



Province of the  
**EASTERN CAPE**  
EDUCATION

**SENIOR PHASE**

**GRADE 9**

**NOVEMBER 2012**

**NATURAL SCIENCES**

**MARKS: 100**

**TIME: 2 hours**

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This question paper consists of 14 pages.

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**INSTRUCTIONS AND INFORMATION**

1. Read all the questions carefully before you start writing.
2. To draw a graph use the graph sheet provided.
3. Number your answers correctly as it is in the question paper.
4. Write neatly.
5. A formula sheet (ANNEXURE 2) is on page 14.

**QUESTION 1: MULTIPLE-CHOICE QUESTIONS**

Four possible answers are suggested for the following questions. Choose the correct answer and write only the letter (A – D) next to the question number (1.1 – 1.10) in your answer book, for example 1.1 C.

1.1 Which of the following factors does not affect the resistance of a conducting wire?

- A Length
- B Thickness
- C Type of a metal used
- D Potential difference

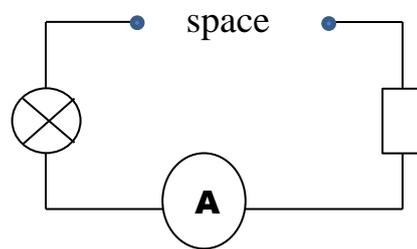
(1)

1.2 Which of the following is not an organ of excretion?

- A Mouth
- B Skin
- C Lungs
- D Kidneys

(1)

1.3 The accompanying diagram shows an incomplete circuit. Which component should be connected in the space to make the lamp light?



- A
- B
- C
- D

(1)

- 1.4 Which of the following is not an acid?
- A Vinegar
  - B Bleach
  - C Lemon juice
  - D Orange juice
- (1)
- 1.5 The term that describes an organism which does not contain a nucleus is ...
- A eukaryotic.
  - B unicellular.
  - C microscopic.
  - D parasitic.
- (1)
- 1.6 Muscles are attached to the bones by ...
- A triceps.
  - B tendons.
  - C receptors.
  - D biceps.
- (1)
- 1.7 Which association is incorrect?
- A Excretion – this is the physical manipulation of solid foods which is done first by the tongue and the teeth followed by the swirling and mixing motions of the digestive tract.
  - B Ingestion – this happens when food is taken into the digestive tract through the mouth.
  - C Digestion – food is broken down chemically into smaller molecules by enzymes.
  - D Secretions – this helps with digestion because the accessory organs release water, acids and enzymes.
- (1)
- 1.8 The salivary glands, liver and pancreas are organs associated with ...
- A excretion.
  - B digestion.
  - C respiration.
  - D reproduction.
- (1)
- 1.9 Which of the following is not a vital process of living organisms?
- A Breathing
  - B Eating
  - C Reproduction
  - D Talking
- (1)

1.10 The least reactive metal from the following metals is ...

- A copper.
- B lead.
- C gold.
- D potassium.

(1)  
[10]

## QUESTION 2

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 – H) of your chosen answer from COLUMN B next to the question number.

COLUMN A		COLUMN B	
2.1	A process of killing pathogenic bacteria in a substance is called ...	A	Balanced diet
2.2	A condition in which the body does not break down sugars properly	B	volt
2.3	Eating the correct amounts of all the different kinds of food according to your lifestyle needs	C	Excretion
2.4	The unit of emf	D	Heart
2.5	An organ about the size of your clenched fist, that acts like a pump and pushes blood around the body	E	Diabetes
		F	Combustion
		G	Growth
		H	Pasteurisation

(5 x 1)

[5]

