

**GRADE 8****NATURAL SCIENCES****NOVEMBER 2025****TIME: 2 HOUR****MARKS: 100****INSTRUCTIONS**

1. Write your name, grade, and class on the ANSWER BOOK.
2. The question paper consists of TWO SECTIONS divided into 10 questions.
3. Answer ALL questions in the ANSWER BOOK.
4. Number the answers correctly according to the numbering system used in this question paper.
5. SKIP A LINE between two sub-questions, e.g., between QUESTION 2.1 and QUESTION 2.2.

**SECTION A****QUESTION 1**

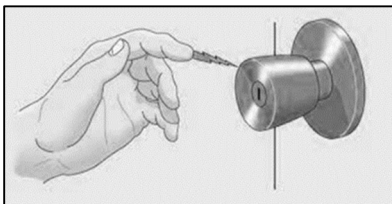
- 1.1 Four options are provided as possible answers to the following questions. Each question has only ONE correct answer. Write only the letter (A – D) next to the question number (1.1.1 – 1.1.9) in the ANSWER BOOK.

- 1.1.1 A neutral object has ...

- A more protons than electrons.
- B more electrons than protons.
- C the same number of electrons and protons.
- D no protons or electrons.

(1)

- 1.1.2 The spark between the finger and the doorknob is caused by ...



- A friction.
- B electricity.
- C electrostatic forces.
- D the discharge of electrons.

(1)

- 1.1.3 A component in a circuit that melts when the current gets too high in order to protect the other components in the circuit is called a ...

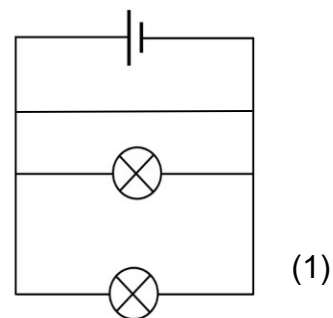
- A bulb.
- B fuse.
- C conductor.
- D short circuit.

(1)

1.1.4 In the circuit shown, none of the bulbs is glowing.

What could be the correct explanation for this observation?

- A The bulbs have no resistance.
- B The bulbs are connected in parallel.
- C There is a short circuit.
- D There is no switch in the circuit.



1.1.5 If more bulbs are connected in series ...

- A the current will be larger and the resistance smaller.
  - B the current will be smaller and the resistance greater.
  - C both the resistance and the current will be greater.
  - D both the resistance and the current will be smaller.
- (1)

1.1.6 Which of the following is a relatively cheap metal that is a good conductor and commonly used in electric cables?

- A Nichrome
  - B Copper
  - C Silicon
  - D Carbon
- (1)

1.1.7 What colour does a RED object display when placed under a GREEN light? (1)

|   | Colour that the object displays | Explanation                                                                                               |
|---|---------------------------------|-----------------------------------------------------------------------------------------------------------|
| A | Red                             | A red object cannot change colour when placed under a different colour of light.                          |
| B | Purple                          | Purple is a mixture of red and green light.                                                               |
| C | Green                           | The green light is dominant.                                                                              |
| D | Black                           | The red object absorbs the green light. No light is reflected; therefore, the object appears to be black. |

(1)

1.1.8 The law of reflection states that ...

- A the angle of incidence equals the angle of reflection.
  - B light bends toward the normal.
  - C light travels in straight lines.
  - D the angle of reflection is always greater than the angle of incidence.
- (1)

1.1.9 What is refraction of light?

- A Bouncing of light from a smooth surface.
  - B Spreading of light into colours.
  - C Bending of light when it passes from one medium to another.
  - D Absorption of light by a surface.
- (1)  
[9]

1.2 Write down the correct word or phrase for each of the following statements.  
Write the answer next to the question number (1.2.1 – 1.2.5) in your ANSWER BOOK.

- 1.2.1 The process of charging a balloon by rubbing it against your hair. (1)
  - 1.2.2 A component that converts electrical energy to light energy. (1)
  - 1.2.3 The component that provides energy to an electric circuit. (1)
  - 1.2.4 The type of circuit with two or more pathways for current to flow. (1)
  - 1.2.5 A material or object that allows all light to pass through it. (1)
- [5]

1.3 Choose a word from COLUMN B that matches the description in COLUMN A.  
Write only the letter next to the question number in the answer book, for e.g., 1.3.5 M.

