Education and Sport Development
Department of Education and Sport Development
Departement van Onderwys en Sportontwikkeling
Lefapha la Thuto le Tlhabololo ya Metshameko
NORTH WEST PROVINCE

NORTH WEST PROVINCIAL ASSESSMENT

GRADE 6

NATURAL SCIENCES AND TECHNOLOGY
NOVEMBER 2017

MARKS: 80
TIME: 2 hours

NAME: _____

SCHOOL: _____

DISTRICT: _____

AREA OFFICE: _____

80

This question paper consists of 18 pages.

Instructions and Information.

1. This question paper consists of THREE Sections. A, B and C.
2. Answer all questions in each Section.
3. Write all your answers in spaces provided.
4. Write neatly and legibly.

SECTION A

QUESTION 1

1.1 Read each question and **make a circle** around the letter A, B, C or D that is the correct answer. Example 1.1.6 ©

1.1.1 Which of the following materials is an electric conductor? (1)

A Silver
B Glass
C Silver coloured plastic
D Plastic bag

1.1.2 In which of the following circuits will there be a flow of electrical current? (1)

A

B

C

D

1.1.3 Pule has connected two light bulbs across two cells.
How can he make the bulbs dimmer? (1)

A Add the third cell to the circuit.
B Replace one of the cells with a section of a wire.
C Replace one of the cells with a plastic ruler.
D Replace one of the bulbs with a section of wire.

1.1.4 Materials that allow electricity to flow through are called… (1)

A insulators
B plastics
C conductors
D non-metals

1.1.5 In an electric circuit diagram, the symbol  can be used to represent… (1)

A an open switch
B a closed switch
C two bulbs or globes
D two cells

1.1.6 Which statement is FALSE about the moon? (1)

A The moon; stars and the sun orbit around the earth.
B The moon do not give out its own light and heat.
C On the moon we can see craters, lighter areas which are mountains, and darker areas which are flat plains.
D Neil Amstrong was the first astronaut to land on the moon

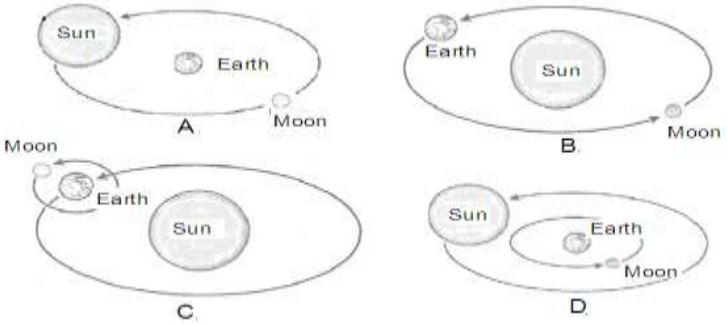
1.1.7 Each year, seasons on earth are caused by…. (1)

A closeness of Earth to the Sun during orbiting
B speed of Earth's rotation
C tilt of Earth on its axis
D amount of meteorites in sky

1.1.8 The _____ of the Earth causes day and night. (1)

A axis
B rotation
C hemisphere
D moons

1.1.9 Which of these best shows that the Earth revolves around the sun and the moon revolves around the Earth? (1)



A A
B A and B
C C
D B and C

1.1.10 The names of the outer planets in our solar system are… (1)

A Jupiter, Saturn, Uranus, Neptune
B Jupiter, Venus, Neptune, Sun
C Venus, Earth, Saturn, Neptune
D Only Earth and Sun

[10]

1.2 Write down the correct term for each of the following statements.

1.2.1 The remains of plants and animals that lived millions of years ago and are now used as fuels.

_____

1.2.2 Energy resources that can be produced continuously such as wind; wave energy and hydroelectric energy

_____

1.2.3 Energy resources that cannot be replaced once are used up and such as coal; oil; gas and nuclear fuels.

_____

1.2.4 Energy from the

_____ (4)

1.3 Match the number in Column A with the letter in Column B. Write down the matching letter in the middle column.

	COLUMN A	ANSWER	COLUMN B
1.3.1	Scientists who study objects in space or celestial bodies such as moons, planets, stars, etc.		A Rotation
1.3.2	Lumps of rock from planets that broke up long ago and orbit around the sun.		B Orbit
1.3.3	Spinning movement of the earth on its own axis.		C Astronomers
1.3.4	The fourth planet from the Sun, red in colour.		D Geologists
1.3.5	The main source of energy and the centre of solar system		E Mars
			F Venus
			G Fossil fuels
			H Sun
			I Asteroids

(5)

TOTAL FOR SECTION A: 19

SECTION B

QUESTION 2

Electric circuits are often used to solve problems that require energy. In the 1890s, American Ever-Ready Company founder, Conrad Hubert, invented the electric hand torch like the one shown.