## QUESTION 3

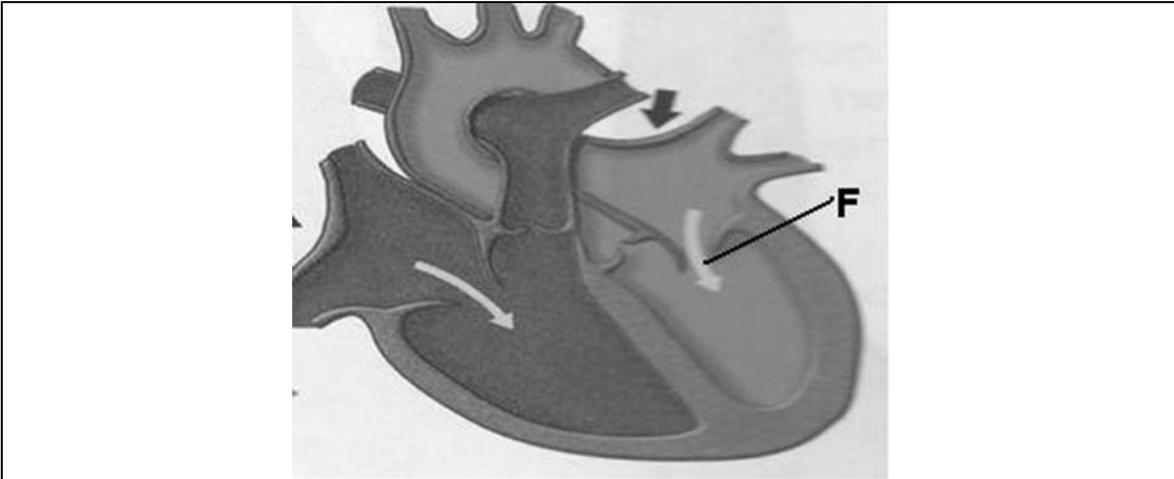
Give the correct term for each of the following descriptions. Write only the term next to the question number (3.1 – 3.5) on the answer book.

- 3.1 The life process by which your body gets rid of waste substances (1)
- 3.2 A group of tissues working together to carry out a particular function (1)
- 3.3 A method of using electricity to separate reactive metals from their ores (1)
- 3.4 The increase in size, mass or volume of an organism (1)
- 3.5 A series of chemical reactions that take place inside all living cells (1)

[5]

**QUESTION 4: LIFE AND LIVING**

Study the diagram below and answer the questions that follow.



- 4.1 Identify the chamber or cavity of the heart that collects deoxygenated blood from the body. (1)
- 4.2 Name the blood vessels that carry the type of blood mentioned in QUESTION 4.1 back to the heart. (1)
- 4.3 Is it oxygenated or deoxygenated blood that returns to the left side of the heart from where it is pumped back to the body? (1)
- 4.4 Explain the main function of the part marked **F**. (1)
- [4]**

**QUESTION 5: LIFE AND LIVING**

Read the extract below with the accompanying table and answer the questions that follow.

Man needs oxygen to generate energy for all living processes from respiration. Air is inhaled. Oxygen is absorbed and the waste products of respiration are exhaled. These waste products are carbon dioxide and water vapour. The following table shows the concentration of gases inhaled and exhaled.

<b>Gas</b>	<b>Inhaled</b>	<b>Exhaled</b>
Nitrogen	78%	78%
Oxygen	21%	17%
Carbon dioxide	0,03%	4%

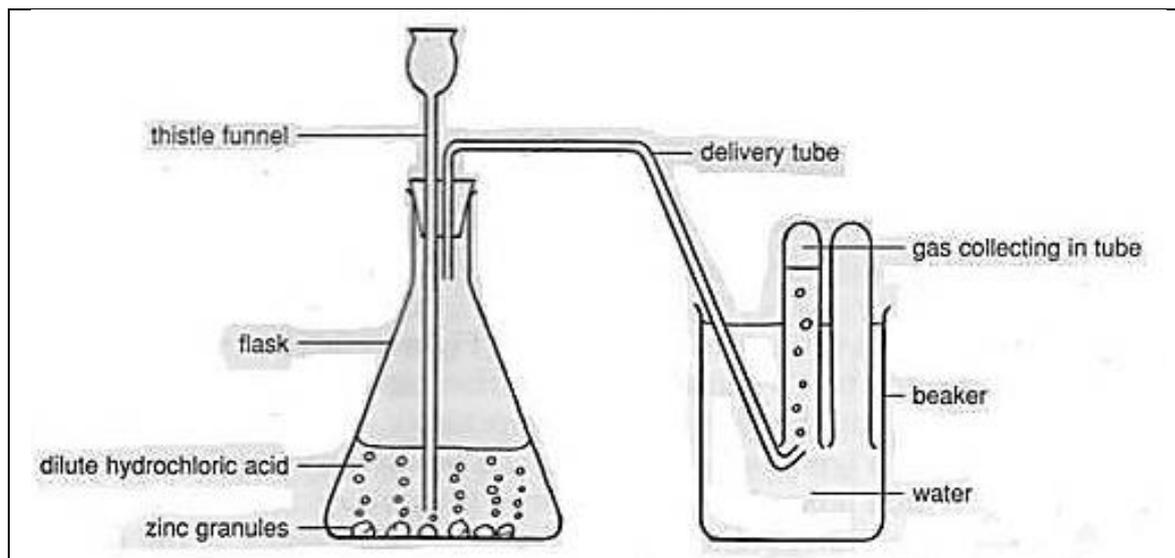
- 5.1 Name the gas that is inhaled the least. (1)
- 5.2 Name the gas that is exhaled most. (1)