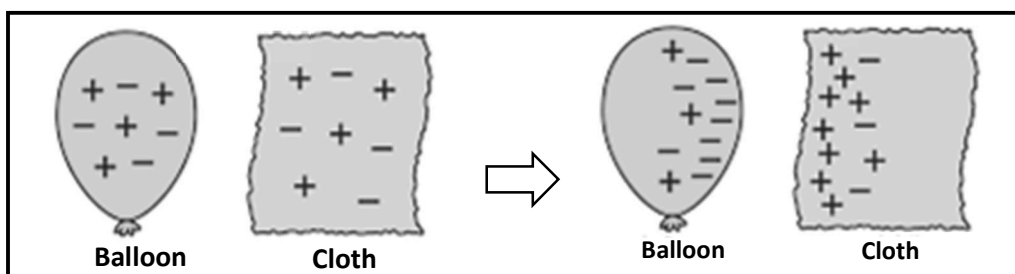
| COLUMN A |                                                                                                | COLUMN B |              |
|----------|------------------------------------------------------------------------------------------------|----------|--------------|
| 1.3.1    | A region very far away from the Sun where comets come from.                                    | A        | Universe     |
| 1.3.2    | What an asteroid is called when it enters Earth's atmosphere and is seen as a "shooting star". | B        | Rotation     |
| 1.3.3    | ALL the planets, stars, solar systems, and galaxies.                                           | C        | Meteor       |
| 1.3.4    | The closest planet to the Sun.                                                                 | D        | Oort Cloud   |
| 1.3.5    | The planet known as the Morning or Evening Star.                                               | E        | Light year   |
| 1.3.6    | This motion causes day and night on Earth.                                                     | F        | Meteorite    |
|          |                                                                                                | G        | Mercury      |
|          |                                                                                                | H        | Orbit        |
|          |                                                                                                | I        | Solar system |
|          |                                                                                                | J        | Venus        |

[6]

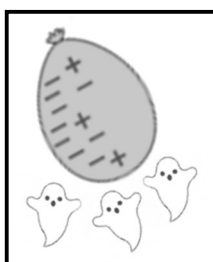
**TOTAL SECTION A: 20**

**SECTION B****QUESTION 2**

Shown below, a balloon and a cloth BEFORE and AFTER rubbing them together.



- 2.1 What is the charge on the balloon BEFORE rubbing it with the cloth? (1)
- 2.2 What is the charge on the balloon AFTER rubbing it with the cloth? (1)
- 2.3 Were electrons transferred from the cloth to the balloon OR from the balloon to the cloth? (1)
- 2.4 Explain your answer in question 2.3 by referring to the charges in the diagram. (2)
- 2.5 Pieces of tissue paper are cut out in the shape of little ghosts. When the charged balloon is moved over the tissue paper ghosts, they start to "dance", as shown below.



Explain this observation. Redraw the charged balloon and a tissue paper ghost in your answer book. Use labels and + and - signs to show how the charges are distributed across the balloon and the tissue paper ghost.

(3)  
[8]

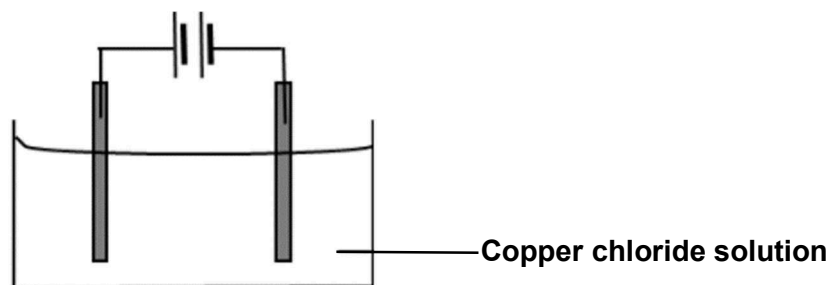
**QUESTION 3**

- 3.1 Draw a circuit diagram consisting of the following components:
  - A battery made up of THREE CELLS connected in series.
  - TWO BULBS connected to one another in parallel.
  - ONE RESISTOR connected in series with the battery.
  - A CLOSED SWITCH connected in series with the battery and the resistor.
 (4)
- 3.2 What happens in a circuit when the switch is open? (1)
- 3.3 What is the function of a resistor in an electric circuit? (1)

[6]

