



Province of the  
**EASTERN CAPE**  
EDUCATION

## **INTERMEDIATE PHASE**

**GRADE 6**

**NOVEMBER 2014**

## **NATURAL SCIENCES AND TECHNOLOGY**

**MARKS: 80**

**TIME: 2 hours**



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This question paper consists of 9 pages.

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**INSTRUCTIONS AND INFORMATION**

1. Read ALL the questions carefully before you start answering the questions.
2. Answer ALL the questions in your ANSWER BOOK.
3. Number the answers correctly as they are in the question paper.
4. Write neatly and legibly.

**QUESTION 1**

Various possibilities are suggested as answers to the following questions. Choose the correct answer and write only the letter (A–D) representing your chosen answer next to the question number (1.1–1.5) on your ANSWER BOOK for example 1.6 E.

- 1.1 Two or more cells connected together in an electrical circuit energy are called a (an) ...
- A insulator.
  - B cells.
  - C battery.
  - D conductor.
- 1.2 The remains of dead plants and dead animals that store energy from the sun from millions of years ago are ...
- A dead plants.
  - B dead animals.
  - C fossil fuels.
  - D organic material.
- 1.3 All the planets and the moon are parts of the sun's family and are called ...
- A asteroids.
  - B the atmosphere.
  - C the solar system.
  - D satellites.
- 1.4 A vehicle with wheels designed to travel on the moon or other planets is a ...
- A space.
  - B rover.
  - C robot.
  - D telescope.
- 1.5 If you have add more cells in serie in an electrical circuit a light bulb in it will burn ...
- A dimmer.
  - B brighter.
  - C not at all.
  - D None of the above.

(5 x 1) [5]

**QUESTION 2**

Match a statement in COLUMN A with a term in COLUMN B. Write the letter (A–F) of your answer next to the question number (2.1–2.5) on the ANSWER BOOK, for example 2.6 G.

COLUMN A		COLUMN B	
2.1	Materials that do not readily conduct electricity	A	Orbit
2.2	An optical instrument for making distant objects like stars, planets etc. appear larger and nearer	B	Conductor
2.3	The large circular pathway that the earth moves around the sun	C	Telescope
2.4	The object(s) that revolve(s) around a planet	D	Spacecraft
2.5	A vehicle that goes into space	E	Insulator
		F	Moons

(5 x 1)

**[5]****QUESTION 3**

Re-write the following sentences and fill in the missing words to make the statement correct. Underline the words that you filled in.

Mars; Watts; Conductor; Robot; Space Rovers; Earth; SALT; Switch

3.1 ... is the component for controlling the flow of current in an electric circuit.

3.2 The amount of electrical energy appliances use is measured in ...

3.3 ... consists of rock that is red in colour because of the rusted iron in it.

3.4 The ... telescope was finally completed in 2010.

3.5 ... are used to collect rock and soil samples and take photographs of the surface of the moon and Mars.

(5 x 1)

**[5]**

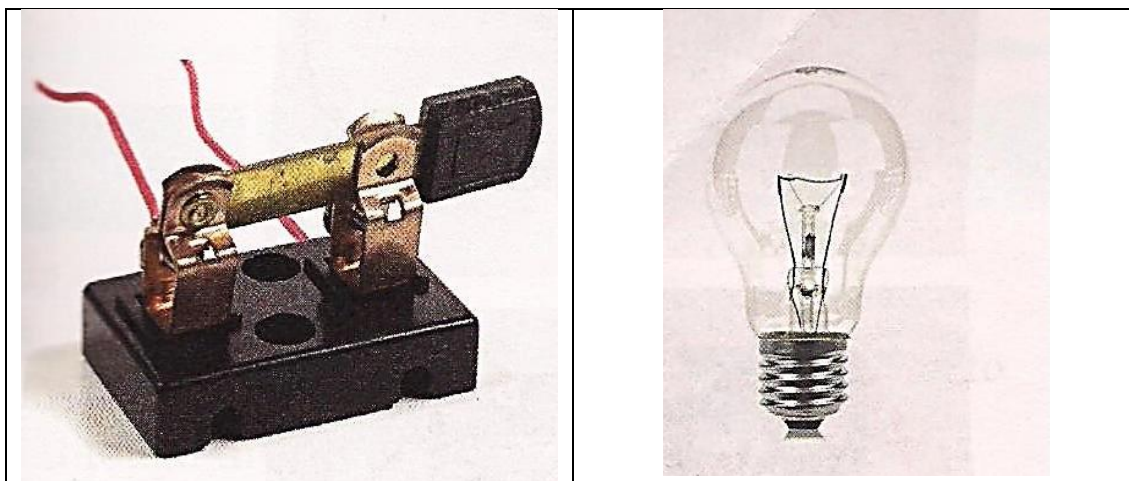
**QUESTION 4**

4.1 Answer the following questions.

4.1.1 Name the THREE components of a simple electric circuit. (3)

4.1.2 What is the function of cells in an electric circuit? (1)

4.2 Look at these pictures and draw the symbols for each of the following electrical components.

**A****B****C****D**

(4 x 1) (4)

4.3 In a Grade 6 Natural Sciences and Technology class a group of learners were instructed to make a simple circuit by connecting different components of a circuit together. After they finished connecting the different components together they were required to turn on the switch. In one of the groups the light bulb did not light up.

