



Province of the  
**EASTERN CAPE**  
EDUCATION

## **INTERMEDIATE PHASE**

**GRADE 6**

**NOVEMBER 2014**

### **NATURAL SCIENCES AND TECHNOLOGY MEMORANDUM**

**MARKS: 80**

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This memorandum consists of 7 pages.

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**QUESTION 1**

1.1 C ✓

1.2 C ✓

1.3 C ✓

1.4 B ✓

1.5 B ✓

(5 x 1) [5]

**QUESTION 2**

2.1 E ✓

2.2 C ✓

2.3 A ✓

2.4 F ✓

2.5 D ✓

(5 x 1) [5]

**QUESTION 3**

3.1 Switch ✓

3.2 Watts ✓

3.3 Mars ✓

3.4 SALT ✓





3.5 Space Rovers ✓

(5 x 1) [5]

**QUESTION 4**

- 4.1 4.1.1
- Cells/battery ✓
  - Conductor ✓
  - Light bulb ✓
- (3 x 1) (3)

4.1.2 Cells provide energy in an electric circuit. (1)

- 4.2 A – Switch  ✓
- B – Light bulb  ✓
- C – Conductor  ✓
- D – Cell  ✓

(4 x 1) (4)

- 4.3 The components of a circuit are not properly connected. ✓✓ (2)  
**(Any relevant answer to be marked.)**

- 4.4 4.4.1
- | INSULATORS    | CONDUCTORS  |
|---------------|-------------|
| Wood ✓        | Iron nail ✓ |
| Rubber band ✓ |             |
- (3)

- 4.4.2
- Copper wire is a good conductor of electricity. ✓✓
  - It does not corrode easily. ✓✓
  - It is not too expensive. ✓✓
- (Any two correct responses may be accepted.)** (Any 2 x 2) (4)

- 4.4.3
- They do not allow electricity to pass through them. ✓
  - They are used wherever there is danger of someone getting an electric shock. ✓
  - To prevent/avoid a short circuit. ✓
- (One relevant response.)** (Any 1 x 1) (1)

**[18]**

**QUESTION 5**

## 5.1 5.1.1 DESIGN BRIEF:

- To design and make an alarm to protect the building. ✓
- It will use a two-cell series battery (3 volts) and will use a buzzer as a warning device. ✓
- The alarm will be activated by a secret switch hidden under the door mat. ✓

(3 x 2) (6)

## 5.1.2

INPUT	PROCESS	OUTPUT
Cells give energy to the circuit containing a buzzer and secret switch. ✓ (1)	Thief steps on to the mat and close the secret switch. Electric current runs through wires and makes the buzzer buzz. ✓ (2)	The buzzer makes a noise when the circuit is closed. ✓ (1)

(4)

- 5.1.3 The circuit may have broken parts so there is no current flowing in it. ✓

**(Any relevant answer is acceptable.)**

(1)

- 5.2 5.2.1 TV set, electric stove, electric fan, electric toaster, electric iron, etc. ✓

**(Any relevant answer is acceptable.)**

(5)

- 5.2.2 Watch TV for entertainment, electric stove cooks food so that we can remain alive, electric fan helps during hot day to cool our bodies, etc. ✓

**(Any relevant answer is acceptable.)**

(4)

- 5.2.3 We have to pay for electricity because it is expensive to generate and government has to receive money to keep these power stations going. ✓

**(Any relevant answer is acceptable.)**

(2)

