GRADE 8 **NATURAL SCIENCES EXAM** **NOVEMBER 2021**

MARKS: 100

TIME: 2 Hours

Instructions:

1. Answer ALL the questions
2. Number and answer correctly according to the numbering system used in the question paper.
3. Present your answer according to the instructions of each question.
4. Do ALL drawings in pencil and label them in blue or black ink.
5. Write neatly and legibly

SECTION A

QUESTION 1

Various options are provided as possible answers to the following questions. Choose the answer and write only the letter (**A** to **D**) next to the question numbers (**1.1** to **1.5**) in the ANSWER BOOK, e.g 1.6 D.

1.1 Earth takes 365 $\frac{1}{4}$ days to orbit the Sun. Which of the following is a result of this fact?

A All calendars have 365 days

B February has 28 days instead of 30

C An extra day is added every four years

D Some holidays are on different dates each year

1.2 What keeps the Earth in its orbit?

A The Sun's speed rotating

B The Sun's gravitational pull

C The Earth's spin direction

D The Earth's location between other planets

1.3 The majority of asteroids are found in a belt located between what two planets?

A Earth and Mars

B Mars and Venus

C Mars and Jupiter

D Jupiter and Saturn

1.4 Out of the following which is not a poor conductor ?

A Cast iron

B Copper

C Carbon

D Tungsten

1.5 A year on Jupiter is 4,333 days long. A year on Mercury is 88 days long. Why do planets have different length years?

A A year is longer on larger planets

B Each planet has its own orbital period

C Some planets are larger than other planets

D Planets exert a gravitational force on other planets

1.6 The following is not an example of an output device…

A Light bulb

B Buzzer

C Beeper

D Cell

1.7 An astronomer wishes to measure the distance between two galaxies. Which of the units of measurement below should she use?

A Light centuries

B Hours

C Light years

D Light days **[7X1 = 7]**

1.2 Give the correct biological term for each of the following descriptions. Write only the term next to the relevant question number.

1.2.1 The transfer of charge by rubbing objects together.

1.2.2 A component which opens and closes a circuit.

1.2.3 A collection of stars held by their gravity.

1.2.4 A material which does not allow light to pass through it.

1.2.5 A device that opposes the flow of current.

[5X1 =5]

1.3 Match a statement from Column A with the correct term from Column B. Write the question number and only the letter of your answer.

	COLUMN A	COLUMN B
1.3.1	Converts electrical energy to light energy	A. Cell
1.3.2	Source of electrical energy in a circuit	B. Repulsion
1.3.3	Occurs between two like charges	C. Bulb
1.3.4	Also known as dirty snowballs	D. Pluto
1.3.5	The study of bodies in space	E. Comets
		F. Astronomy

[5x1 = 5]

1.4 The table below gives information on the movement of some planets. Study the table below and answer the questions that follow.

PLANET	TIME TAKEN FOR ROTATION ON IT'S AXIS (Hours)
URANUS	20
MERCURY	60
JUPITER	10
MARS	30

1.4.1 Identify the independent variable. (1)

1.4.2 Using the information above, construct a bar graph showing the time taken for rotation of each planet. (4)

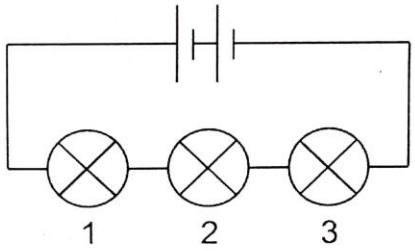
1.4.3 List 3 facts about Jupiter that you have studied. (3)

[8]