**QUESTION 4**

4.1 An electric current passes through a solution of copper chloride as shown below.



4.1.1 What is the colour of a copper chloride solution? (1)

4.1.2 Write down the correct term for the process that occurs when an electric current causes a chemical reaction. (1)

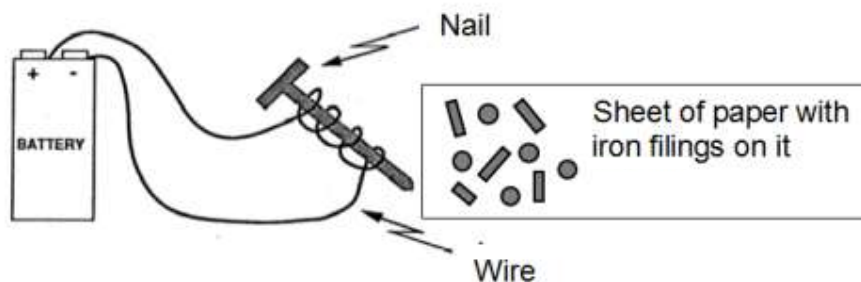
4.1.3 Rewrite and complete the WORD equation for the chemical reaction caused by the electric current:

Copper chloride  $\rightarrow$  ... + ... (2)

4.1.4 Name ONE observation that will indicate the formation of chlorine gas. (1)

4.1.5 What is the name of the negative(-) electrode where copper forms? (1)

4.2 A learner takes a piece of conducting wire and turns it around a nail. He then connects the conducting wire to a battery.



4.2.1 Write down the correct term for the apparatus demonstrated in the sketch above. (1)

4.2.2 What happens when an electric current flows through the coil wrapped around the nail? (1)

4.2.3 Suggest TWO changes that can be made to the apparatus for it to be able to pick up a larger number of iron filings. (2)

4.2.4 What will happen if the current is switched off? (1)

**[11]**

**QUESTION 5**

An investigation was carried out to determine the effect of increasing the NUMBER OF BULBS CONNECTED IN SERIES on the current in an electrical circuit.

This investigation was conducted with the purpose to test the following hypothesis:

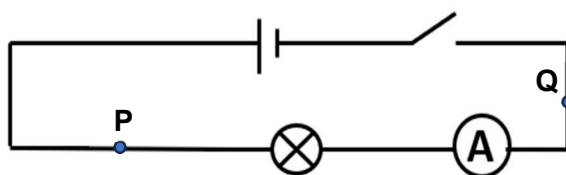
**“If the number of bulbs connected in series INCREASES, then the total current in the circuit will also INCREASE.”**

**Method:**

One cell, a switch, an ammeter and one bulb were connected in series.

The switch was closed and the ammeter reading was recorded.

The experiment was repeated with two and then with three bulbs connected in series.



The results were recorded in the table below:

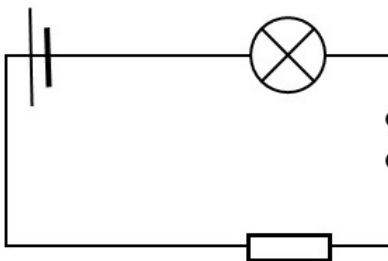
| Number of bulbs connected in series | Ammeter reading (A) |
|-------------------------------------|---------------------|
| 1                                   | 0,3                 |
| 2                                   | 0,2                 |
| 3                                   | 0,1                 |

- 5.1 How many bulbs were connected when the ammeter reading was 0,1 A? (1)
- 5.2 What other circuit component can be used to emit light, instead of a bulb? (1)
- 5.3 Write down the INDEPENDENT variable of this investigation. (1)
- 5.4 Write down the DEPENDENT variable of this investigation. (1)
- 5.5 Based on the results, indicate whether the hypothesis is ACCEPTED or REJECTED. (1)
- 5.6 Write down the conclusion for this investigation. (2)
- 5.7 When the switch is closed, how does the current at point P compare to the current at point Q? (1)
- 5.8 What is the reading on the ammeter when the switch is OPEN? (1)

**[9]**

**QUESTION 6**

6.1 Study the following circuit diagram and answer the questions that follow:



6.1.1 Is the above circuit a SERIES circuit or a PARALLEL circuit? (1)

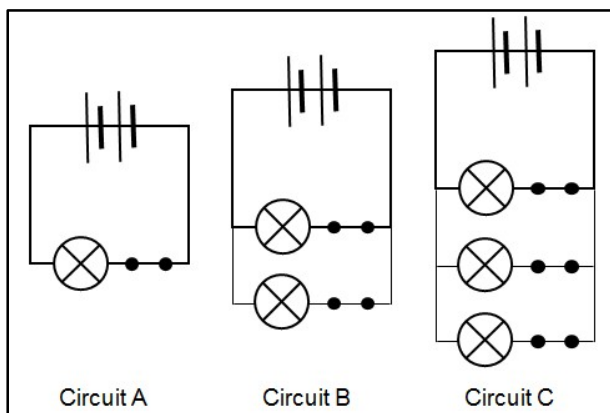
6.1.2 Give a reason to your answer in 6.1.1. (1)

