TERM 3
NATURAL SCIENCES + TECHNOLGY
GRADE 6
MEMORANDUM

MARKS	:	50
DURATION	:	1 HOUR

QUESTION 1

a. Electric circuits have different components, list 4 components of a circuit (4)

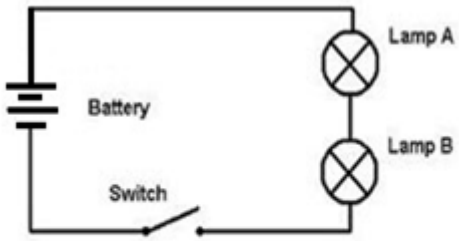
i. **Cell √**

ii. **Bulb √**

iii. **Switch √**

iv. **Wire√**

b. Draw a circuit diagram in the space provided using the following components:
2 cells connected in series, 2 bulbs and an open switch (5)



1 Mark for – Battery
1 Mark for – Open switch
1 Mark for – for each lamp (2)
1 Mark for – Connecting wires

c. Fill in the missing words. Use the word in the text below. (5)

Non-renewable	**electric charge**	**insulators**
Electric current	**renewable**	**conductors**

i. The _***electrical charge√***_ of an object is a measure of how much electricity there is in it

ii. ***Conductors √*** are materials that carry electrical energy well.

iii. ***Insulators*** √ are materials that do not conduct electricity

iv. The wind is a source of ***renewable√*** energy.

v. The movement of electrical charge is known as an ***electrical current*** √

d. Explain why the electric current won't reach a light bulb if there is an open switch (2)

For electric current to flow, it needs a complete unbroken pathway. ✓
If the switch is open it breaks✓ the circuit pathway. ✓

e. Why are electrical wires in electrical circuits covered with plastic? (2)

i. ***Plastic is a good insulator✓***
ii. ***The plastic will prevent someone from getting an electric shock._✓***
iii. ***Electricity cannot flow through plastic as plastic is not a conductor of electricity✓***
(Any 2 correct responses)

f. Give examples of 2 materials that can conduct electricity and 2 materials that don't conduct electricity. (4)

Conductors	***Insulators***
Copper✓ silver✓	***Plastic ✓ Ceramic✓***
Gold ✓ aluminum✓	***Glass ✓ Rubber✓***

Total Question 1: [18]

Question 2

a. Look at the systems below and complete the questions (6)

Object	***Input: energy from……***	***Output: Energy changed to……***
 ***Stove***	***Mains electricity: Electrical energy ✓***	***Heat energy ✓***
 ***Torch***	***Cell / Battery: Chemical energy ✓***	***Light energy ✓***

	***Cell / Battery: Chemical energy ✓***	***Sound energy✓***

b. The table shows the electricity usage of appliances at home: (3)

Type of appliance	***Wattage rating***
Drill	***380***
TV	***85***
Kettle	***2000***
Energy-saver bulb380	***11***

i. Which appliance will use more electricity

The kettle ✓

ii. Explain why it is better to use energy-saving bulbs?

The energy saving bulbs cost more but they use much less energy thereby making electric use very less and saving a lot of energy ✓✓

c. Write down 2 energy saving ideas that you can use at home. *(2)*

i. ***Switch appliances off when not using them ✓***
ii. ***Turn the geyser off when not using it✓***
iii. ***Use a shower instead of a bath***
iv. ***Cover pots when cooking***
v. ***Use a kettle to boil water rather using a pot, boil only the required amount of cups.***
vi. ***Make sure that the rubber seals of the ovens and fridge are not worm out***
vii. **Switch off the lights in the rooms that are not occupied by people**

(Any 2 correct responses)

Total question 2: [14]

Question 3

a. Complete the sentences (2)

1. Coal, oil and natural gas are examples of _____

   fossil fuels ✓

2. Sun, wind and water are _____ resources of energy

   renewable ✓

b. Give a definition of a fossil fuel (2)

Fossil fuels are the remains of dead ✓ plants and animals that acquired and stored energy from the sun from millions of years ago ✓

c. Write a paragraph to explain how coal forms. Use the following words in your paragraph. Learner's answers may vary but they need to use the given words. (6)

Heat	**plants**	**energy**	**rotting**	**pressure**	**layers**

Millions of years ago plants✓ died, the rotting✓ plants were covered by layers✓ of mud and sand. After many years of heat✓ and pressure,✓ fossil fuels form. The fossil fuels stored energy✓ from the sun from millions of years

Total Question 3: [10]

QUESTION 4 (8)

a. Illegal connections are very dangerous. Read the article below and answer the questions:

Snake Park, Soweto – Mrs Xauaka Kokoropo said she was saving money to buy a cable to connect illegally to her neighbor's electrical box. "We know it is illegal," she said, but I have many appliances and need electricity! "She said illegal connections would not stop until the authorities help the residents. Her neighbor said that many people have died in shack fires because they used open fires in tin containers to warm up their shacks, but forgot to put them out once they were warm, and the shacks caught fire. If they had electricity the tragic deaths could have been avoided she added. However, a resident who did not give his name said that illegal connections annoyed residents who pay because they cause power failures and also hurt or kill children.

i. What evidence can you find in the article that the Snake Park community is stealing electricity?