The inside parts of the above torch are shown in Figure 3 below.

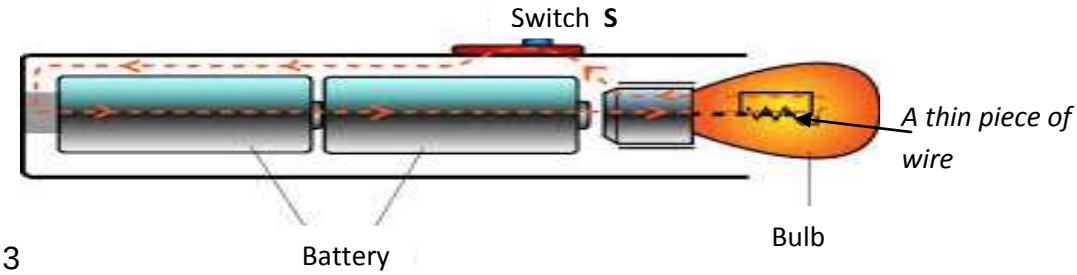


Figure 3

2.1 Use Figure 3 and the words in the word box to complete the sentences below:

current; voltage; increase; decrease; light; battery ; cell; electrical energy; less brightly; more brightly;

2.1.1 When switch S is closed or is on, the electrical energy is transferred from the _____ to the bulb and _____ is given off. (2)

2.1.2 In Figure 3, the arrows represent_____ which is measured in amperes. (1)

2.1.3 If we were to add the third cell to the battery, the bulb would burn_____ because the current would _____throughout the circuit. (2)

2.2 Light bulbs don't last very long. What do you think is the main reason for a light bulb that stops working? (refer to a thin piece of wire in the bulb when explaining your answer). (2)

_____

_____

2.3 Draw and label the simple circuit diagram for a torch system shown in Figure 3 which has the following components: 2 cells ; connecting wires; 1 bulb/globe and 1 open switch. Remember to use the correct symbols for the electrical components. (6)

[13]

QUESTION 3

3.1 Cost of electrical power

The grade 6 learners investigated which electrical appliance uses more electricity to run than others. They looked at the back or bottom of each appliance and recorded the information in the table as shown below, study the table and answer questions that follow:

Appliance or device number	Name of appliance or device	Power rating in W or kW	Power rating in watt (W)
1	Radio	0.015 kW	15 W
2	Electric kettle	2.0 kW	
3	Cell phone Charger	**240 V and 100 mA**	
4	Energy saving light bulb	15 W	15 W
5	fridge	8 kW	8000 W

In column 3, learners then recorded the power values either in watt or kilowatt. The power values in column 3 were converted to watt in column 4. If the power is given in kW, they multiplied this number by 1000 to get the value in watt (W). If the device like cell phone charger does not show a value in W or kW, they looked for two quantities given in volt (V) and milli ampere (mA). They multiplied these two numbers and then divide the answer by 1000 to get the power in watt.

3.1.1 What is the power rating for the electric kettle in watt? (2)

_____

3.1.2 Calculate the power rating for cell phone charger in watt. (2)

_____

_____

3.2 Which TWO electrical appliances have the lowest power requirements?

_____

_____ (2)

3.3 Which TWO electrical appliances have highest power requirements? (2)

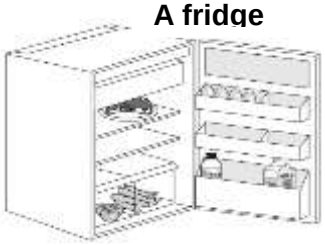
_____

_____

3.4 If the electricity supplied to the fridge costs R2.00 for each kilowatt hour (kWh) and the fridge used 150 kWh of electricity.

How much did this electricity costs? Show clearly how you work out your answer.

A fridge



Note: The total cost of electricity = number of kilowatt hours **X** cost per kilowatt hour.

