

FORM 2

INTEGRATED SCIENCE

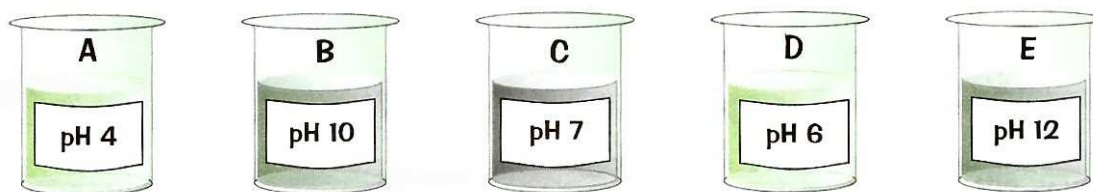
TIME: 1h 30min

Name: _____

Class: _____

ANSWER ALL QUESTIONS

1. Below are five beakers each containing 100cm^3 of different solutions. Their pH are shown on them.



- a. Answer the following questions:

- i) Which beaker contains a neutral solution? _____ (1)
- ii) Which beakers contain an acidic solution? _____ (2)
- iii) Which beakers contain an alkaline solution? _____ (2)
- iv) Which two beakers could be mixed to make a neutral solution? _____ (1)
- v) Give an example of a substance with a: pH of 14: _____
- pH of 10 _____ (2)

- b. During an experiment some labels fell off the beakers. A student had two indicators, (Litmus paper and Universal Indicator) in the lab. Which indicator can help this student to put the correct labels back on the beakers? _____ (1)

- c. Another student used litmus paper to test some of the above solutions. Fill in the blanks to show the colour of the indicator.

| Indicator | Beaker | Colour of Indicator |
|-------------------|----------------|---------------------|
| Red Litmus paper | Beaker A: pH4 | |
| Red Litmus paper | Beaker B: pH10 | |
| Blue Litmus paper | Beaker E: pH12 | |

(3)

2. Match each hazard sign to its name and meaning.

Draw lines between the columns to show the correct links.



corrosive

irritant

flammable

toxic

These substances are not corrosive but can cause reddening or blistering of the skin.

These substances attack and destroy living tissue including eyes and skin.

These substances can cause death. They may have their effects when swallowed or breathed in or absorbed through the skin.

These substances catch fire easily.

(8)

3. Chemical reactions make new materials. They are irreversible changes.

The table shows a number of changes.

Tick (✓) the correct column to show whether these are **chemical** or **physical** changes.

| | chemical change | physical change |
|--|-----------------|-----------------|
| a) burning toast under a grill | | |
| b) turning water into ice in a freezer. | | |
| c) Boiling an egg. | | |
| d) lighting a Bunsen burner | | |
| e) salt disappearing as it is stirred into a beaker of water | | |
| f) water droplets forming on a kitchen window | | |
| g) green copper carbonate powder turning to black copper oxide when it is heated strongly. | | |

(7)

4. Complete the following word equations to show:

a. **burning of magnesium:**

magnesium + oxygen → _____

(1)

b. **rusting:**

iron + oxygen ^(water) → _____

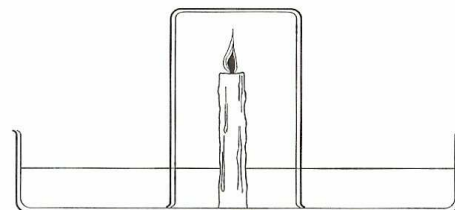
(1)

5. A group of students set up the following experiment.

They placed a large glass beaker over a burning candle in a tray of water. They timed how long the candle stayed alight.

- a) After 29 seconds the candle went out. Why?

(2)



- b) Why didn't the candle go out as soon as the beaker was put over it?

(1)

- b) i) What happened to the level of water in the beaker?

