

FORM 2

INTEGRATED SCIENCE

TIME: 1h 30min

Name: _____

Class: _____

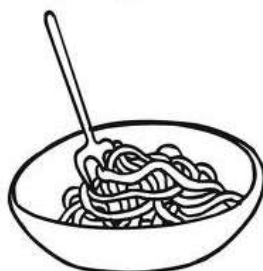
ANSWER ALL QUESTIONS

1. This question is about food and digestion.

a. The dishes below are Ron's favourite food.



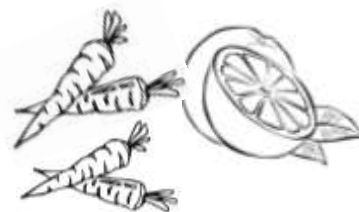
Chicken



Spaghetti



Burger and chips



Fruit and vegetables

Which dish is a main source of:

i. Carbohydrates? _____

ii. Vitamins? _____

2 marks

b. Ron usually buys wholemeal spaghetti. These are rich in fibre. Why is fibre important in the diet?

_____ 1 mark

c. Which of the above foods can cause heart disease?

_____ 1 mark

d. Ron needs to improve his muscle power. Which of the above food is mostly needed to grow new muscle cells?

_____ 1 mark

2. Mark has measured his pulse rate during exercise. These are his results.

Time/sec	0	1	2	3	4	5	6	7	8	9	10	11	12
Pulse rate/min	65	75	88	100	130	145	150	152	153	151	120	110	98

- a. Between which two times was Mark's pulse rate increasing most quickly?

Tick (✓) the correct answer.

- ☐ Between 0 – 3 seconds
☐ Between 3 – 6 seconds
☐ Between 6 – 9 seconds
☐ Between 9 – 12 seconds

1 mark

- b. Explain why his pulse rate increased during the race.

_____ 2 marks

- c. Predict what happens to Mark's breathing rate during the race?

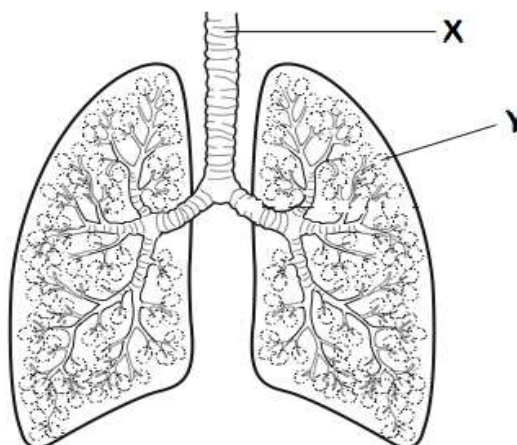
_____ 1 mark

- d. Name the parts labelled X and Y.

X: _____

Y: _____

2 marks



- e. Mark was aware that a number of microbes might effect his health. Match each disease to the correct microbe, by writing the correct number in the last column. One has been done for you as an example.