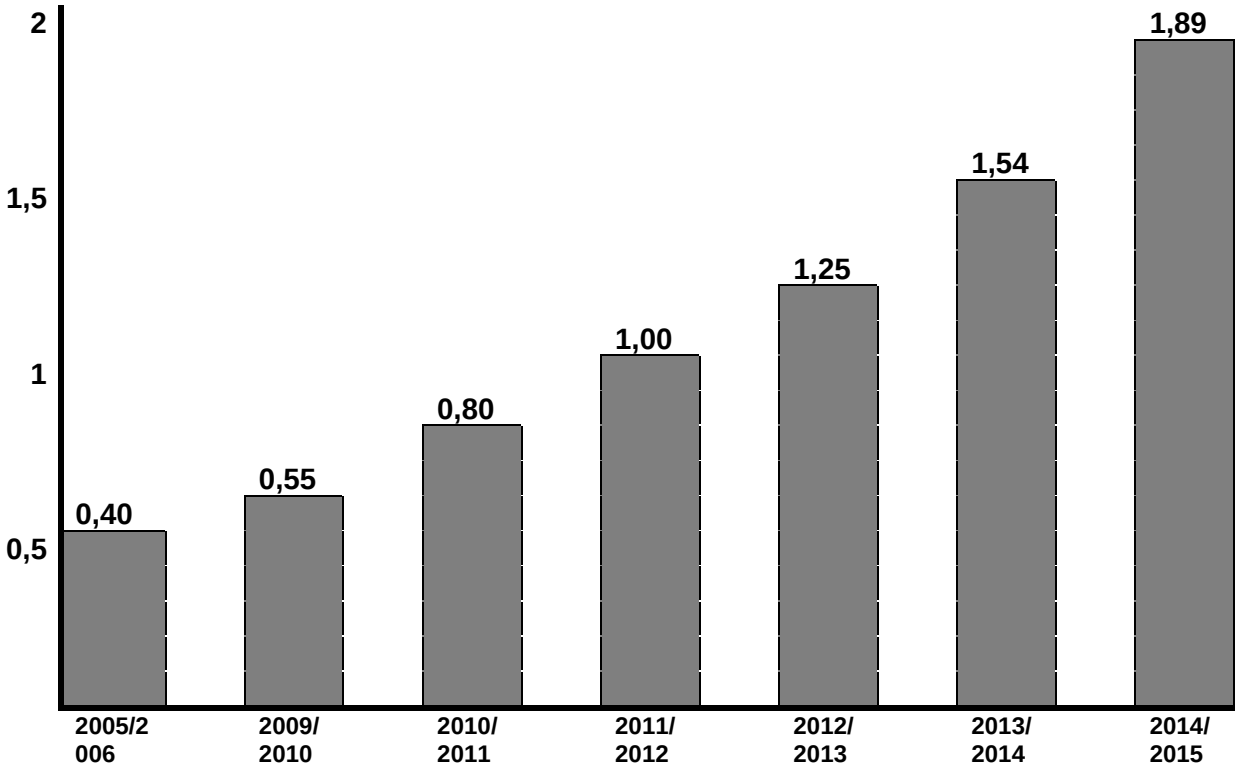
Connecting illegally to a neighbor's electrical box. ✓

ii. What are the dangers of illegal connections?

Illegal connections can hurt or even kill children including adults. ✓

Illegal connections can cause fire. ✓

b. Eskom has implemented a dramatic price increase in the past and could ask for a price increase in the future. The demand in the country exceeds the supply. The graph below shows the price change over a seven year period.



Actual and projected cost of electricity between 2008-2015

1. Why is electricity so expensive? [2]

   The cost of transporting coal to the coal mine is very high. ✓

   Cost of running a power station is high✓

   The cost of coal mine are high.

   Cost of electrical appliances are high

   (Any 2 correct responses)

2. Look what it would have caused you if you boiled a kettle of water using 2kw in 2008 in the table below

2kw x 0.40c =0.80c =80 cents each time you boil the kettle

What would have cost you to boil the same amount of water in a kettle in 2015?

= 2kw✓ x R 1,95✓
= R 3, 90✓

It would have cost you R 3,90

Total for question 4: [8]

TOTAL [50]