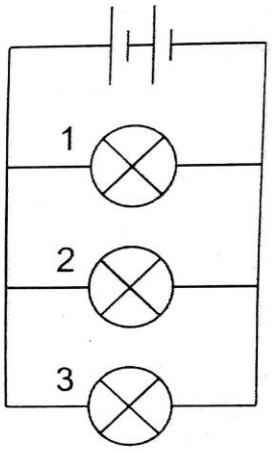
SECTION B

Question 2

2.1 Study the diagrams below and answers all questions that follow



circuit A



circuit B

2.1.1 Which circuit **A** or **B** represents a parallel circuit? (1)

2.1.2 What would happen in circuit A if bulb 2 has recovered? (1)

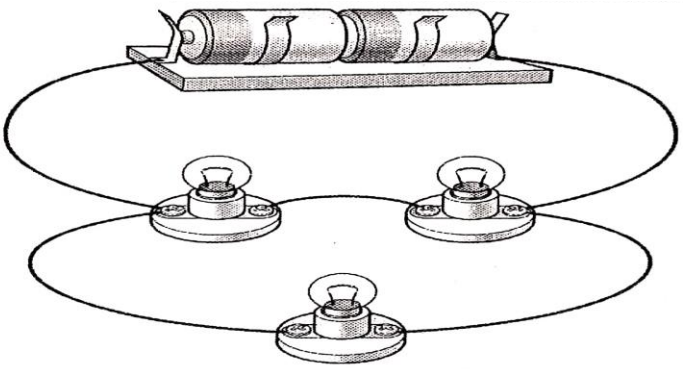
2.1.3 Would you have the same result in circuit **B** if you removed bulb 2? (1)

2.1.4 Give a reason for your answer in **2.1.3** above. (2)

2.1.5 Redraw circuit A and place an <u>open switch</u> into the circuit. (2)

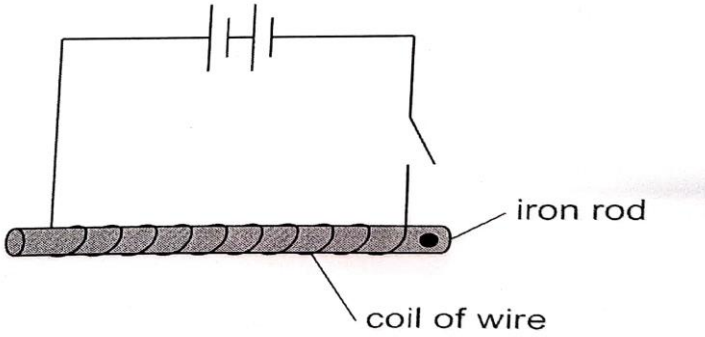
[7]

2.2 Redraw the diagram below as a circuit diagram.



[4]

2.3 Study the diagram below and answer the questions that follow.



2.3.1 What does this circuit diagram represent? (1)

2.3.2 What effect is brought about by the flow of current in this circuit? (1)

2.3.3 Look at the diagram and explain what needs to be done in order for the effect above to work. (1)

2.3.4 The effect brought about by this circuit can be made stronger. Name two ways that this can be done. (2)

2.3.5 Why do we use an iron rod for this process? (1)

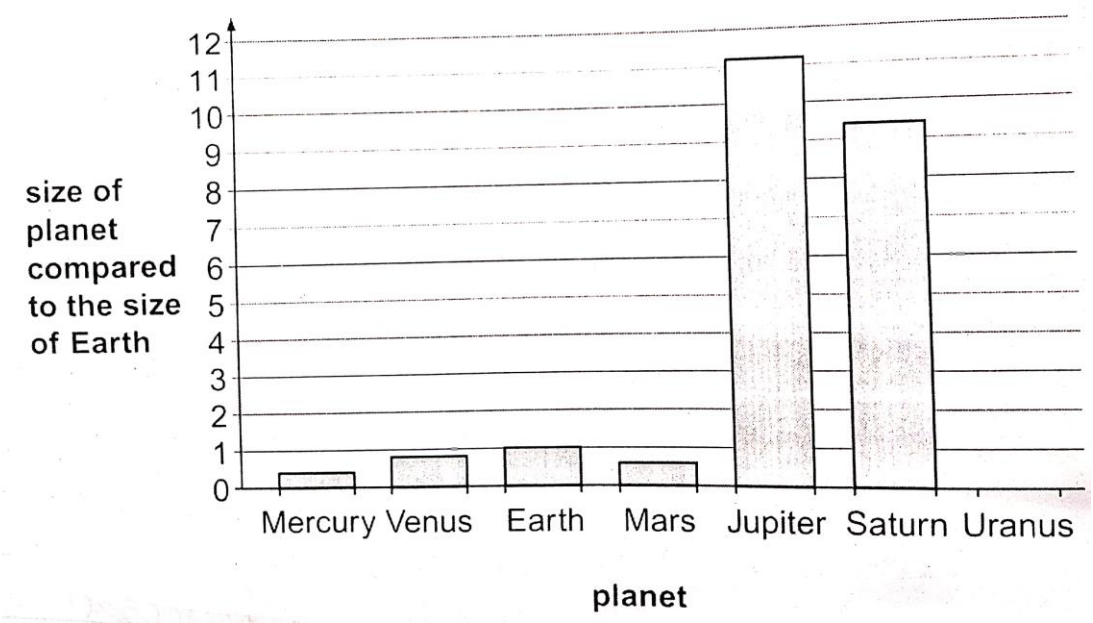
2.3.6 Name the most suitable type of wire to coil around the iron. Give a reason for your answer. (2)

[8]

Question 3

3. The graph below shows the comparison of the size of planets when you compare them. It does not show the actual size but how many times larger or smaller all other planets are when compared to earth.