6.1.3 A second bulb is added in series to the circuit. Explain what happens to each of the following:

(a) The total resistance of the circuit. (1)

(b) The brightness of the bulb. (1)

6.2 Study the circuit diagrams below. All cells and bulbs are identical.



6.2.1 Compare the brightness of the bulbs in circuits A and B with each other. (1)

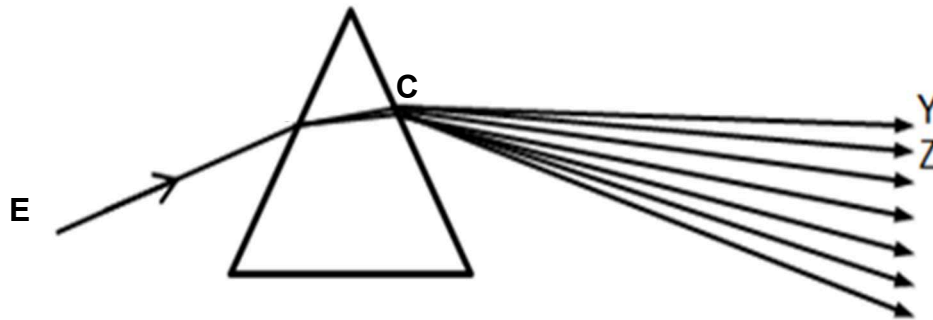
6.2.2 Explain why circuit C has the largest overall current. (2)

6.3 What is an advantage of connecting bulbs in parallel compared to bulbs connected in series? (1)

**[8]**

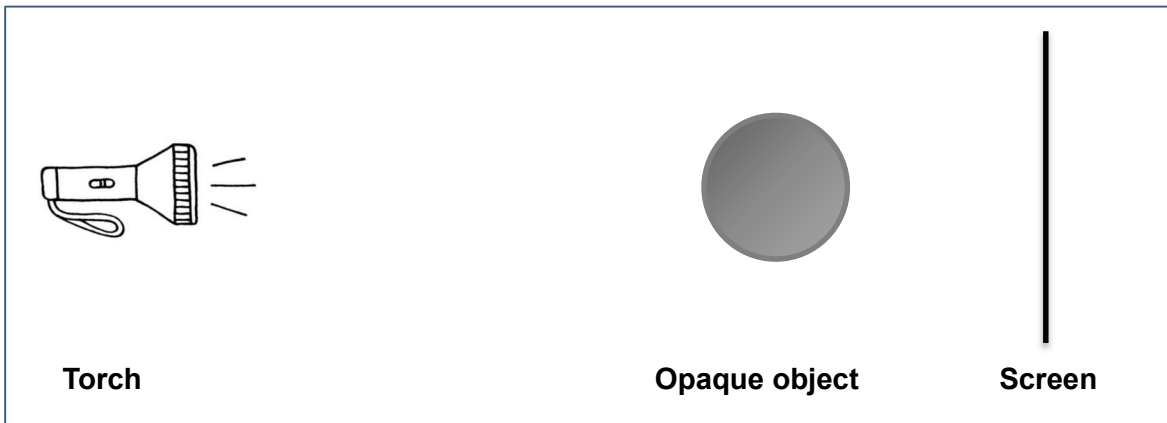
## QUESTION 7

- 7.1 The diagram below illustrates light passing through a triangular prism. Answer the questions that follow.



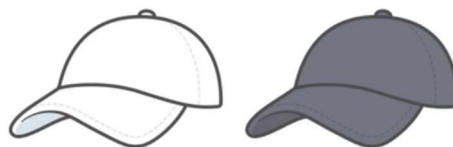
- 7.1.1 Name the colours of light represented by E and Z. (2)
- 7.1.2 Explain what happens at point C, where the ray of light exits the triangular prism. (1)
- 7.1.3 What is the range (rainbow) of different colours called? (1)

- 7.2 An opaque object is placed between a torch and a screen.



