education

Department of Education
FREE STATE PROVINCE

GRADE 6

NATURAL SCIENCES AND TECHNOLOGY

NOVEMBER 2024

TIME: 1½ hours

MARKS: 50

NAME AND SURNAME	
CLASS	
SCHOOL	
MARKS OBTAINED	**/50**

This question paper consists of 10 pages.

GENERAL INSTRUCTIONS AND INFORMATION:

1. The question paper consists of 8 pages including the cover page.
2. There are 6 questions in total.
3. Allocation of marks:

   SECTION A: 15

   SECTION B: 35
4. Read and answer all the questions thoroughly.
5. Number the answers correctly according to the numbering system used in the question paper.
6. Answer **ALL** the questions in a **separate answer book.**
7. Leave one line between two sub – sections, and questions.
8. Write neatly and legibly.

SECTION A

QUESTION 1: MULTIPLE-CHOICE-QUESTIONS

Choose the correct answer from the possible answers given in each statement. Write down only the correct letter next to the relevant number, e.g., 1.1.1 C.

1.1 ---------allows electricity to pass through it.

A. wood
B. copper
C. glass
D. rubber (1)

1.2. a worker for an electrical company is preparing to fix a power line.

Why would he put on rubber gloves before working with any power lines?

A. rubber is a poor conductor of heat but a good conductor of electricity

B. rubber is a good conductor of heat but a poor conductor of electricity

C. rubber is a poor conductor of heat and electricity
D. rubber is a good conductor of heat and electricity (1)

1.3 The best electrical conductors, in order, are…

A. copper, lead, gold, silver
B. copper, gold, aluminium, lead
C. gold, iron, mercury, copper
D. silver, copper, gold, aluminium (1)

1.4. One of the following is **NOT** an example of fossil fuel.water
A. coal
B. natural gas
C. oil
D. water (1)

1.5 Parts of electric circuits are called…

A. appliances
B. circuit diagram
C. copper wire
D. components (1)

1.6 How long does it take for the Earth to go around the Sun once?

A. 29.5 days
B. 365.25 days
C. 24 days
D. 5 days (1)

1.7 A vehicle that travels through space

A. spacecraft
B. prototype
C. robot
D. telescope (1)

1.8. --------- is something that limits a product when you design.

A. design
B. constraint
C. design brief
D. evaluate (1)

1.9. During which phase of the Moon does a solar eclipse occur?

A. Full Moon
B. New Moon
C. Waning Gibbous
D. First Quarter (1)

1.10. --------is a specific piece of information/requirement about a product.

A. evaluate
B. constraint
C. system
D. specification

[10]

QUESTION 2

Choose a term from Column B that matches the description in Column A. Write **ONLY** the letter (A – E) next to the question number (2.1 – 2.5) in your answer book.

	COLUMN A	**COLUMN B**	
2.1	A system whereby the eight planets, moons, comets asteroids, dust and gas orbit around the Sun	**A.**	Neptune
2.2	The seventh and third largest planet mainly composed of ice and rocks.	**B.**	Asteroids
2.3	The rocks that orbit the centre of our Solar System between planet Mars and Jupiter are called	**C.**	Saturn
2.4	The second largest planet in the Solar System. It has bright white rings	**D.**	Uranus
2.5	The farthest planet from the centre of our Solar System	**E.**	Solar System
		F.	Tides

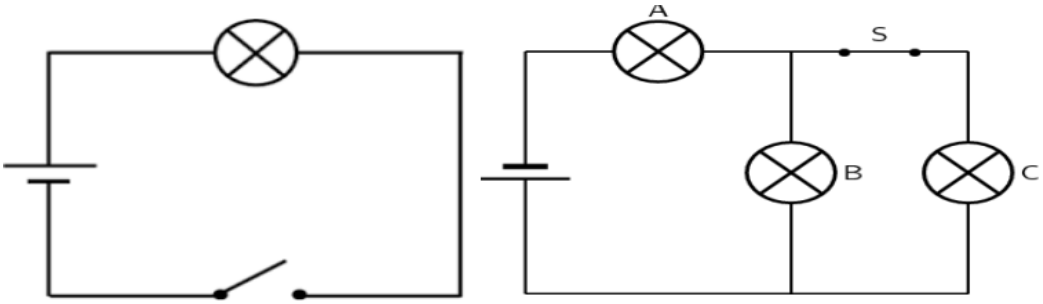
[5]

