Province of the
EASTERN CAPE
EDUCATION

SENIOR PHASE

GRADE 9

NOVEMBER 2013

NATURAL SCIENCES

MARKS: **100**

TIME: **2 hours**

This question paper consists of 13 pages including an annexure.

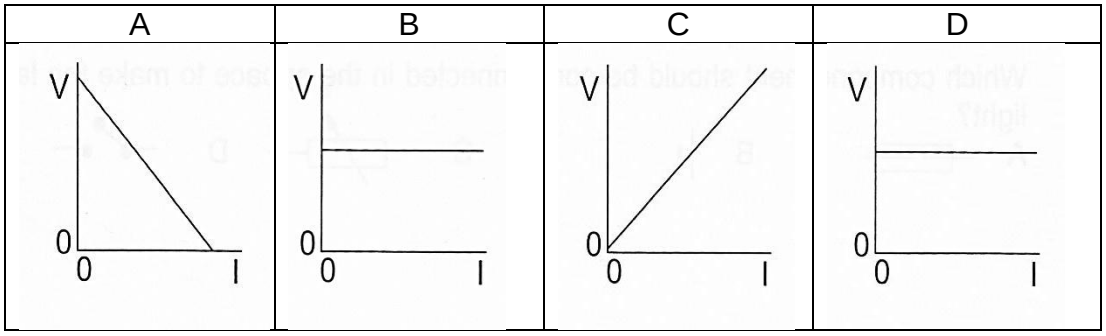
INSTRUCTIONS AND INFORMATION

1. Answer all questions.
2. Read all the questions carefully before you start writing.
3. Answer all questions on the answer sheet.
4. Number your answers correctly according to the numbering system used in this question paper.
5. Use a lead pencil when drawing graphs, sketches and diagrams.
6. Write neatly and legibly.

QUESTION 1: MULTIPLE-CHOICE QUESTIONS

Various possible answers are suggested for the following questions. Choose the correct answer and write the corresponding LETTER (A–D), representing your chosen answer next to the question number (1.1–1.5) on your answer sheet, for example 1.6. D.

1.1 Which of the following graphs represent the relationship between potential difference between the ends of a resistor and current strength at constant temperature?



(1)

1.2 Diluted hydrochloric acid in the stomach helps digestion. However, an excess of hydrochloric acid causes indigestion and discomfort. The excess acid can be neutralised by antacids such as …

A nitric acid (HNO_3).
B sulphuric acid (H_2SO_4).
C sulphurous acid (H_2SO_3).
D milk of magnesia [$Mg(OH)_2$]. (1)

1.3 The by-products of respiration are …

A oxygen, carbohydrates and energy.
B water and glucose.
C carbon dioxide and oxygen.
D carbon dioxide, water and energy. (1)

1.4 Which of the following metals reacts violently with an acid?

A Lead (Pb)
B Copper (Cu)
C Magnesium (Mg)
D Calcium (Ca) (1)

1.5 Which of the following is the main function of the heart?

A Physical manipulation of solid foods
B Regulates the bowel movements
C Gives the cell its shape
D To pump blood (1)

[5]

QUESTION 2: MATCH THE WORDS

Match each of the descriptions in COLUMN A with one of the terms/phrases in COLUMN B. Write the question number (2.1–2.5) from COLUMN A on the answer book and the correct letter (A–I) of your chosen answer from COLUMN B next to the question number, for example 2.6 A.

COLUMN A		COLUMN B	
2.1	Substances that can be used to kill harmful bacteria	A	corrosion
2.2	The removal of the waste products of chemical reaction that takes place in cells	B	indicator
2.3	A chemical reaction which involves oxygen	C	volcano
2.4	A chemical that is used to test whether a substance is acidic or alkaline	D	atom
2.5	A place where magma comes out onto the surface of the earth	E	molecule
		F	power
		G	excretion
		H	magma
		I	antibiotics

(5 x 1) **[5]**

QUESTION 3: FILL IN THE MISSING WORDS

Fill in the missing words. Write only the word next to the question number (3.1 – 3.5) in the answer book.