- ii) Why? _____ (2)

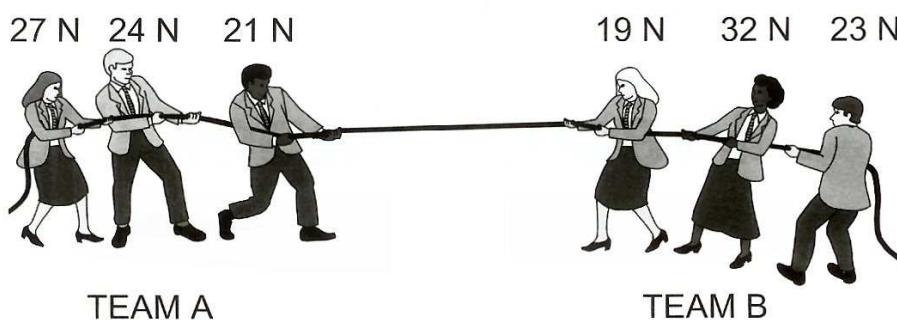
- c) Complete the following word equation which shows the burning of a candle.

wax + _____ → water + _____ + [ENERGY]

(2)

6. Some friends are having a tug of war.

The diagram shows the two teams and the force with which each person is pulling.



- a. i) Calculate the total force produced by each team. Show your working.

- ii) Which is the winning team? _____ (3)

- b. Explain what happens if both teams pull with the same force.

- Why? _____ (2)

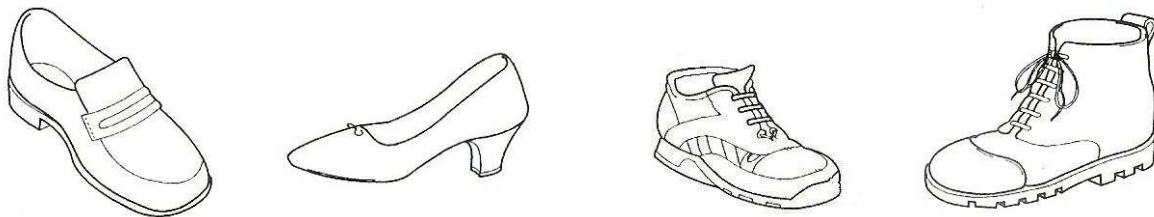
7. The picture shows the beginning of a bobsleigh race on a slope of ice.

The team has to push the bobsleigh as hard as they can. As the bobsleigh gains speed the team jumps on board.



- On the diagram draw an arrow to show:
 - The pushing force. Label this arrow P. (1)
 - The friction between the bobsleigh and ice. Label this arrow F. (1)
- There are other forces acting on the bobsleigh. On the diagram draw an arrow to show ONE of these forces. Label the force. (2)
- What happens to the speed of the bobsleigh as it travels down the slope? (1)

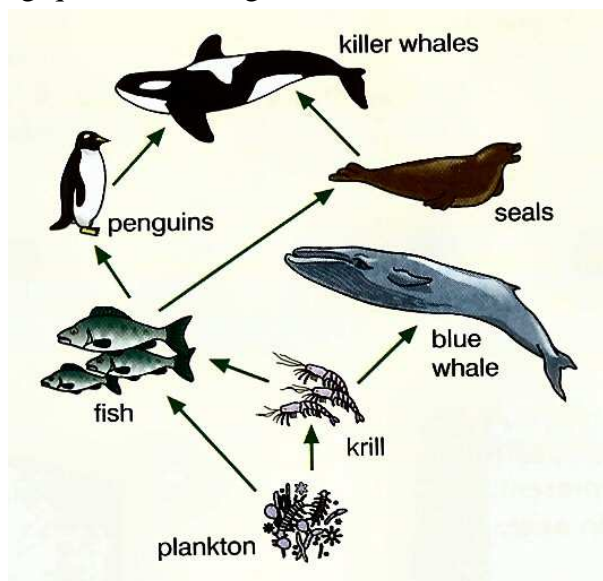
The picture below shows four different shoes.