1	Influenza
2	Athlete's foot
3	Salmonella food poisoning
4	Tuberculosis (TB)

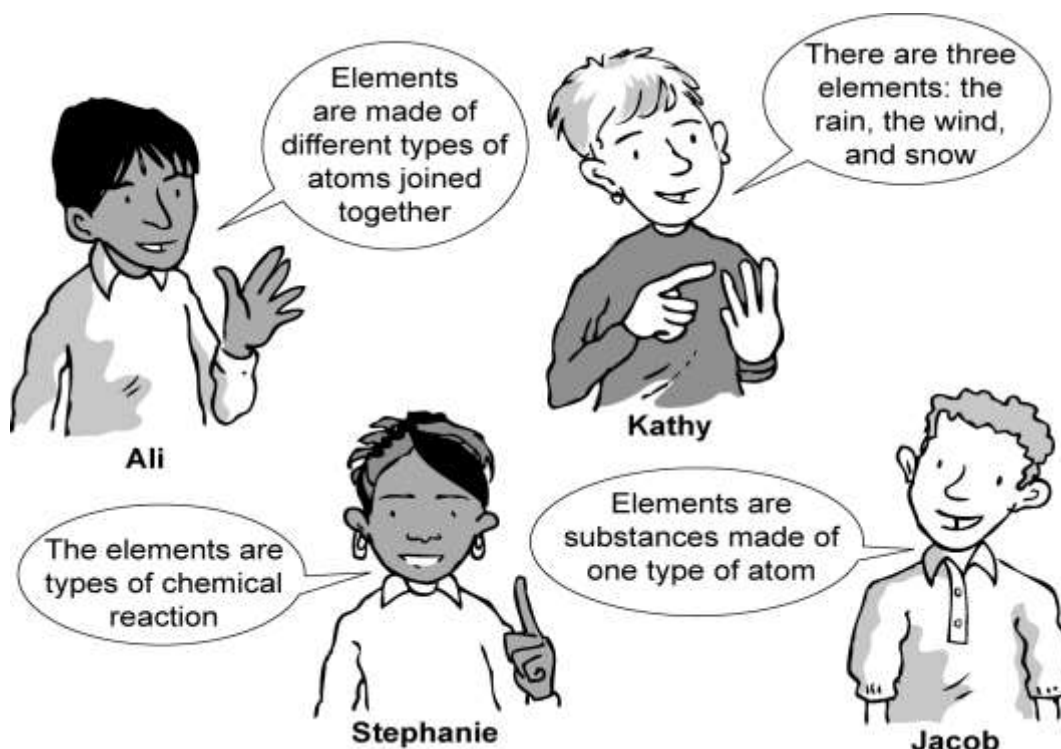
Bacteria	4
Bacteria	
Fungus	
Virus	

3 marks

- f. Unfortunately Mark is a heavy smoker. Briefly describe the effect of smoking on his health.

2 marks

3. In a science lesson some students shared their ideas about elements.



- a. Which student offered the best explanation of what an element is?

1 mark

- b. Draw line to match the descriptions of the four different elements below to their names.

Description
The most abundant gas in air
Takes part in combustion reactions
This element is a non-metal. It is a yellow solid
This element is a metal

Name
Iron
Sulfur
Oxygen
Nitrogen

4 marks

4. a. Look at the following list of chemicals. Underline TWO compounds.

potassium salt sodium helium water copper

2 marks

- b. Alison and Liz heated some zinc over a Bunsen burner. Zinc is a shiny grey metal. After a while a white powder appeared in the crucible.

- (i) Write down a visible change taking place in the above experiment.

_____ 1 mark

- (ii) Is the white powder an element, a compound or a mixture?

_____ 1 mark

- (iii) Zinc conducts electricity. Does this mean that the white powder will also conduct electricity? Give a reason for your answer.

_____ 2 marks

- (iv) Put these 3 terms into a word equation to describe what happened in the above experiment.

oxygen, zinc oxide, zinc.

_____ 2 marks

5. Match the words to the correct explanations. Write the correct number in the last column

1	Soluble
2	Insoluble
3	Solution
4	Evaporation
5	Filtering

Does not dissolve in water	
Separates a dissolved solid from a solution	
Dissolves in water	
Separates insoluble solids from liquids	
A substance (e.g. salt) dissolved in water	

5 marks

6. a. Which of these fuels is NOT a fossil fuel? Tick (✓) your answer.

coal ☐

oil ☐

gas ☐

wood ☐

1 mark

b. The following sentences describe how electricity is generated in a power station.
Put these sentences in order. The first one has been done for you.

☐

Steam turns the turbines.

☐

1

Fuel is burned to generate heat.

☐

The turbines generate electricity.

☐

Heat is used to boil water.

3 marks

c. When carbon is burned, carbon dioxide is produced.

(i) Write a word equation for this reaction.

1 mark

(ii) How does carbon dioxide contribute to global warming?

1 mark

d. The table below shows some of the advantages and disadvantage of using solar energy.
Complete the table by giving ONE advantage and ONE disadvantage of using fossil fuels and wind energy as sources of generating electricity.