- 5.3 Draw a bar graph to represent the percentage of the gases exhaled.  
 (Use the graph sheet provided – ANNEXURE 1.)  
 Provide the graph with a suitable scale. (6)
- 5.4 Write down the chemical equation that represents the process of  
 respiration in words. (2)

**[10]**

**QUESTION 6: MATTER AND MATERIALS**

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



- 6.1 What gas do you think is released during this experiment? (1)
- 6.2 Explain briefly how you would test for this gas. (2)
- 6.3 Hydrogen has many uses in industry. Name TWO industrial uses of hydrogen. (2)
- 6.4 Write down the word equation for this reaction. (2)
- 6.5 Write down the chemical equation for this reaction and balance it. (5)

**[12]**

**QUESTION 7: ENERGY AND CHANGE**

Study the picture below and answer the questions that follow.

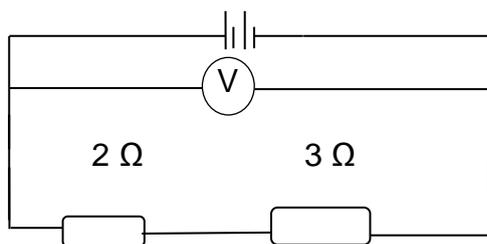


7.1 List FOUR unsafe practices with regard to electricity. (4)

7.2 State how the practices mentioned in QUESTION 7.1 can be made safe. (4)  
[8]

**QUESTION 8: ENERGY AND CHANGE**

In the circuit diagram shown, the voltmeter reads 10 V.



8.1 Calculate the combined resistance. (2)

8.2 Calculate the current flowing through the circuit. (3)

8.3 Calculate the potential difference across the 3 Ω resistor. (3)

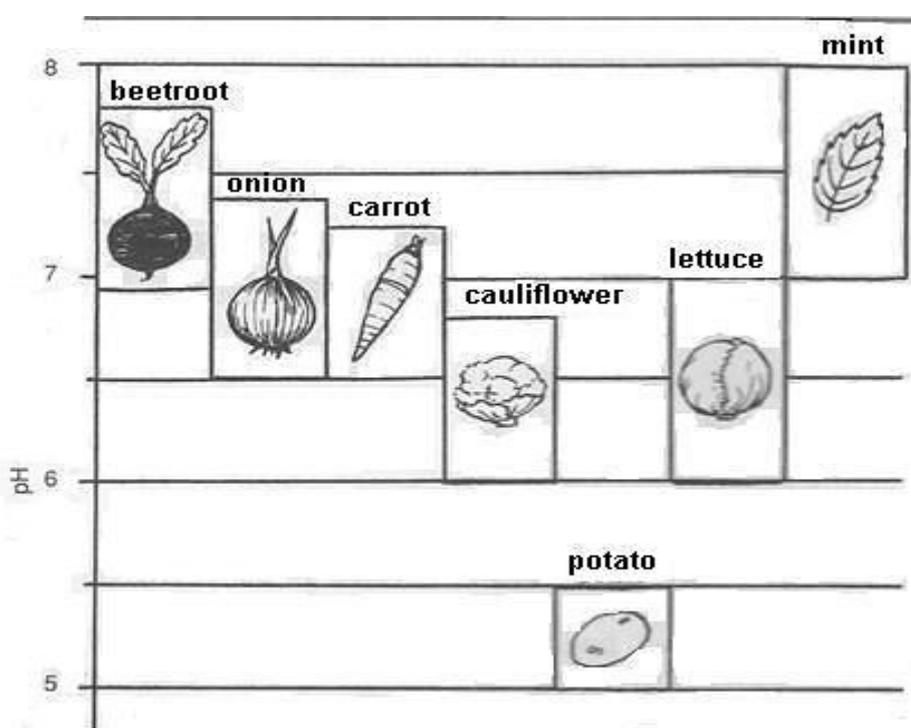
8.4 Calculate the emf of each cell. (3)

[11]

**QUESTION 9: MATTER AND MATERIALS**

Read the case study below and answer the questions that follow.