- Put a circle around the best shoes that the team members have to wear to prevent them from slipping on the ice. (1)
- Explain why this is the best shoe. Use the word **friction** in your answer. (2)

8. The diagram shows a food web in the South Atlantic Ocean.

Answer the following questions using the food web below.



a) Which organism is a producer? _____ (1)

b) Underline the correct word or words that could be applied to the following organisms. The first one has been done as an example.

i) **krill:** (herbivore, consumer, carnivore, predator, prey)

ii) **blue whale:** (herbivore, consumer, carnivore, predator, prey)

iii) **penguin:** (herbivore, consumer, carnivore, predator, prey)

iv) **killer whale:** (herbivore, consumer, carnivore, predator, prey)

v) **seals:** (herbivore, consumer, carnivore, predator, prey)

(4)

c) From the above food web, write a food chain with five organisms.

_____ (2)

d) If the seals are all killed, how does this effect the number of:

i. fish _____

ii. krill _____

(2)

e) The penguin is a good swimmer and lives in a cold environment.

Give one characteristic which makes the penguin:

i) a good swimmer

ii) adapted to live in a cold environment

(2)

9. Some microbes cause diseases.

- a) The body can defend itself against disease in a variety of ways. Match up method of defence to the correct description from those listed below.

| DEFENCE | DESCRIPTION |
|-------------------|---|
| Stomach acid | Seals wounds quickly to prevent entry of microbes |
| Skin | Stops most microbes from entering the body |
| Immune system | Chemical that kills most microbes |
| Clotting of blood | Made up of white blood cells that kills microbes |

(4)

- b) Name two infectious diseases and the microbe that causes each disease.

| Infectious disease | Microbe |
|--------------------|---------|
| | |
| | |

(4)

10. This question is about food.

The information in the following sentences is not correct.

Re-write each sentence correctly. The first one has been done as an example.

- i) Animals and plants can make their own food.

Plants can make their own food

- ii) Old people are not very active so they do not need food.

- iii) Animals need energy but plants do not.

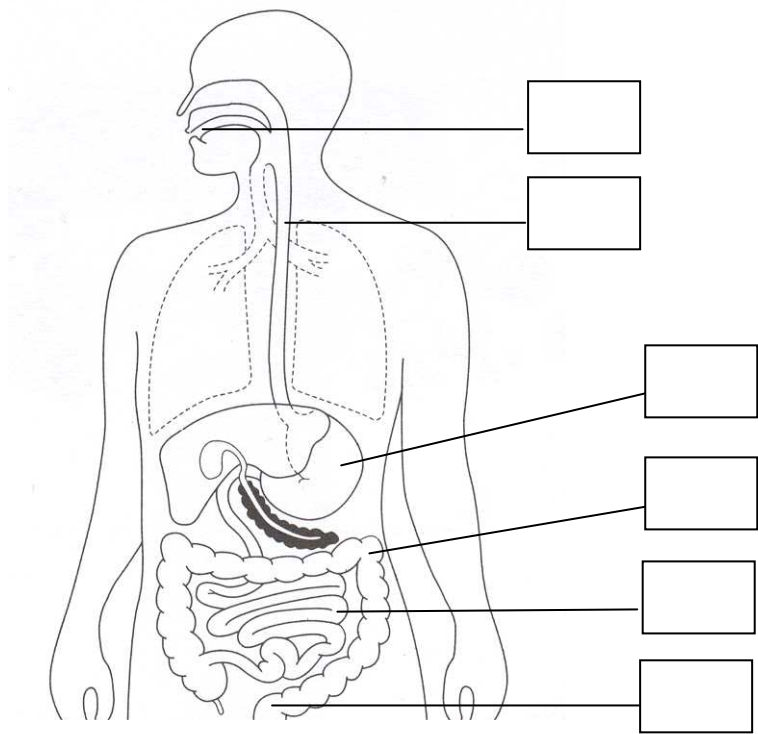
iv) A diet of chips, sweets and fizzy drinks is good for you.

v) Minerals provide the best source of energy for the body.