Energy source	Advantage	Disadvantage
Solar energy	Does not produce carbon dioxide	Can be used only when the Sun is shining.
Fossil fuels		
Wind energy		

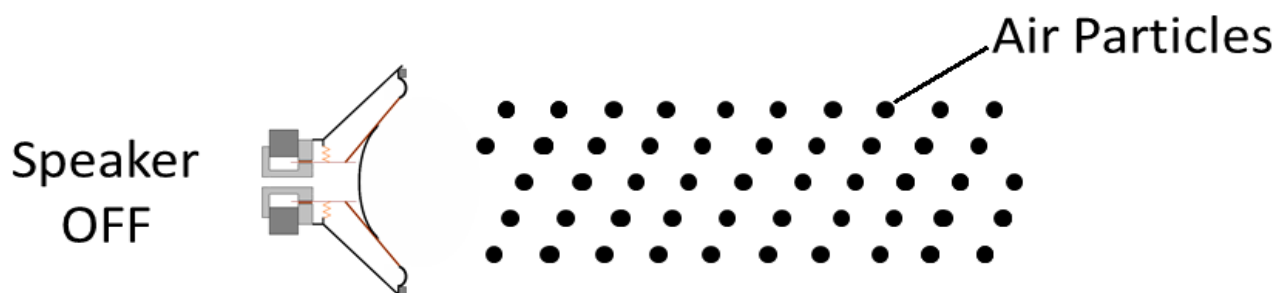
4 marks

- e. Kate separates her waste. She knows that incorrect disposal may cause pollution. Give TWO ways how the 3 R's can be used to help the environment.

2 marks



7. The picture shows a loud speaker and some air particles.



- a. The speaker is turned on. Complete these sentences to describe how our ears hear sound coming from the speaker.

The speaker makes the air particles _____. These air particles hit the _____. Nerve cells send messages to the _____.

3 marks

- b. Tick (✓) TRUE or FALSE for each of these sentences.

	TRUE	FALSE
Sound cannot travel through concrete.		
Sound travels faster in air than in water.		
A large explosion on the Sun cannot be heard from Earth. This is because the Sun is far away.		

3 marks

8. Megan goes out at night into her garden with a torch to find her pet cat.

a. Below are some of the objects she sees.

Tick (✓) TWO which do not produce light:

☐ The cat's eyes

☐ The torch

☐ The Moon

☐ The Stars

2 marks

b. What scientific term do we give to objects which produce light?

Underline the correct answer.