What do you think is the reason for the bulb not to light up? (2)

- 4.4 4.4.1 From the list of objects state whether they are insulators or conductors:

**iron nail; rubber band; wood.**

Tabulate your answer. Copy the table in your ANSWER BOOK and fill in the table.

INSULATORS	CONDUCTORS

(3 x 1) (3)

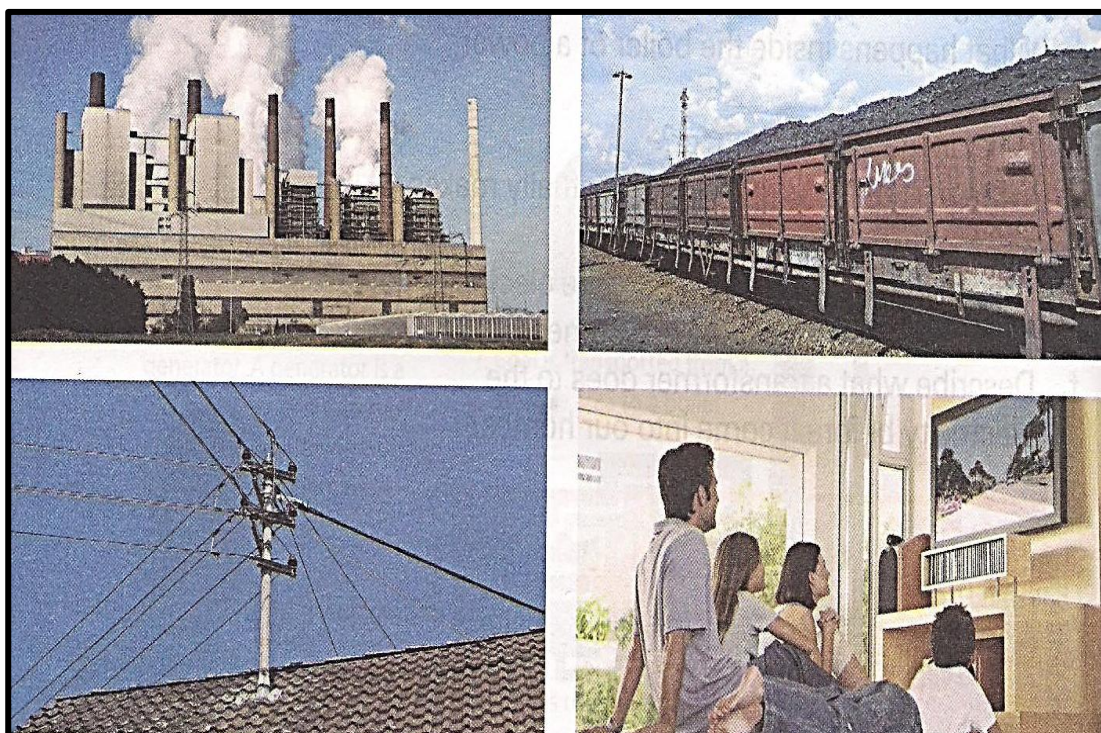
- 4.4.2 Why do we use copper wire as a standard electric wire? Give TWO reasons. (4)

- 4.4.3 Suggest a reason why we need to use electrical insulators. (1)

**[18]**

**QUESTION 5**

- 5.1 5.1.1 Write a design brief with THREE specifications and constraints for an alarm system you wish to design and make. The alarm is to protect your possessions that are kept in a locked outside building. (6)
- 5.1.2 Draw a systems diagram maintaining the input-process-output for the alarm system referred to above. (4)
- 5.1.3 Jabu tested the alarm. It did not work when the current flows in the circuit. Suggest ONE possible reason to this. (1)
- 5.2 Use the following picture to answer the following questions.



- 5.2.1 List any FIVE electrical appliances that people living in both rural and urban areas use. (5)
- 5.2.2 Choose any TWO electrical appliances and explain why they are useful and how they make life easier. (4)
- 5.2.3 Do you think that people should have to pay for electricity? Give a reason for your answer. (2)

**[22]**



**QUESTION 6**

Study the image below and answer the questions that follow.



- 6.1 Name the THREE objects that are shown in the image. (3)
- 6.2 What is an asteroid? (1)
- 6.3 How many planets do we have in our solar system? (1)
- 6.4 What will an alternative home planet/moon need to be able to support life as we know it, if we ever need to flee from earth? (2)
- 6.5 Explain why Earth travels slightly faster than Mars, as both are planets orbiting the sun. (2)
- 6.6 Is the moon ever visible during daytime? Give a reason for your answer. (1 + 2) (3)
- 6.7 Suggest a reason why life is always possible on planet Earth. (1)
- 6.8 Support the following statement:
- “We cannot breathe on the moon without a spacesuit.” (1)

**[14]**



**QUESTION 7**

Sakhie's group tested the different model space rovers they made, to see how far they could move down a ramp. These are their results:

<b>NAME</b>	<b>DISTANCE THE MODEL ROVERS MOVED</b>
Anna	12 cm
Thembi	10 cm
Faizel	9 cm
Jabu	14 cm

7.1 Draw a bar graph of the group's results. (7)

7.2 If you are appointed as the designer of a robot vehicle to be sent to Mars, list any TWO key features that you would include on such a vehicle. (2)

7.3 Why has no astronaut yet travelled to Mars? Give TWO reasons. (2)

**[11]**

**TOTAL: 80**