The heart is made up of two pumps located side-by-side. One side pumps blood to the head and (3.1 …); the other side pumps blood to the (3.2 …). The two pumps are closely joined together and pump with exactly the same rhythm without allowing the blood to cross from one side to another. The heart pumps blood out of its (3.3 …) hand side, along an artery to the lungs. In the lungs, the blood collects (3.4 ...) from the air that you breathe in. The blood goes back along another artery to the heart, this time it goes into the (3.5 …) hand side of the heart.

(5 x 1) **[5]**

QUESTION 4: ENERGY AND CHANGE

An experiment was conducted as part of an investigation to establish the influence of the thickness of a conductor on the resistance of the conductor.

Experimental procedure:

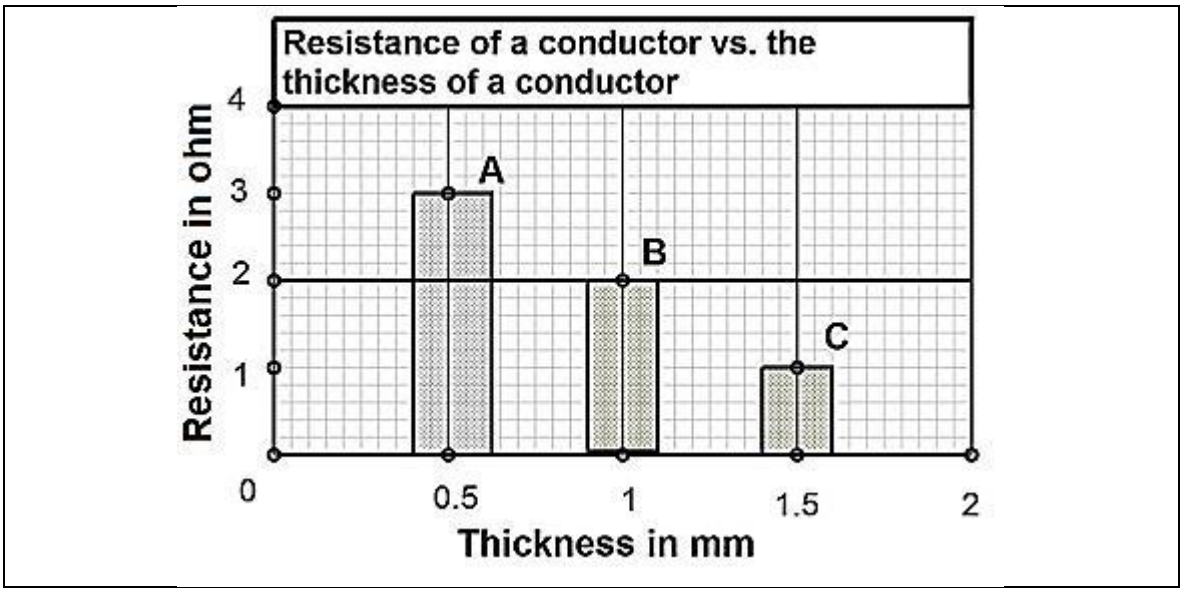
Three cells, a switch, an ammeter and a metal conductor (A) were connected in **series.** A voltmeter was connected in parallel across the conductor. The switch was closed and the readings on the ammeter and the voltmeter were noted. Ohm's law was used to calculate the resistance of the conductor (A). The experiment was then repeated with two more metal conductors with different thickness (B and C respectively).

Information related to the experiment:

	Conductor A	**Conductor B**	**Conductor C**
Diameter (thickness) of conductor	0,5 mm	1 mm	1,5 mm
Type of material	nichrome	nichrome	nichrome
Length of the conductor	15 mm	15 mm	15 mm
Time taken to note readings after the switch was closed	2 seconds	2 seconds	2 seconds

Results:

The following graph was drawn from the results obtained. It represents the relationship between the thickness of the conductors and their resistances.