**[22]**

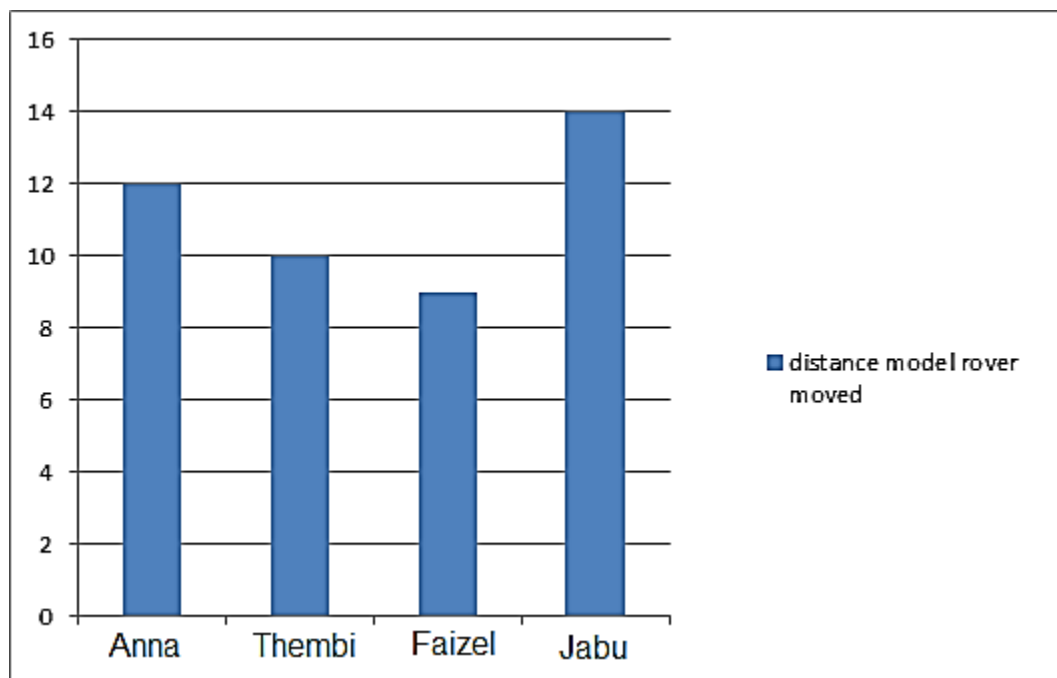
**QUESTION 6**

- 6.1 Earth, ✓ Sun, ✓ Moon ✓ (3)
- 6.2 Thousands of little pieces of rocks and small stones between Jupiter and Mars that orbits the sun. ✓ (1)
- 6.3 8 planets (1)
- 6.4 Alternative home will need:
- Oxygen ✓
  - Lique water ✓
  - Protect ultra-violet radiation ✓
  - Protection from solar wind ✓
  - Solid surface ✓
  - Gravity similar to earth. ✓
- (Any two relevant answers are acceptable.)** (2)
- 6.5
- Earth is closer to the sun. ✓
  - There is stronger force of gravity acting on it. ✓
  - To avoid being dragged into the sun, Earth must travel a bit faster than Mars. ✓
- (Any two relevant answers are acceptable.)** (2)
- 6.6 Yes, the moon shines by reflecting the light of the sun. ✓ (3)
- 6.7
- Earth's atmosphere contains oxygen. ✓
  - Earth is the only planet with liquid water. ✓
- (Any one answer is acceptable.)** (1)
- 6.8 There is no oxygen on the moon. ✓ (1)

**[14]**

## QUESTION 7

### 7.1 Different model rovers



Give a mark for each of the following

- The X-axis labelled ✓
- The Y-axis labelled ✓
- Each point plotted accurately ✓
- Points joined by bars ✓
- Neatness ✓

(7)

- 7.2 ➤ Wheels made of wire mesh ✓
- Electric motors to drive each wheel ✓
  - Solar panels to recharge batteries ✓
  - Cameras to take photographs ✓

**(Any other relevant explanation is acceptable.)**

(Any 2 x 1) (2)

- 7.3 ➤ It is very dangerous due to the distance. ✓
- It will be extremely expensive. ✓

(2)  
[11]

**TOTAL: 80**

## RUBRIC FOR MARKING 5.1.1

Criteria	LEVEL DESCRIPTORS			
	Level 4	Level 3	Level 2	Level 1
<b>DESIGN BRIEF SPECIFICATION AND CONSTRAINTS</b>	Is able to suggest many alternative responses for an alarm to work so as to protect the building.	Is able to suggest and record at least two possible solutions to solve the problem.	Can suggest and record one possible solution to the problem.	Is unable to suggest and record any solution to the problem.
<b>MARKS RANGE</b>	<b>6</b>	<b>4</b>	<b>2</b>	<b>0</b>