Transparent

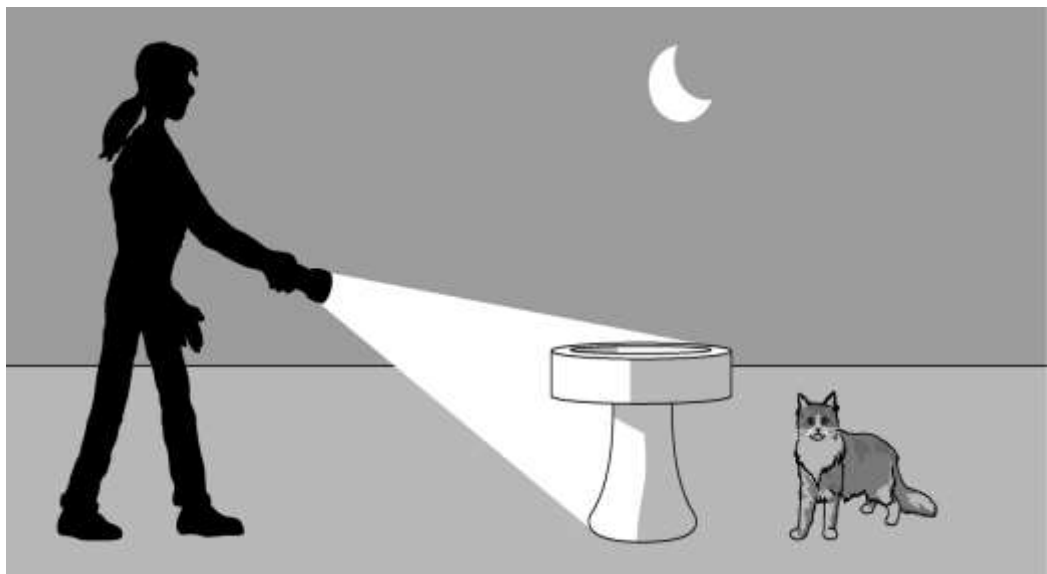
Opaque

Luminous

Non-luminous

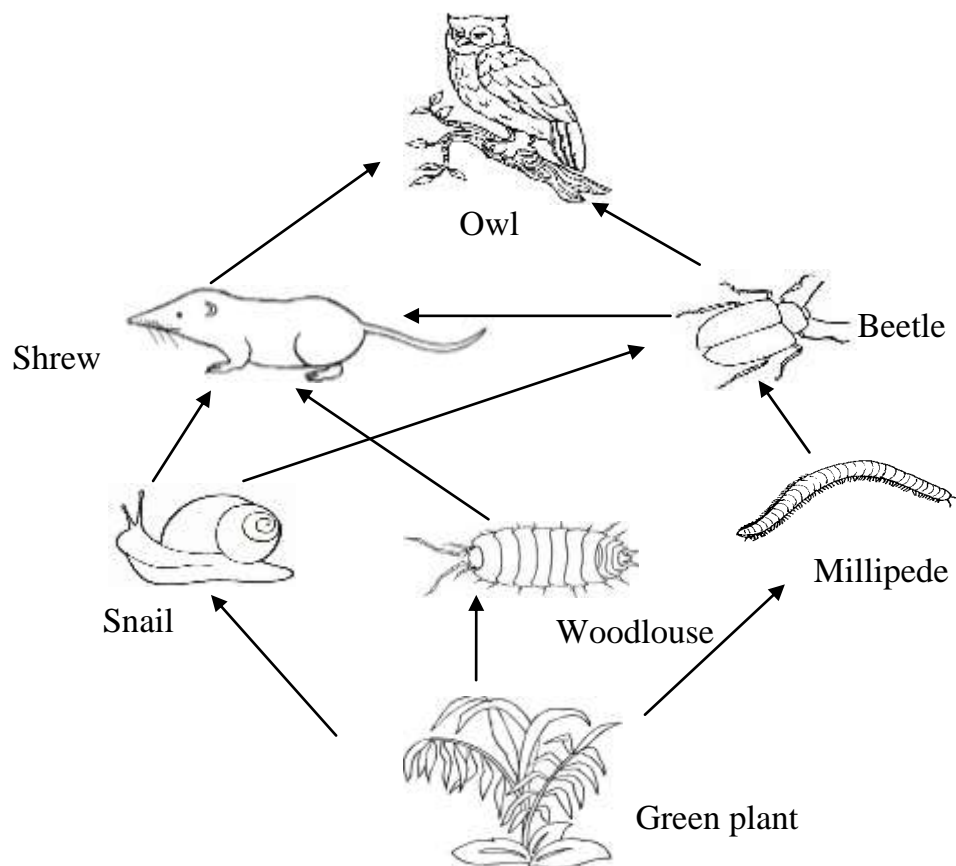
1 mark

c. The cat hides behind a bird table. Why can't Megan see him in the light from her torch?



1 mark

9. The organisms below live in the same habitat.



a. What is this diagram called?

_____ 1 mark

b. The snail and the beetle are examples of consumers. What are the green plants called?

_____ 1 mark

c. From this diagram, write one food chain which includes the millipede.

_____ 2 marks

d. The owl is a predator. What does the owl eat?

_____ 1 mark

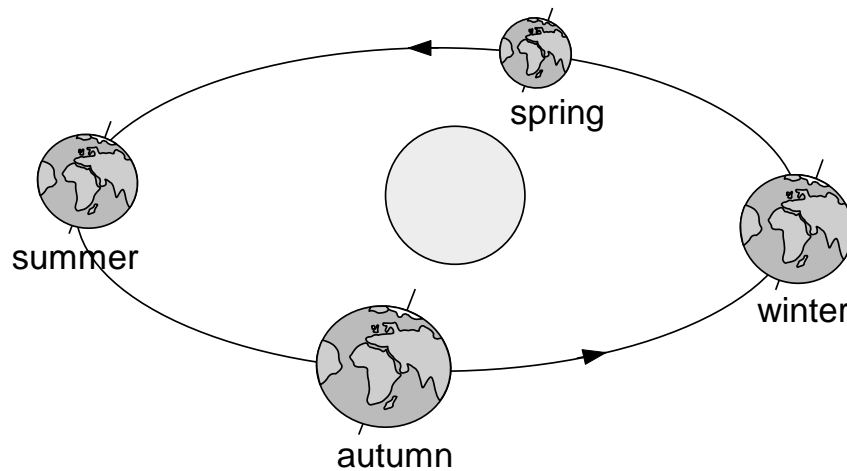
e. Write down TWO adaptations which make the owl a good predator?

 _____ 2 marks

f. What happens to the millipedes if all the beetles die out?