4.1 Use the information given in the experimental procedure and draw a circuit diagram of the setup. Indicate the direction of the conventional current in your diagram. (5)

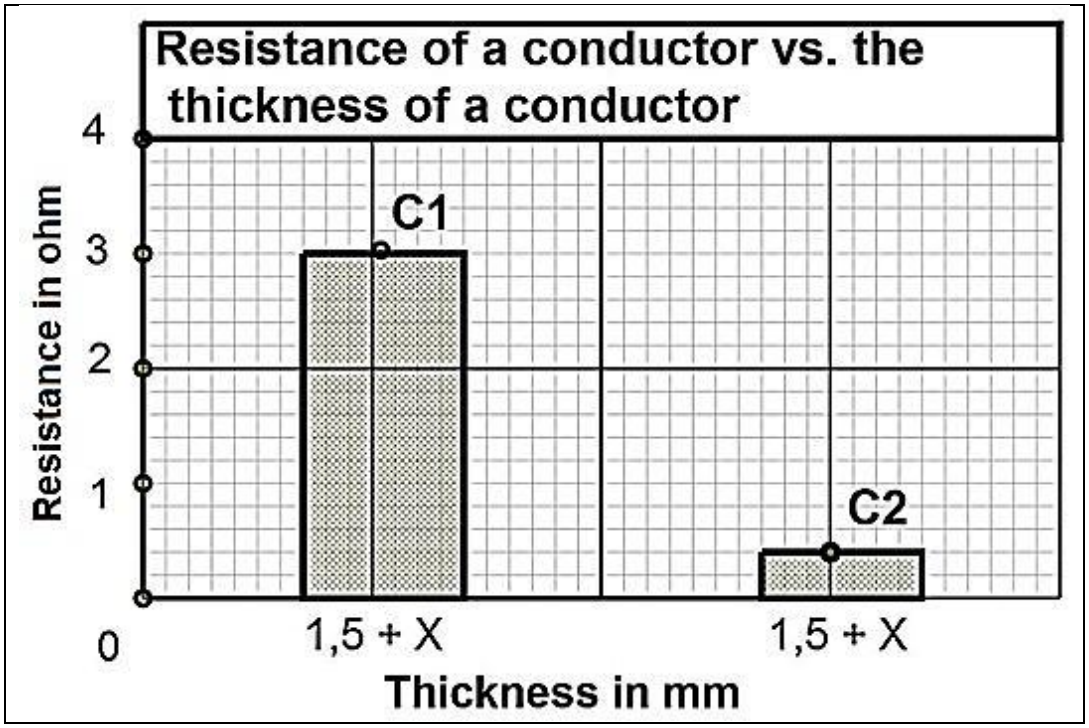
4.2 Write down the independent variable in this experiment. (1)

4.3 Use the graph and write down the conclusion that can be made related to the relationship between the resistance and the thickness of the conductors. (2)

4.4 Use Ohm's law ($R = \frac{V}{I}$) and calculate the reading on the voltmeter for resistor A. The reading on the ammeter for this setup was 1,5 A. (3)

4.5 What is the meaning of an ammeter reading of 1,5 A? (2)

4.6 A second conductor with thickness X is now connected in parallel with conductor (C). This additional conductor in parallel will have one of the following two effects (C1 or C2) on your results.

