestion of food. [2]

teeth: .....

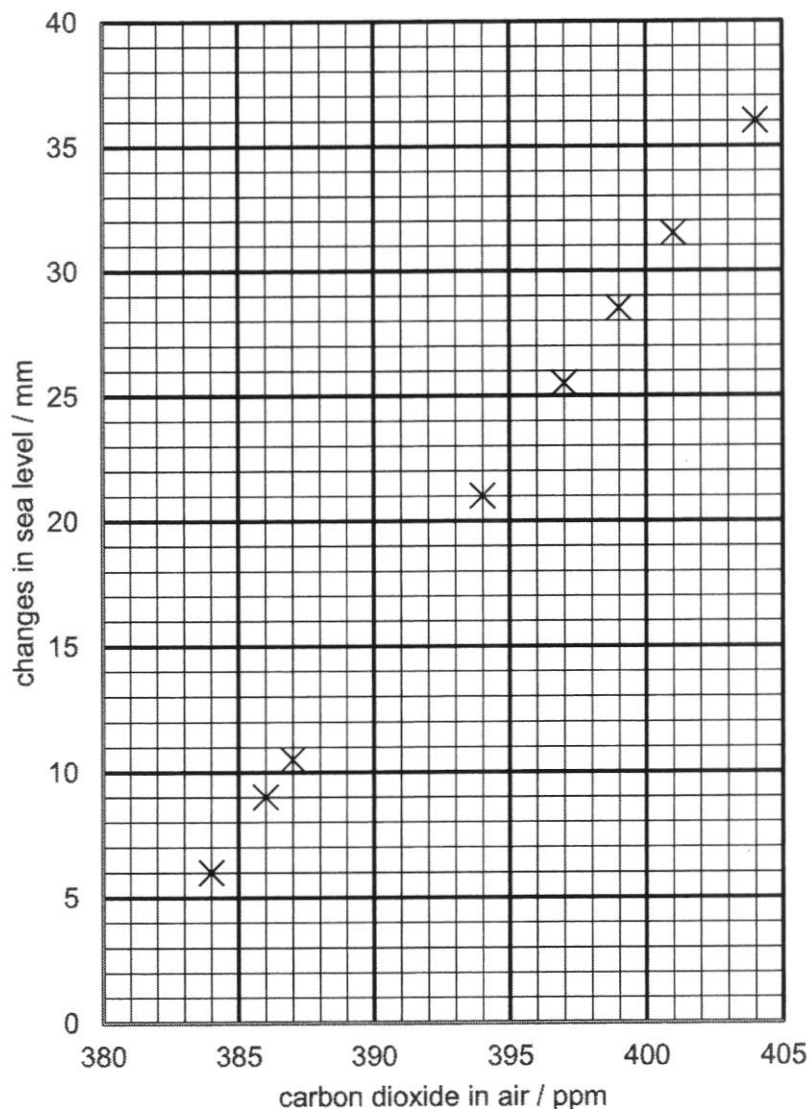
saliva: .....

**9** **Table 9.1** shows the data of amount of carbon dioxide in air measured in ppm (parts per million) and the changes in sea level from the year 2007 to 2016.

Year	carbon dioxide in air / ppm	changes in sea level / mm
2007	384	6.0
2008	386	9.0
2009	387	10.5
2010	390	15.0
2011	392	18.0
2012	394	21.0
2013	397	25.5
2014	399	28.5
2015	401	31.5
2016	404	36.0

**Table 9.1**

The graph below shows part of the data from **Table 9.1**.



- (a) The data for the year 2010 and 2011 is missing from the graph. Mark out on the graph the two missing data points using **X**.

[2]

**MID YEAR EXAMINATION 2019**

(b) Draw a straight line to connect all the data points. [1]

(c) Describe what happened to the sea level as the amount of carbon dioxide in the air increases over the 10 years period. [1]

.....

(d) Suggest a possible reason for the increase in the amount of carbon dioxide in the air over the 10 years period. [1]

.....

(e) State one effect of rising sea level. [1]

.....

(f) State one way to reduce the amount of carbon dioxide in the air. [1]

.....

(g) Name an environmental effect that is caused by the increase in the amount of carbon dioxide in the air. [1]

.....

**End of Paper**

**MYE 2019**  
**SECONDARY 2 NORMAL TECHNICAL**  
**MARKSCHEME**

**SECTION A**

Question no.	Answer	Question no.	Answer
1	B	14	C
2	D	15	B
3	A	16	A
4	D	17	C
5	B	18	B
6	B	19	B
7	A	20	D
8	B	21	D
9	C	22	B
10	B	23	D
11	B	24	C
12	D	25	B
13	D		

**SECTION B**

No.	Answer	Marks
1	(a) Friction	1
	(b) [any one] smoothen the floor / put box on wheels	1
2	(a) Solar / Light	1
	(b) Electrical	1
	(c) Sound	1
	(d) Heat	1
3	(a) Melting	1
	(b) Boiling	1
	(c) Freezing	1
	(d) Condensation	1
4	circuit 1: Yes there is current flow / there is battery <b>and</b> closed circuit	1 1
	circuit 2: No there is no battery / no current flow	1 1
5(a)	Diagram 1: damaged insulation	1
	Diagram 2: overloading of sockets	1
5(b)	[any two] 1. Close the window when the air-conditioning is on	1

	2. TV should be switched off when the man is asleep 3. Radio should be switched off when the man is asleep [Do not accept "Switch off the lights"] [Do not accept suggestions without elaboration]	1
<b>6</b>	(a) Pesticides (b) Oil spills (c) Litter (d) Sewage	1 1 1 1
<b>7 (a)</b>	Cell X – red blood cells Cell Y – muscle cells Cell Z – bone cells	1 1 1
<b>7 (b)</b>	bone cells: to provide support to the body / help us to stand muscle cells: to contract and extend and allow body to move red blood cells: to transport oxygen / carry oxygen	1 1 1
<b>8 (a)</b>	A – oesophagus B – stomach C – large intestine D – small intestine E – anus	1 1 1 1 1
<b>8 (b)</b>	(i) C (ii) B	1 1
<b>8 (c)</b>	teeth: to cut food to smaller pieces saliva: to digest food / make food smooth or moist	1 1
<b>9</b>	(a) Two Xs marked correctly (b) One straight line (c) Changes to sea level increases (d) Deforestation / exhaust fuels from vehicles (e) Flooding (f) Reforestation / reduce electrical energy / use electric vehicles [any one] [Do not accept stop burning forest] (g) Greenhouse effect	2 1 1 1 1 1 1