In your answer book, redraw the torch, object, and screen. Then, draw a ray diagram to illustrate how the object's shadow is formed on the screen. Clearly indicate and label the shadow in your diagram. (3)

- 7.3 White light shines on two caps — one appears white, the other black.

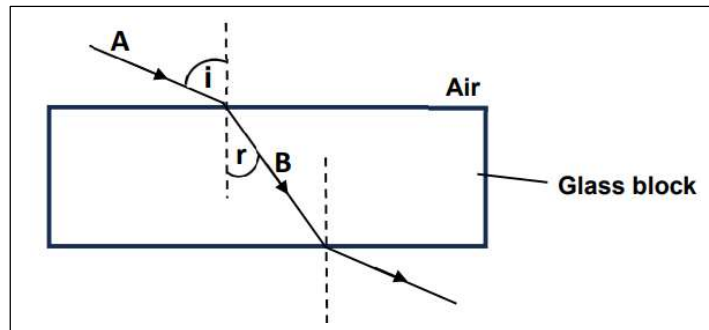


Use your understanding of the reflection and absorption of light to explain this observation. (2)

[9]

**QUESTION 8**

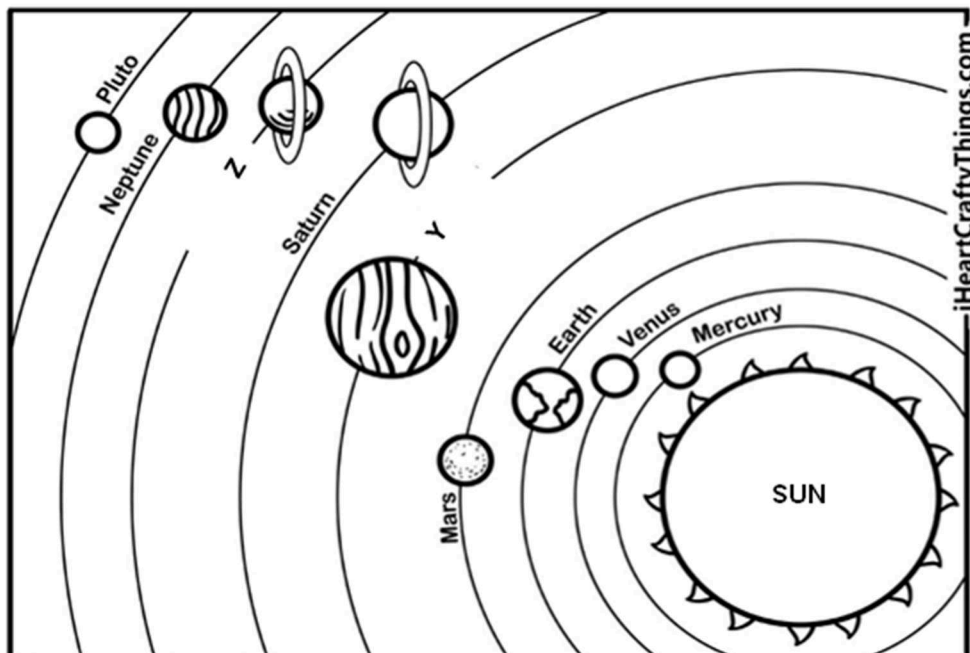
A ray of light strikes the surface of a rectangular glass block and changes direction upon entering the glass. Use the diagram below and answer the questions that follow.



- 8.1 What optical phenomenon is observed when the ray of light changes direction as it enters the glass block? (1)
- 8.2 Give the correct label for light ray A. (1)
- 8.3 If angle  $i$  is called the angle of incidence, what is the correct label for angle  $r$ ? (1)
- 8.4 Use your observations from the diagram to explain why the optical density of glass is higher than the optical density of air. (2)
- [5]**

**QUESTION 9**

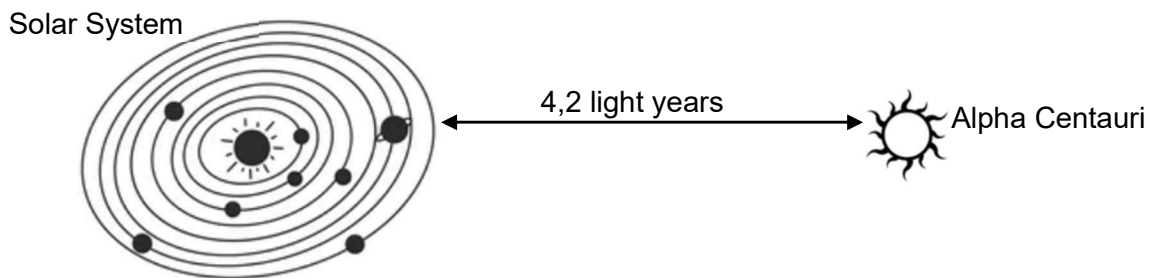
Study the diagram of the solar system below and answer the questions that follow.