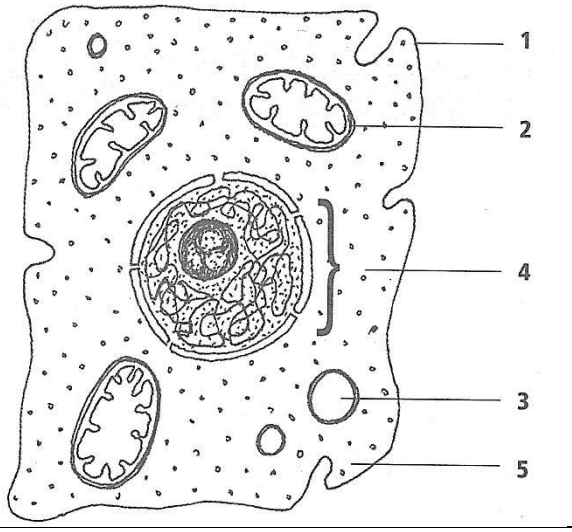


4.6.1 Which ONE of the two effects (C1 or C2 on the graph) would you consider as more likely? Explain your answer. (3)

[16]

QUESTION 5: LIFE AND LIVING

Study the diagram below and answer the questions that follow.



5.1 Provide a suitable heading for the above diagram. (1)

5.2 Provide labels for parts **1**, **4** and **5**. (3)

5.3 Identify the part of the cell that is referred to as the 'brain'. Give a possible reason to support your answer. (2)

5.4 Describe the main function of the part marked **1**. (1)
[7]

QUESTION 6: LIFE AND LIVING

Read the extract below and answer the questions that follow.

Tuberculosis is one of South Africa's worst killer diseases. Up to million people in the world die from TB each year. It used to be called consumption because it consumes the body, causing it to waste away. TB is caused by a bacterial infection of the lungs. It is spread from one person to another by inhaling the bacteria into the lungs when someone who has the disease coughs. The symptoms of TB are not wanting to eat, losing weight, having a fever and sweating, getting chest pains and coughing up blood. The disease can be discovered through an X-ray of the lungs. Fortunately TB can be cured if it is recognised early enough. It is treated using drugs called antibiotics.

6.1 What causes tuberculosis? (1)

6.2 Write the abbreviation of the term "tuberculosis". (1)

6.3 Explain briefly how tuberculosis is spread. (2)

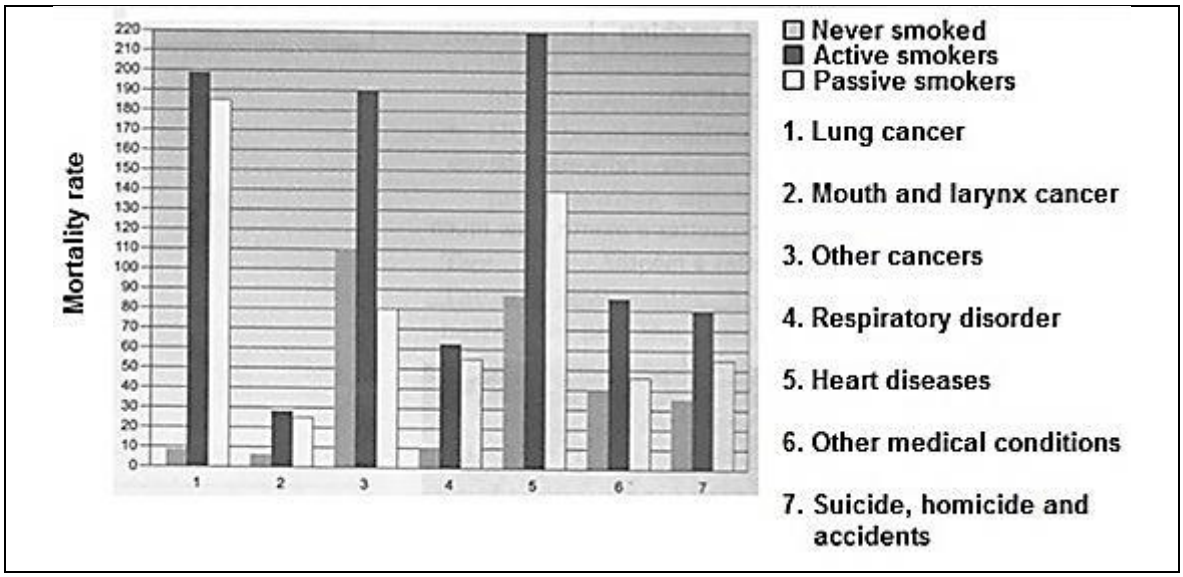
6.4 Name any FOUR symptoms of the disease as mentioned in the extract. (4)

6.5 Suggest TWO preventative measures for tuberculosis. (2)

[10]

QUESTION 7: LIFE AND LIVING

Look at the bar graph below that shows how many people in every 100 000, aged between 35 and 69, die from smoking and diseases related to smoking.