3.1 Study the graph and answer the questions:



3.1.1 Redraw the axis of the graph in your answer book. Draw in the bars for **Earth** and **Uranus** ONLY. Uranus is four times larger than earth. (3)

3.1.2 Which planet is slightly more than 10 X larger than earth? (1)

3.1.3 Rewrite the planets in order of their size from smallest to largest. (2)

[6]

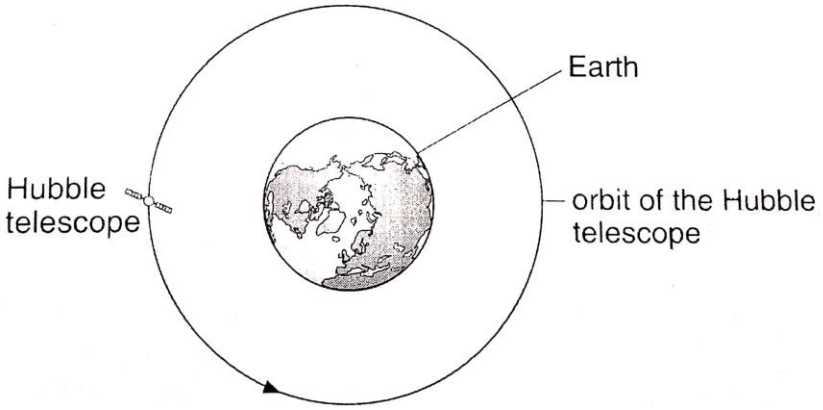
3.2 Some stars in the universe are much bigger than our star, the sun, but they look smaller.

3.2.1 Why do they look smaller than our sun? (2)

3.2.2 What do the nuclear reactions of the sun provide us with? (2)

[4]

3.3 Study the diagram below and answer all questions:



3.3.1 Why is the Hubble Space Telescope famous? (2)

3.3.2 How do they repair and service this telescope? (2)

3.3.3 Which force keeps the Hubble telescope in orbit? (1)

3.3.4 What is another name for an orbiting object? (1)

[6]

3.4 Read the following study below and answer the questions that follows:

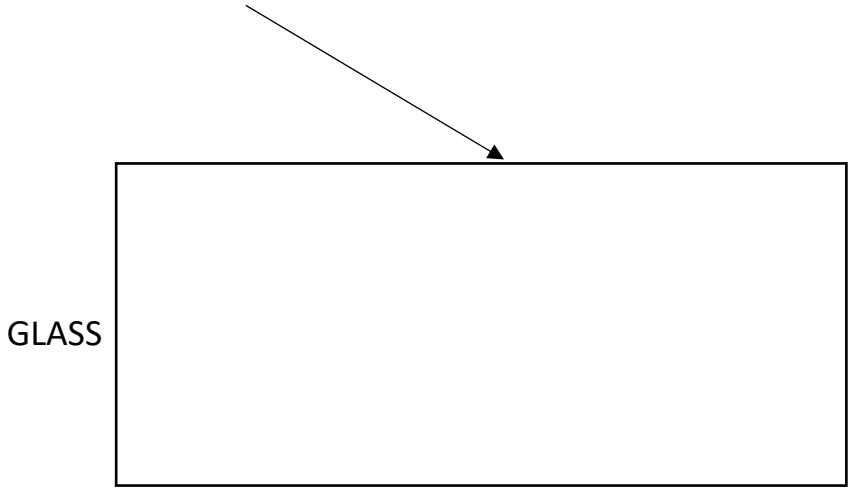
> "*Reflection is when light bounces off an object. When we look at objects, we are really seeing the light reflecting off them.''*

3.4.1 Draw a fully labelled diagram showing the reflection of a light ray from a mirror surface. (5)

3.4.2 What happens in scattered reflection? (2)

[7]