_____

_____

_____ (4)

3.5 Study FIGURE 4 and answer questions that follow:
Systems and control at Mary's Computer repair shop.

FIGURE 4

At times when Mary is busy in her office, people goes inside the shop without her notice. Some steal displayed computer hard drives and keyboards. In order to overcome this challenge, the Shutter stock company installed a light system that notifies whenever someone comes and leaves Mary's shop. The control system consists of a light emitting diode planted on top of computer screen and a lamp placed next to the computer screen as shown in figure 4. Whenever the shop door opens, the light emitting diode (bulb) flicks the light and the lamp lights up.

3.5.1 Write down the problem that Mary's Computer shop experienced (1)

_____

_____

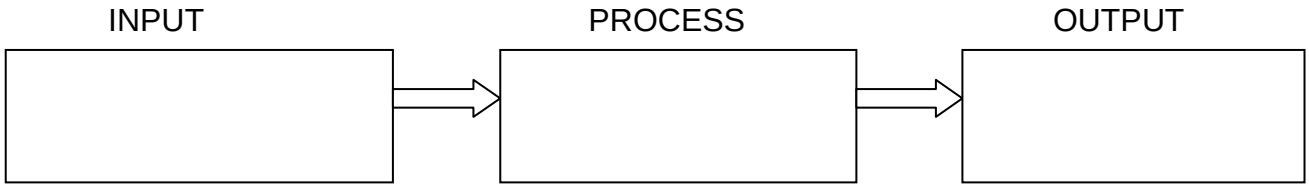
3.5.2 How was the problem at Mary's Computer shop solved using technology? (2)

_____

_____

3.5.3 Use the words in a box to complete the flow diagram for energy flow in a torch system. (3)

Light, Electrical energy, Electrical energy converted into light.