(4)

11. The following diagram shows the human digestive system.

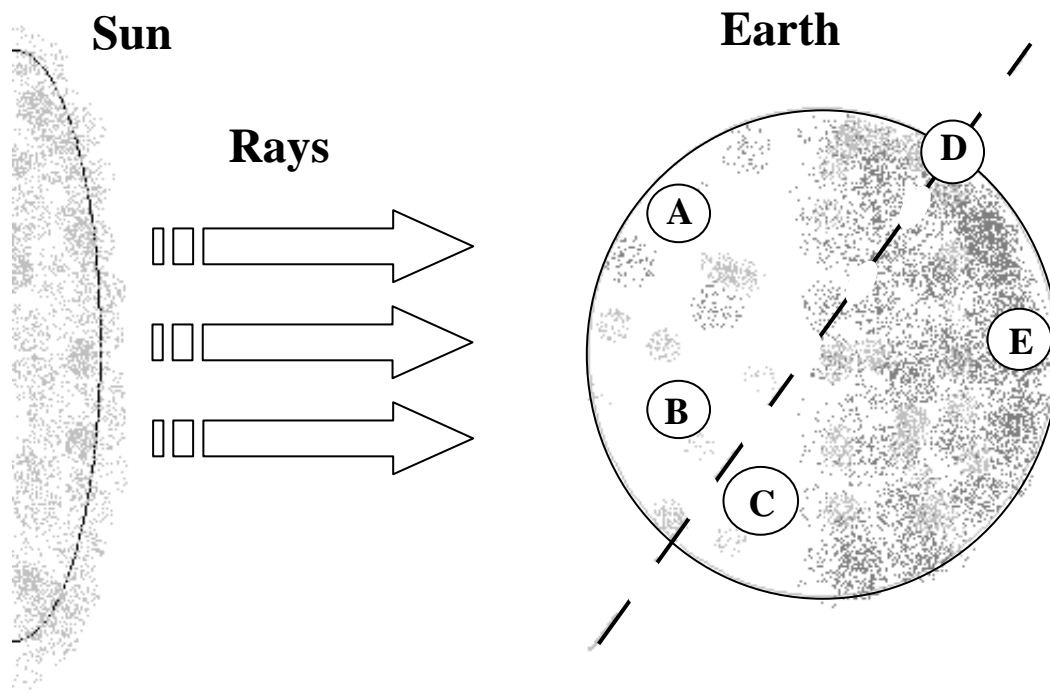
Use the following table to mark the diagram with the LETTERS showing where the following take place.



| What happens | Place |
|---------------------------------------|-------|
| Water is reabsorbed here | A |
| Food is broken down into a fine paste | B |
| Food is absorbed into the blood | C |
| Chewed food is passed through this | D |
| Food is taken in | E |
| Waste is removed from here | F |

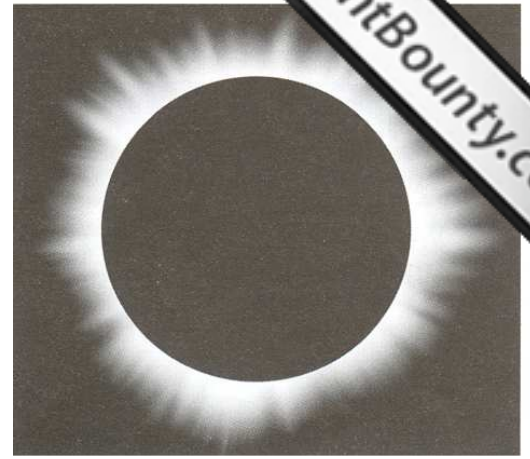
(6)