- 9.1 Why is the Sun called a star? (1)
- 9.2 Rewrite the following sentence in your answer book and fill in the missing words:  
Sunlight energy is produced by .... reactions in the Sun that convert .... gas into helium gas. (2)
- 9.3 Give the NAME of the biggest planet in the solar system. (1)
- 9.4 Which planet in our solar system is known as the red planet? (1)
- 9.5 Which body in the diagram above is regarded as a dwarf-planet? (1)
- 9.6 Give the name of planet Z. (1)
- 9.7 Which force keeps all the planets in their stable predictable orbits? (1)
- 9.8 Where in the solar system is the Asteroid Belt located? (1)
- 9.9 Give THREE reasons why Earth can sustain life. (3)
- [12]**

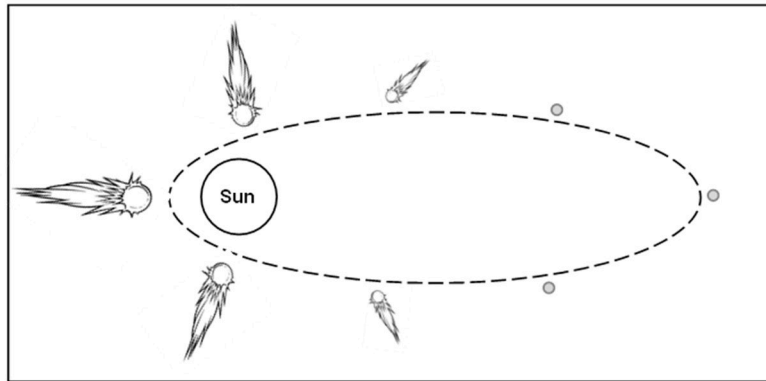
### QUESTION 10

- 10.1 Our solar system is located in a galaxy, which contains billions of stars and planets. The star Alpha Centauri is about 4,2 light years away from our solar system.



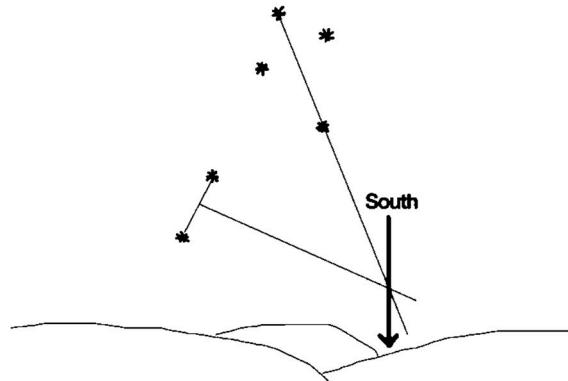
- 10.1.1 What is the name of the galaxy in which our solar system is found? (1)
- 10.1.2 What is the shape of the galaxy mentioned in question 10.1.1? (1)
- 10.1.3 Give two differences between a galaxy and a solar system. (2)
- 10.1.4 Explain the meaning of one light year. (2)

- 10.2 The diagram below shows a comet orbiting the Sun. Comets are made of dust, rock, and ice.



Choose the correct word in brackets in each of the following sentences. Only write down the number and the correct word.

- 10.2.1 When a comet gets close to the Sun, **(gravity / heat)** causes it to release gas and dust, forming a glowing tail. (1)
- 10.2.2 The tail of the comet points **(towards / away)** from the Sun. (1)
- 10.2.3 Comets follow an **(elliptical / circular)** path around the Sun. (1)
- 10.3 The diagram below shows a famous constellation of four stars and its two pointers that can easily be seen in the southern hemisphere.



- 10.3.1 What is this constellation of four stars called? (1)
- 10.3.2 The brightest star of the two pointers is the closest star to our Sun. What is the name of this star? (1)
- 10.3.3 Why was the constellation shown above especially useful to travellers in the Southern Hemisphere before the invention of modern navigation tools? (1)

[12]

**TOTAL SECTION B: 80**  
**GRAND TOTAL: 100**