

## Directions for Section 2

This section has FOUR parts

Part A	Questions 51–60	(10 marks)
Part B	Questions 61–62	(11 marks)
Part C	Questions 63–64	(14 marks)
Part D	Questions 65–66	(15 marks)

- Complete your answers to Section 2 Part A in the boxes provided on the separate answer sheet
- Complete your answers to Section 2 Parts B–D on the lines provided on pages 29 to 37
- Write your Centre Number and Student Number at the top of pages 29, 31 and 35

## Instructions for answering questions in Section 2 Part A

- **Completing the boxes**

Write firmly and clearly. Your answer must be written from left to right. Use block letters for words. Numbers must be used for numerical answers. Decimal points and negative signs must be clearly shown in separate boxes. Do NOT let any part of the letter or number touch the sides of the answer boxes.

Sample 1:  $-7 \div 2 =$ 

-	3	.	5		
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Sample 2: How many days are in a week? 

7	
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 days

Sample 3: What is the fifth month? 

M	A	Y			
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If you think you have made a mistake, put a line through the incorrect answer and write the correct one above the box.

M A Y  

J	U	N	E		
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**PART A**

Complete your answers to Questions 51–60 on the Section 2 Part A Answer Sheet.

51 Complete the following chemical equation:



52 Name the type of chemical reaction represented by the equation in Question 51.

53 What is the name of the tube through which sperm leave the male human body?

54 Consider the three examples below.

- Car exhaust can make breathing difficult.
- Litter from a beach party makes the area untidy.
- Suds from washing machines are carried into rivers and oceans.

What is ONE word that describes the exhaust, litter and suds in these examples?

55 Name the scientist who proposed the relationship:

$$\text{force} = \text{mass} \times \text{acceleration}$$

56 Use ONE word to complete this sentence:

All waves are carriers of .....

57 What feature of a wave is represented by the distance between *P* and *Q* in the diagram?



- 58 What type of electromagnetic radiation is detected as heat?
- 59 An electrical circuit is set up so that when one light in the circuit stops working, the other lights stay on. What type of electrical circuit is this?
- 60 Use ONE word to complete this sentence:
- The movement of crustal plates on Earth's surface is explained by the Theory of Plate .....

**End of Section 2 Part A**

**Go on to Part B**

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**PART B**

- Write your Centre Number and Student Number at the top of this page.
- Complete your answers in this booklet.

**Question 61** (3 marks)

**Marks**

Outline the theory of evolution by natural selection.

**3**

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Marks

**Question 62** (8 marks)

Scientific investigations can be carried out individually or in groups (teams).

Describe TWO advantages of each approach.

Individual approach

(i) ..... 2  
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(ii) ..... 2  
.....  
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Group approach

(i) ..... 2  
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(ii) ..... 2  
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**End of Section 2 Part B**

**Go on to Part C**

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**PART C**

- Write your Centre Number and Student Number at the top of this page.
- Complete your answers in this booklet.

**Part C continues on page 32**

**Question 63** (7 marks)

Table 1 shows the average distance from the Sun and the average orbital speed of some of the planets in our solar system. Table 2 shows the five largest asteroids and their average distances from the Sun.

**Table 1**

<i>Planet</i>	<i>Average distance from Sun in astronomical units (AU)</i>	<i>Average orbital speed (km/s)</i>
Mercury	0.4	48.0
Venus	0.7	35.0
Earth	1.0	30.0
Mars	1.5	24.0
Jupiter	5.2	13.0
Saturn	9.6	10.0

**Table 2**

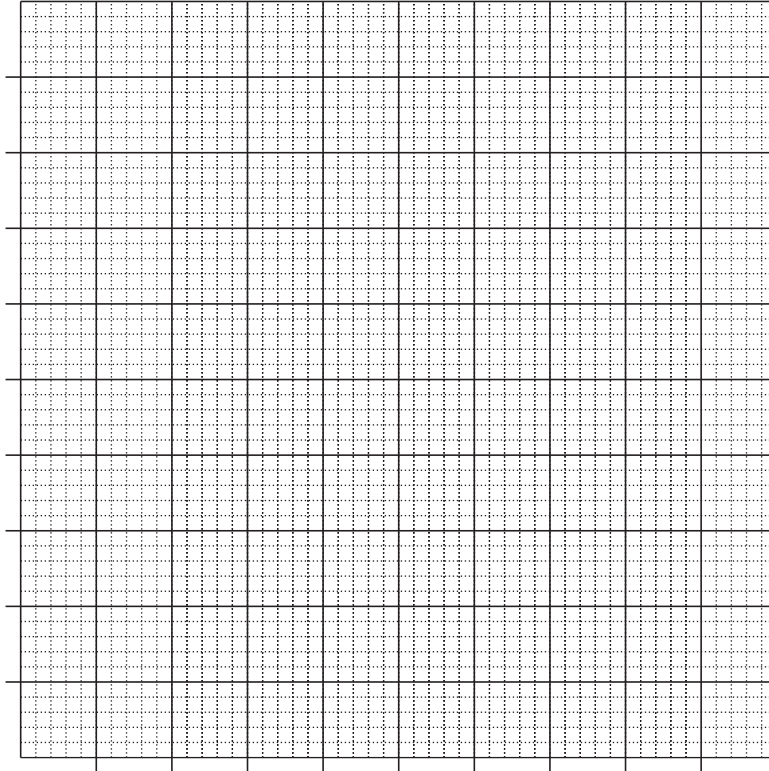
<i>Asteroid</i>	<i>Average distance from Sun (AU)</i>
Vesta	2.4
Juno	2.7
Ceres	2.8
Pallas	2.8
Hygeia	3.2