7.1 Use the bar graph to find out how many active smokers die of heart diseases. (1)

7.2 Look at the different groups of people (smokers, passive smokers and non-smokers) who die of respiratory diseases. From which group does the largest number of people die? (1)

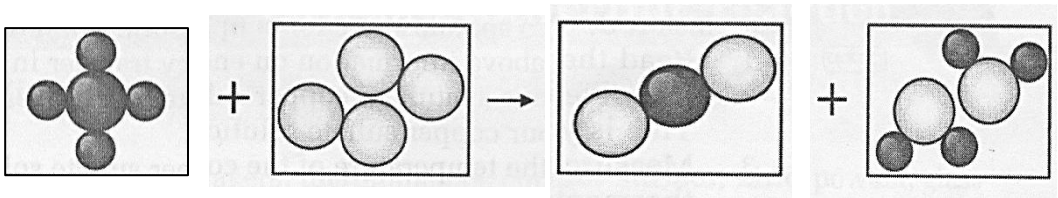
7.3 Would you prefer to be an active smoker or passive smoker or non-smoker? Give a possible reason to support your answer. (2)

[4]

QUESTION 8: MATTER AND MATERIALS

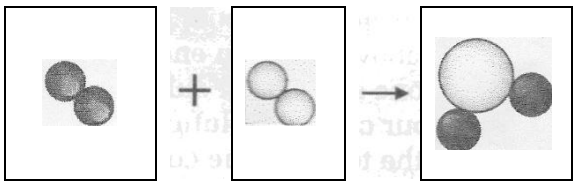
Use the model key for each element and write the symbol equations.

8.1



(4)