_____ 1 mark

10. This diagram shows Earth in orbit. Answer the following questions.



a. Refer to the diagram and use the following words to fill in the blanks. Each word can be used once, more than once or not at all.

seasons	summer	24 hours	orbit	365 days	winter
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- (i) The tilt of the axis of the Earth from the vertical gives rise to the _____.
- (ii) The path of the Earth around the Sun is also called its _____.
- (iii) The Earth rotates on its own axis once every _____.

3 marks

b. Fill in

- (i) The different shapes of the moon visible from Earth are called the _____ of the moon.
- (ii) Since the Moon orbits the Earth, it is called a _____.
- (iii) The hottest planet in the Solar system is _____.
- (vi) The planet nearest to the Sun is _____.
- (v) The biggest planet in the Solar system is _____.

5 marks

- c. Skydiver Felix Baumgartner came down safely about 9 minutes after jumping from his capsule roughly 43km above Earth. He used a parachute to slow down his jump. Imagine that Felix is thinking about repeating the same thing on the Moon.



Answer the following questions:

On Earth his mass is 75kg.

(i) What is his mass on the Moon? _____ 1 mark

(ii) What is his weight on Earth? _____ 1 mark

(iii) Felix is thinking about using a parachute to slow down his jump on the Moon.

What do you say to Felix? Is this a good idea? Why?

2 marks

11. In a series of robberies around the town, a “crazy thief” leaves a message written under a half-bitten apple to tease the police. The investigators have now completed a key that can be used to reveal the message left in the notes by the thief.



a. What does the message read? _____
1 mark

b. What other piece of evidence can the police collect from the paper with the message?

1 mark

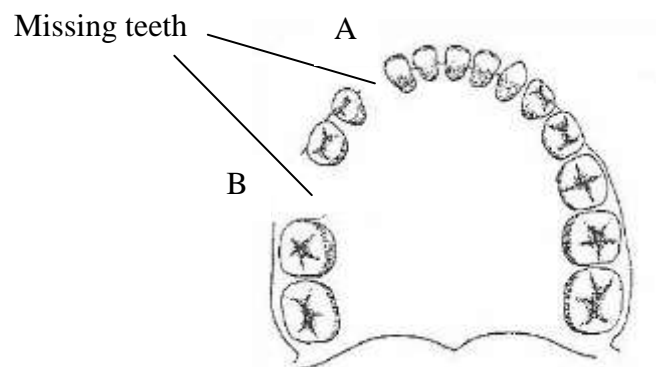
- c. The bite marks on the apple found on the crime scene indicate that the thief has two missing teeth.

Identify each type of tooth and its function.

Tooth A:

Name: _____

Function: _____



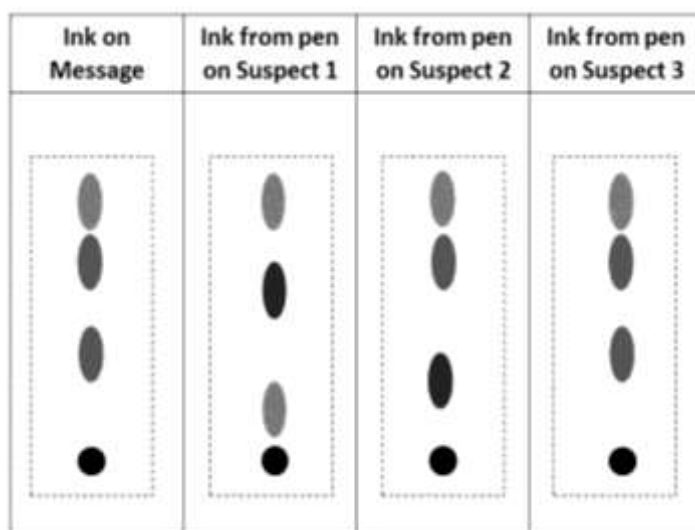
Tooth B:

Name: _____

Function: _____

4 marks

- d. Three men were brought to the police station for further investigation. Luckily enough, they all had a pen in their pocket. Using chromatography, the ink from the pen used to write the message was compared to the ink from the pens of the suspects.



- (i) Explain the use of the solvent in chromatography.

1 mark

- (ii) Identify which of the three suspects may be the “crazy thief”.

1 mark

- (iii) The pen used to write the message is a very common pen. Besides the pen, what other evidence should the police use to confirm this suspect?

1 mark

- End of paper. Please check your work again -