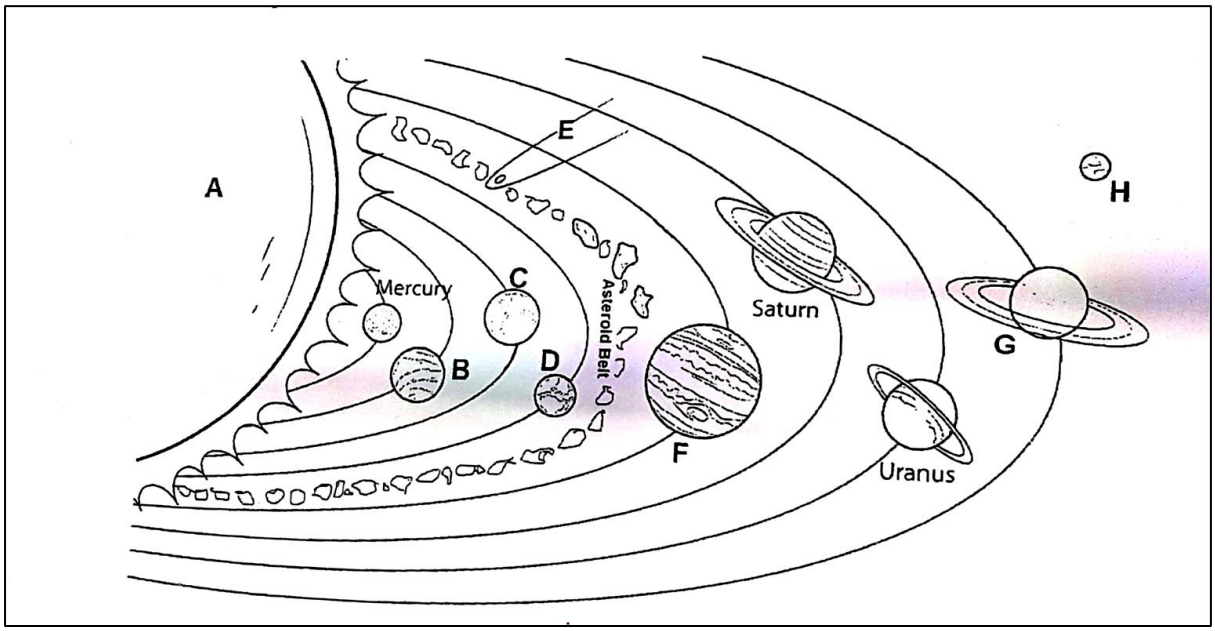
3.5 A ray of light passes from air into a transparent glass block. This is represented below. Redraw the diagram below in your answer book and complete the path of light as it passes through. (Label the normal, incident ray and refracted ray).



[3]

Question 4

4.1 Study the diagram below and answer the questions that follow:



4.1.1 Name the galaxy represented above. (1)

4.1.2 Provide labels for:

a) **C**

b) **E**

c) **F**

d) **G**

e) **H**

(5)

4.1.3 Describe the shape of this galaxy. (1)

4.1.4 List FOUR conditions which favour life to exist and be sustained on planet labelled **C**. (4)

4.1.5 Copy and complete the table below:

NAME	DEFINATION
Asteroid	
Comet	
Meteorite	

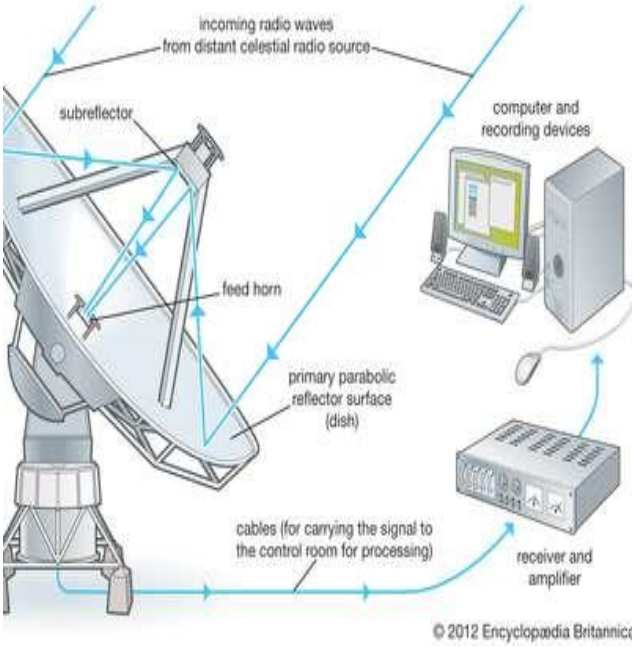
(3)