TOTAL SECTION A:15

SECTION B

QUESTION 3

3.1 Compare the circuit diagrams below and answer the questions that follow.



CIRCUIT A **CIRCUIT B**

QUESTIONS	CIRCUIT A	CIRCUIT B
Is the switch CLOSED or OPEN? (2)	3.1.1 _____	3.1.2 _____
Will the bulb/s LIGHT-UP in the circuit? (Yes / No) (2)	3.1.3 _____	3.1.4 _____
Is the circuit complete or incomplete? (2)	3.1.5 _____	3.1.6 _____

(6)

3.2. What is the function of the following components in the simple electric circuit?

3.2.1. Cell/battery (1)

3.2.2. The bulb (1)

3.3. **Define the following terms**:

3.3.1. Conductors (2)

3.3.2. Insulators (2)

3.4. Why are insulators important? (2)

3.5. What happens to energy when we use electrical devices and appliances? (2)

[16]

QUESTION 4

4.1 Cost of electricity.

Lebo compiled a table to show the amount of electricity used by some appliances in his home.

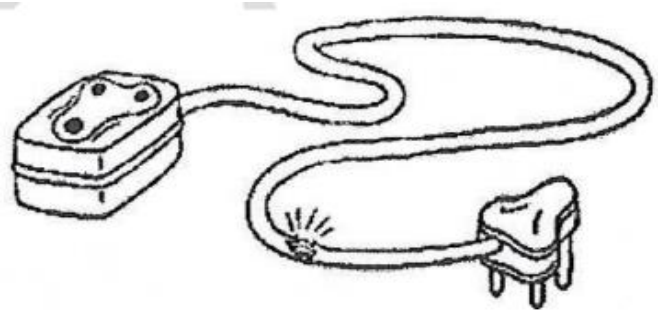
Appliance	**Electricity use by an appliance (W)**
Electric Stove	8 000
Geyser	4 000
Television	340
Kettle	2 000
Fridge	150

4.1.1 Explain why the electric stove and the geyser use more electrical energy than the television and the fridge? (2)

4.1.2 Suggest **TWO** ways in which Lebo's family could save electricity (2)

4.1.3 Provide an example of a renewable source of electricity that Lebo could tell his family to invest in. (1)

4.2. Look at the pictures below and answer the following questions.





4.2.1 Explain why cables such as the ones above cannot be used. (2)

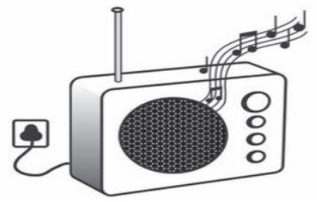
4.2.2 If you were an electrician, what safety measure would you put in place if you were working with an exposed wire? (1)

[8]

QUESTION 5

5.1 What is a system? (1)

5.2 Draw a system diagram for the system below to illustrate the input, the process and the output.



(3)

[4]

QUESTION 6

6.1 Read the following passage and answer the questions that follow.

The Square Kilometer Array (SKA)

South Africa has spent eight years preparing to host the world's largest telescope. The other country wanting to host the SKA is Australia.

We have a very good site in South Africa. The SKA radio telescope will have several antennae and dishes placed in various areas. This will send information to a central computer to produce a picture.

The main centre will be in the Karoo with other centres away from people and away from FM broadcasting and cellphone towers to prevent interferences.

The SKA will be 50 times more sensitive and be able to survey the sky 10 000 times faster than any other telescope.

The telescope will observe black holes, stars and galaxies or bands of stars.

This will be good for the economy and for job creation.

6.1.1 What do telescopes do? (1)

6.1.2. Give **ONE** reason why the SKA will be better than other telescopes. (1)

6.1.3. What is the name of a vehicle with special wheels and axles designed to travel on the Moon or other planets? (1)

6.1.4. Moon rovers and Mars rovers are different because of what? (2)

6.1.5 Give one similarity between the Moon rovers and Mars rovers (1)

6.2 Describe the movement of the Moon around the Earth. (1)

[7]

TOTAL SECTION A: 15
TOTAL SECTION B:35
GRAND TOTAL: 50