**Question 63 continues on page 33**

Marks

Question 63 (continued)

- (a) On the grid provided, draw a line graph of the average distance from the Sun and the average orbital speed for the planets listed. 5



Distance from Sun (AU)

- (b) Use the graph to predict the range of orbital speeds for the asteroids listed in Table 2. 2

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**PART D**

- Write your Centre Number and Student Number at the top of this page.
- Complete your answers in this booklet.

Part D continues on page 36

Marks

**Question 65** (8 marks)

Colonies of fire ants have been discovered in towns in northern New South Wales. Fire ants can be poisoned using a pesticide.

Some scientists suggested spraying pesticide on infested areas. Environmental scientists are worried about the effects the pesticide might have on the environment.

- (a) Outline TWO concerns the environmental scientists might have. 4

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- (b) Other scientists have suggested the introduction of a predator to kill the fire ants instead of spraying pesticide. Assess ONE possible impact of this strategy. 4

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Marks

Use the Periodic Table on page 38 to answer Question 66.

**Question 66** (7 marks)

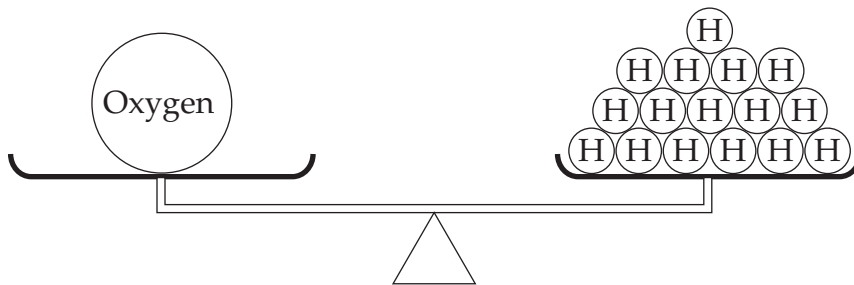
- (a) (i) Name the element with atomic number 52. 1

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- (ii) What is the symbol for the element with mass number 19.00? 1

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- (b) The diagram indicates that the mass of one oxygen atom is sixteen times greater than the mass of one hydrogen atom. 2



Approximately how many helium atoms have the same mass as ONE sulfur atom? Justify your answer by showing your working.

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- (c) Explain how the elements are grouped in the Periodic Table. 3

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Use the Periodic Table to answer the question on page 37.

KEY		Atomic Number	Symbol of element	Name of element
1	H	1.008	Hydrogen	
3	Li	6.941	Lithium	
4	Be	9.012	Beryllium	
11	Na	22.99	Sodium	
12	Mg	24.31	Magnesium	
19	K	39.10	Potassium	
20	Ca	40.08	Calcium	
21	Sc	44.96	Scandium	
22	Ti	47.87	Titanium	
23	V	50.94	Vanadium	
24	Cr	52.00	Chromium	
25	Mn	54.94	Manganese	
26	Fe	55.85	Iron	
27	Co	58.93	Cobalt	
28	Ni	58.69	Nickel	
29	Cu	63.55	Copper	
30	Zn	65.39	Zinc	
37	Rb	85.47	Rubidium	
38	Sr	87.62	Strontium	
39	Y	88.91	Yttrium	
55	Cs	132.9	Caesium	
56	Ba	137.3	Barium	
87	Fr	[223.0]	Francium	
88	Ra	[226.0]	Radium	
89-103			Lanthanides	Actinides
71	La	138.9	Lanthanum	
72	Hf	178.5	Hafnium	
73	Ta	180.9	Tantalum	
74	W	183.8	Tungsten	
75	Re	186.2	Rhenium	
76	Os	190.2	Osmium	
77	Ir	192.2	Iridium	
78	Pt	195.1	Platinum	
79	Au	197.0	Gold	
80	Hg	200.6	Mercury	
81	Tl	204.4	Thallium	
82	Pb	207.2	Lead	
83	Bi	209.0	Bismuth	
84	Po	[210.0]	Polonium	
85	At	[210.0]	Astatine	
86	Rn	[222.0]	Radon	
101	Md	[286.1]	Mendelevium	
102	No	[289.1]	Nobelium	
103	Lr	[260.1]	Lutetium	
104	Rf	[261.1]	Rutherfordium	
105	Db	[262.1]	Dubnium	
106	Sg	[263.1]	Seaborgium	
107	Bh	[264.1]	Bohrium	
108	Hs	[265.1]	Hassium	
109	Mt	[268]	Meitnerium	
110	Uun	—	Ununnilium	
111	Uuu	—	Unununium	
112	Uub	—	Ununbium	
113	Uuq	—	Ununquadium	
114	Uuq	—	Ununquadium	
115	Uuh	—	Ununhexium	
116	Uuh	—	Ununhexium	
117	Uue	—	Ununseptium	
118	Uuo	—	Ununoctium	

End of test