Different soils have different pH levels. Some soils are acidic and others are alkaline. The pH of a soil depends on the rock from which the soil was formed, and the plant remains that are in the soil. Soils from limestone are alkaline with a pH of about 8. Clay soils with decomposing plant material may have a more acidic pH of about 4 or 5. Some plants grow better in acidic soils and others grow better in neutral or alkaline soils. Most plants grow well in soils with a pH of 6,5. If the soil pH is not right, the plant will not grow very well. For this reason, farmers change the pH of the soil so that their crops will grow well. Acidic soil can be neutralised by adding powdered limestone or lime to the soil. Lime is a metal hydroxide and its chemical name is calcium hydroxide.



- 9.1 In what pH range will potatoes grow well? (1)
- 9.2 If the soil had a pH of 7,6, which crop (plant) could be grown? (1)
- 9.3 If the soil was found to have a pH of 6,5, which THREE kinds of plants could a farmer grow in that soil? (3)
- 9.4 What can a farmer do if his soil has a pH of 4? Explain how this method works using your knowledge of neutralisation. (4)
- 9.5 Write down the general word equation to show the reaction that happens when soil is neutralised. (2)
- 9.6 Write down the formula for the hydroxide mentioned in the case study. (1)

**[12]**

**QUESTION 10: EARTH AND BEYOND**

Read the extract below and answer the questions that follow.

**FOSSIL FUELS**

We need energy for most aspects of our daily lives, from using electricity for cooking food to transportation. Our industrialised world mostly uses energy from fossil fuels such as coal, oil and natural gas. However, as these energy sources are non-renewable, it is important to already be developing other energy supplies that use renewable energy sources. Renewable energy sources include solar power, hydro-electric power, wind power and nuclear energy.

Fossil fuels are actually a huge bank of energy resources created by plants and animals millions of years ago. The plants trapped the sun's energy at that time; when they died, they decayed and formed layer upon layer of matter. By burning these fuels the energy is released after all these millions of years. Coal is formed from decayed plant matter, and oil and natural gas is formed from decayed animal matter. Not only do coal, oil and gas provide energy, but they are also the natural resources from which a wide variety of products are made such as plastics, lubricants, chemicals, medicines and fertilisers. By obtaining and using these resources, we do damage to the environment. However, the use of fossil fuels is so important to our modern lives that it is not a question of whether we should be using these non-renewable resources or not; rather how can we obtain and manage them whilst still protecting and conserving the environment.

- 10.1 Briefly explain the difference between renewable and non-renewable resources. (2)
- 10.2 Name TWO non-renewable resources mentioned in the extract. (2)
- 10.3 Name TWO renewable resources mentioned in the extract. (2)
- [6]**

**QUESTION 11: MATTER AND MATERIALS**

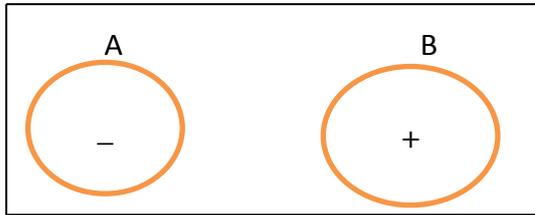
The following information refers to reactions involved in the preparation of salts. Complete the table by writing down the numbers (11.1 – 11.5) in your answer book with the corresponding answer next to the number.

Base	Acid	Salt
Copper oxide	Sulphuric acid	11.1   .....
Sodium carbonate	11.2   .....	Sodium chloride
11.3   .....	11.4   .....	Iron(II) sulphate
Sodium carbonate	11.5   .....	Sodium sulphate

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

**QUESTION 12: ENERGY AND CHANGE**

Study the diagram below and answer the questions that follow.