8.2

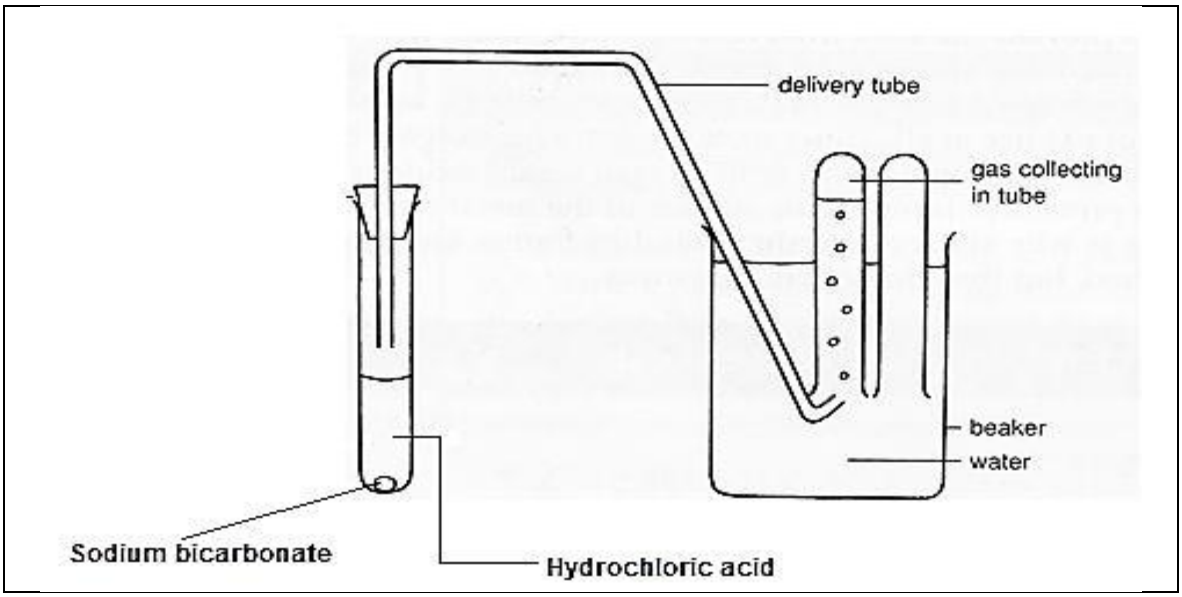


(3)

[7]

QUESTION 9: MATTER AND MATERIALS

Study the following experimental setup. Answer the questions that follow.



GENERAL FORMULA: carbonate + acid → salt + water + gas

9.1 Which of the following pH values would you expect hydrochloric acid to have?

pH = 1, pH = 6, pH = 7, pH = 8, pH = 13 (1)

9.2 Explain why taking sodium bicarbonate helps to relieve indigestion. (2)

9.3 What gas do you think is released during this experiment? (1)

9.4 Explain briefly how you would test for this gas. (2)

9.5 Write down the word equation for this reaction. (2)

9.6 Write down the chemical equation for this reaction and balance it. (6)

[14]

QUESTION 10: MATTER AND MATERIALS

Read the extract below and answer the questions that follow.

Shanti's father had a small accident driving his car. There was a very small dent and some paint got scraped off. After a few days she noticed that rust had started to form where the paint had been scraped off.

10.1 Explain the cause of rust. (3)

10.2 As a Natural Sciences student, what advice would you give to Shanti's father? (2)

[5]

QUESTION 11: MATTER AND MATERIALS

Study the following extract and answer the questions that follow.

Asanda's grandfather likes to bake his own bread. Asanda noticed that after he makes the dough he leaves it in the sun to rise. Asanda wanted to know why it was necessary to leave the dough in the sun. She thought that it might have something to do with temperature. She decided to conduct an investigation. She made some dough with 100 g of flour, 2 g of sugar, 4 g of dried yeast and 25 mℓ of water at 38 °C. She placed 10 mℓ of dough into each of three measuring cylinders. One cylinder was kept at 5 °C, one at 20 °C and the third cylinder at 35 °C. Asanda then left the dough for 20 minutes and measured how much the dough had risen in each measuring cylinder. She recorded her results as follows:

Temperature (°C)	Volume dough rose (cm^3)
5	15
20	25
35	35

11.1 What is the aim of this experiment? (2)

11.2 Write any TWO variables that were kept the same by Asanda in the experiment. (2)

11.3 Do you think this was a fair test? Give a possible reason. (3)

11.4 Draw a line graph to show the results of the investigation. (Use ANNEXURE 1) (6)

[13]

QUESTION 12: ENERGY AND CHANGE

Read the article below and answer the questions that follow.

In 2004 it was reported that the Nyiragongo and Nyamuragira volcanoes in the DRC were causing health problems for 60 000 people who live close to them, placing 1,2 million people in the surrounding area at risk. Some 30 000 square kilometres of land had been destroyed in the last two years as the volcanoes continued to emit gases such as sulphur dioxide, chloride and fluoride, ash and cinders. The chemicals entered the water supply causing health problems. The emissions also had an acid rain effect which has destroyed crops, vegetation and wild animals.

Nearly 400 000 people had to abandon their homes. The United Nations and aid organisations were called in to help with the disaster.

[Adapted from scienceinafrica.co.za 2004 and cnn.worldnews.com]

12.1 Write down THREE chemicals that are emitted in volcanic eruptions. (3)

12.2 Explain the effect of volcanoes on the life of people living in the area. (3)

12.3 What is acid rain, and how does it affect the environment? (3)
[9]

TOTAL: 100

ANNEXURE 1

NAME: _____ **GRADE:** _____