12. The picture below shows the Earth in its orbit during early January.



- a. i. What is the dotted line called? _____ (1)
- ii. On the diagram, draw an arrow to show how the Earth rotates on this dotted line. (1)
- iii. How does the tilt of the dotted line affect the Earth? _____ (1)
- b. The letters show 5 places on Earth. Answer the following questions by writing the correct letters. Each letter can be used once, more than once or not at all.
- i) Here it is dark: _____
- ii) Here it is summer: _____
- iii) Which of the five marked places will experience the most intense heat during its daytime? _____
- iv) On the diagram, mark with an X, a place where it is light during daytime and nighttime.
- (6)

13. The picture shows an eclipse in which the moon is blocking off the Sun's light.

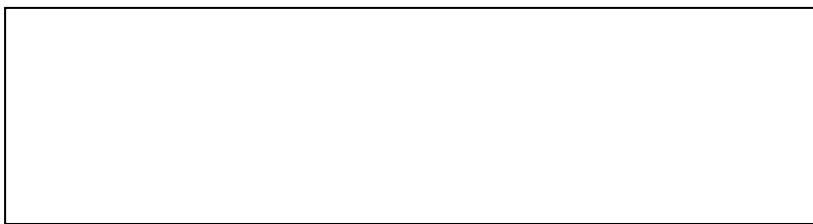
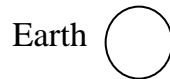
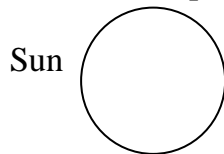


- a. What is this kind of eclipse called?

_____ (2)

- b. During an eclipse the Sun, the Earth and the Moon are arranged in a straight line. In the box below draw a diagram to show how the Sun, the Earth and the Moon are arranged in the type of eclipse shown in the above diagram.

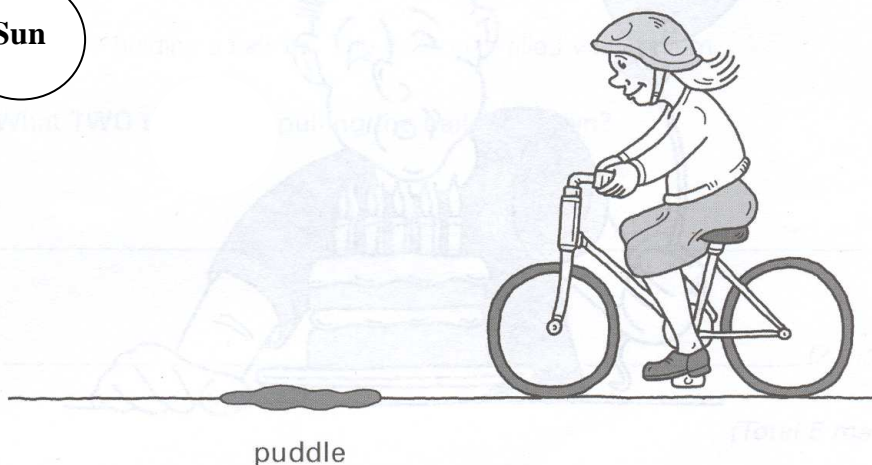
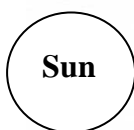
Use these shapes when drawing your diagram:



(Draw your diagram of the eclipse in this box)

(3)

14. Nicole is riding her bicycle. She sees a water puddle. Using arrows, draw rays of light which show how she can see the water puddle. (Use a ruler for your drawings.)



(2)

15. Compare light and sound by answering TRUE or FALSE in the following sentences.

- i. a) **Light** can be produced by the human body _____
b) **Sound** can be produced by the human body _____
- ii. a) **Light** can be reflected _____
b) **Sound** can be reflected _____
- iii. a) **Light** travels in space _____
b) **Sound** travels in space _____

(6)

- END OF PAPER -
PLEASE CHECK YOUR WORK AGAIN