[14]

4.2 Study the telescopes below and answer the questions based on it.

A

B



4.2.1 Identify the type of telescope represented by each of the following:

a) Diagram A (1)

b) Diagram B (1)

4.2.2 a) The telescope A is known as **SALT.** Give the full name for this telescope. (1)

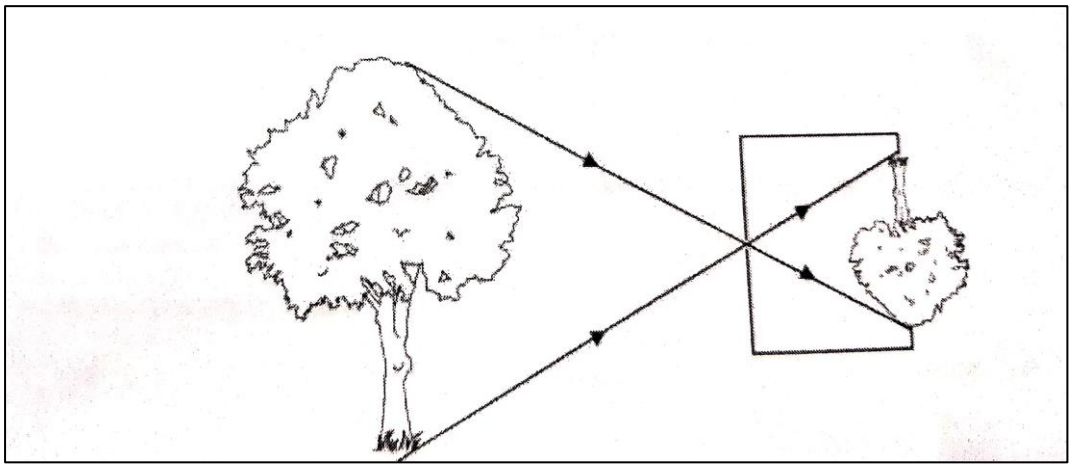
b) Where is this telescope found in South Africa? (1)

c) Why is this region perfect for this type of telescope? (2)

[6]

Question 5

5.1 Study the image below:

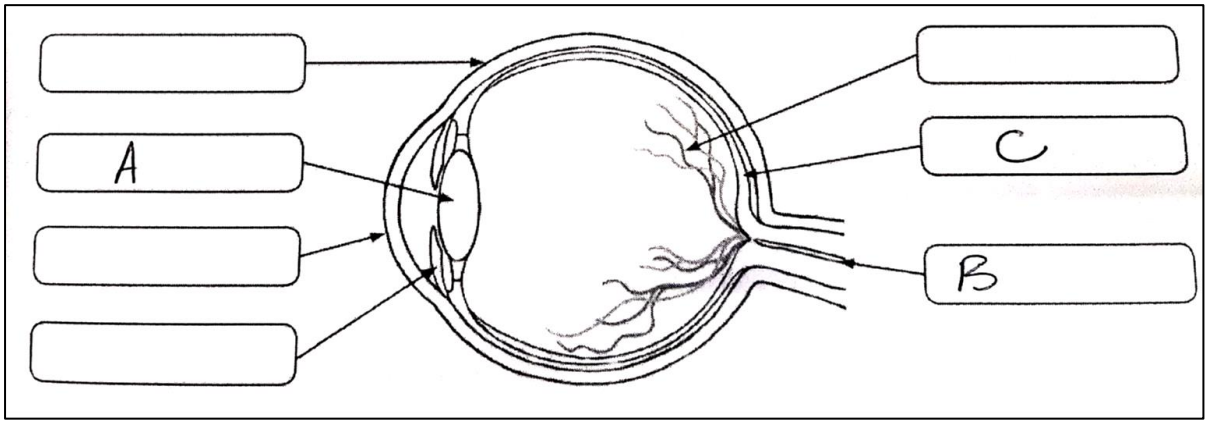


5.1.1 Explain why the image appears upside down. (2)

5.1.2 Why do we see things the right way around? (1)

[3]

5.2 Label the following parts of the eye on the diagram only.



[3]

5.3 In terms of colour, why do we see..

5.3.1 The following mouse as white. (1)

5.3.2 The following cat as black. (1)

[2]

5.4 What colour would a green box to be if illuminated with:

5.4.1 White light? (1)

5.4.2 Red light? (1)

[2]