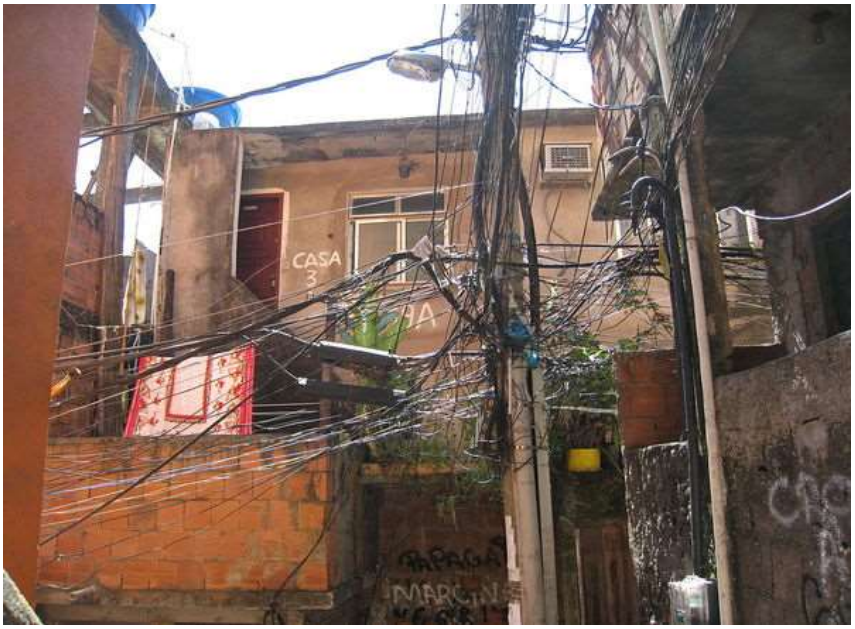


3.6 Study Figure 5 below. Suggest TWO ways in which illegal connections can be prevented (2)

_____

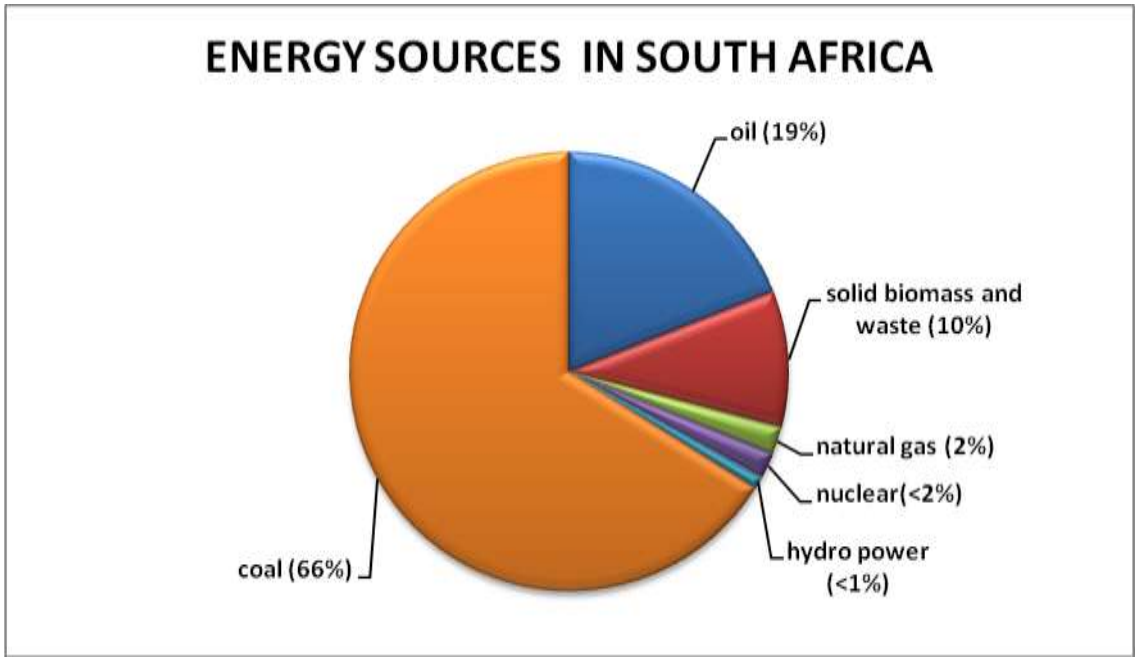
_____

FIGURE 5*:* **DANGER WILL STOP PEOPLE CONNECTING ELECTRICITY ILLEGALLY**



Exposed electric cables fall to the ground from an electricity pole in an informal settlement in the township

3.7 Study FIGURE 6 below and answer questions accompanying it:



3.7.1 Write down THREE fossil fuels listed in the above pie chart. (3)

_____

_____

_____

3.7.2 Which method of generating electricity is less harmful to the environment? (1)

_____

_____

[24]

TOTAL SECTION B: 37

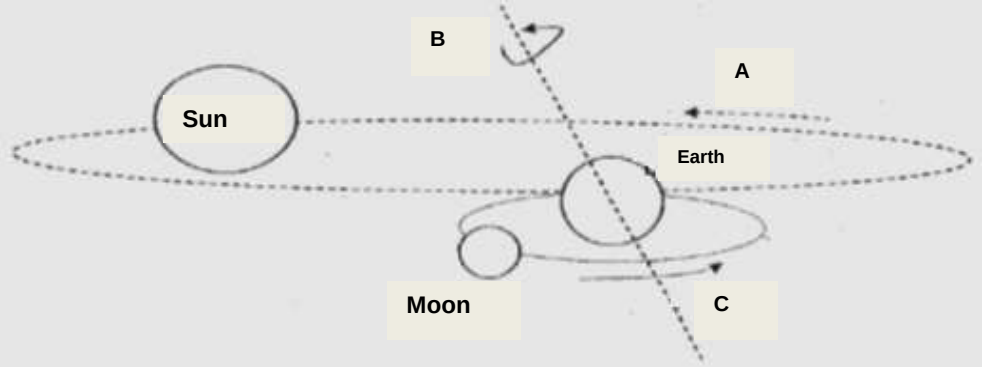
SECTION C

QUESTION 4

Study FIGURE 7

Study Figure 7 below that shows the model of the Earth, Moon and Sun and answer the questions that follow.

Model of the Earth, Moon and Sun



4.1 Complete the table below by stating the type of movement represented by the arrows A and B and the time taken to complete each of the cycles respectively.

Arrow	Type of movement	Time taken to complete one cycle
A		
B		

(4)

4.2 Select the correct answer from the words in brackets

4.2.1 The Earth movement represented by arrow B causes (a year; a month; day and night). (1)

_____

4.2.2 The Moon movement represented by arrow C causes… (a year; a month; day and night) (1)

_____

4.3 State ONE similarity between the Earth's movement and the Moon's movement as represented by the arrows A and C.

_____ (2)

4.4 The earth, moon and other planets are kept in their motion or orbit by gravity.

Explain in one sentence what gravity is. (2)

_____

_____

4.5 Study figure 9 and the table below and answer questions that follow:

FIGURE 9: Movement of Earth and other planets in the solar systems

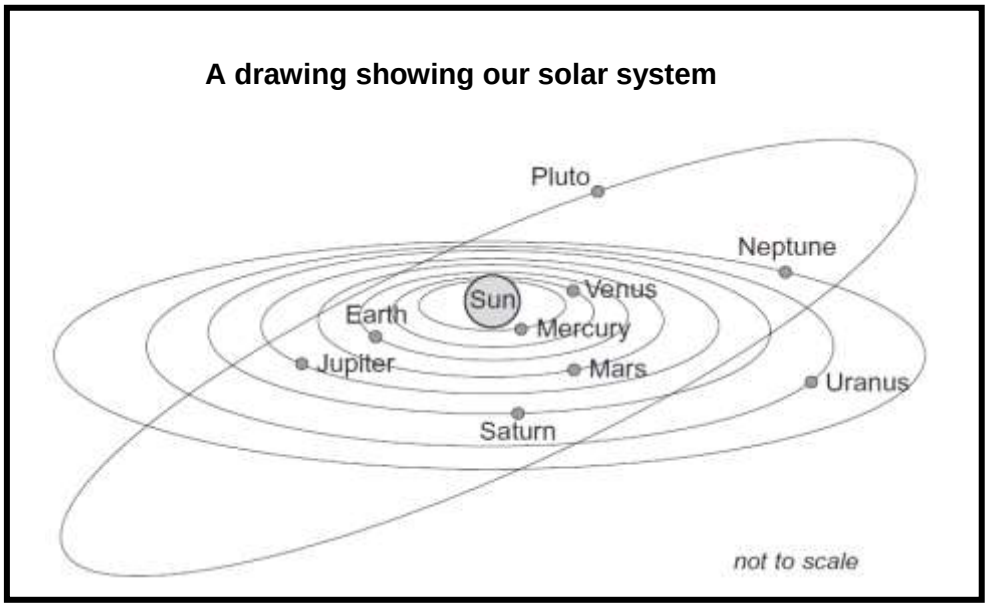


Table: Rotation and revolution time of four planets.

Planet	Time taken for planet to rotate on its axis	Time taken for planet to orbit the Sun in Earth days
Uranus	16,8 hours	84 years
Mercury	59 hours	88 days
Jupiter	10 hours	4 333 days
Mars	24,5 hours	687 days

4.5.1 How many planets are illustrated in the solar system shown (Figure 9)?_____ (1)

4.5.2 From Figure 9; which object revolves around the sun and other planets? (1)

_____

4.5.3 Which planet rotates faster than any other planet in the solar system? (1)

_____

4.5.4 How long is a year on Mars in days?

_____ (1)

4.5.5 How long is a year on Earth in days?

_____ (1)

[15]

QUESTION 5

5.1 Study Figure 9 below and accompanying case study, and answer the following questions**:**

FIGURE 9: **The Mahikeng Astronomical Observatory (MAO)**

The above telescope is called the Mahikeng Astronomical Observatory Telescope. It is a terrestrial telescope located at North West University (Mahikeng campus). According to Professor Thebe Medupe (pictured in Fig 9), once the MAO telescope is in full force, it will benefit students in their research and will be open to schools and public in general. MAO has a high resolution, which enables one to observe detailed patterns on the surface of Jupiter as well as the rings of Saturn. The telescope has a diameter of 40 cm which is large enough to study bright stars that pulsate due to waves inside them. The telescope is also equipped with a CCD camera (charge-coupled device) which enables it to be used remotely, making it accessible to learners and students across South Africa.

Ahmed Areff, News24. Warren Webb - August 21, 2015 at 06:42

5.1.1 The general instrument used to see and gather information in space is called_____ (2)

5.1.2 Mention THREE objects in space that can be observed through the

MAO Telescope. (3)

_____**;** _____ **;**

_____

5.1.3 Medupe says: “MAO is a ground based telescope not a space telescope”.

Which statement from the case study support Prof Medupe’s argument? (1)

_____

5.2 Study Figure 10.1 and Figure 10.2 below and answer questions that follow:

Humans have sent vehicles named rovers to explore and obtain information about Mars and Moon.

The pictures for such rovers are shown below.

Fig 10.1: Apollo 15 is a lunar rover	**Fig 10.2 :** Curiosity is a planetary rover
	

5.2.1 Which vehicles was sent to the Moon?_____ (1)

5.2.2 Explain why curiosity has larger wheels as compared to Apollo 15 (2)

_____

_____

[9]

TOTAL SECTION C: 24

GRAND TOTAL: 80