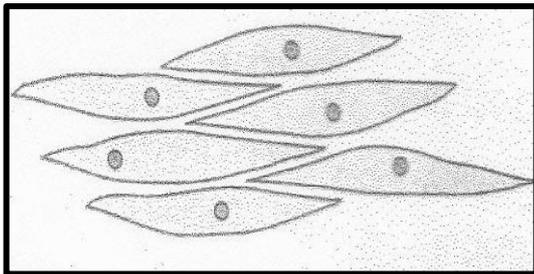


12.1 Describe briefly what happens between the two balls (A and B) when they are brought closer to each other. (2)

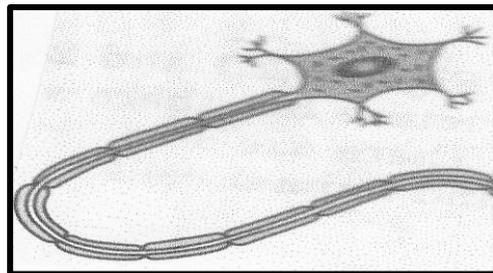
12.2 State the law of attraction and repulsion between charged particles. (1)  
[3]

**QUESTION 13: LIFE AND LIVING**

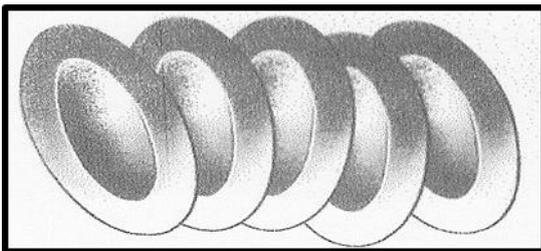
Study the diagrams below and answer the questions that follow.



L



M



N

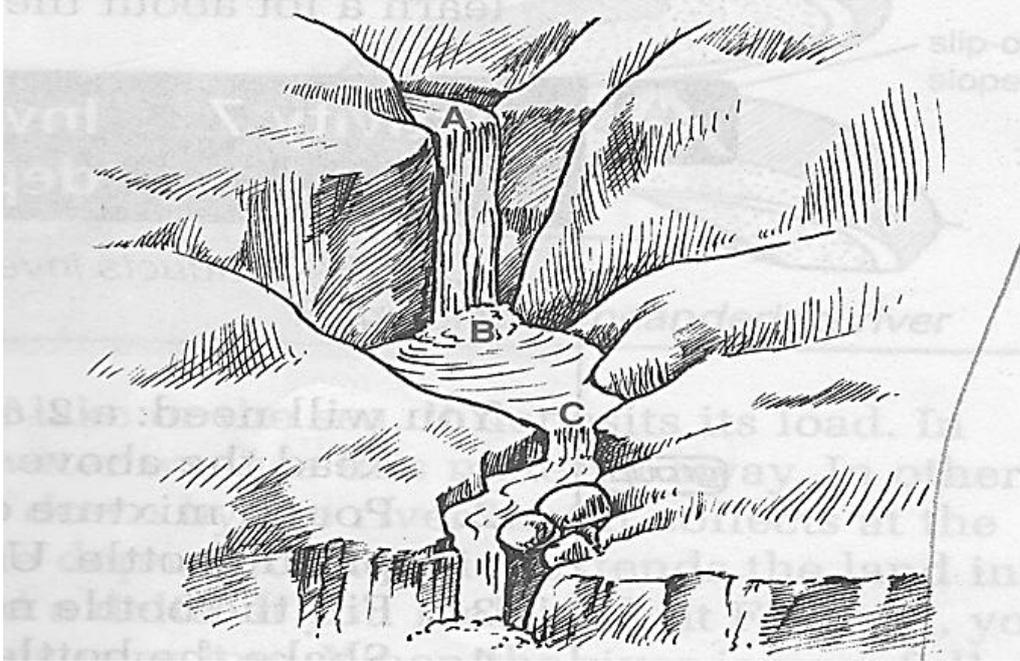
13.1 Identify the specialised cells; L, M and N. (3)

13.2 Explain the function of each specialised cell. (3)  
[6]

**QUESTION 14: EARTH AND BEYOND**

Read the extract below and answer the questions that follow.

Another well-known landform that is formed by river erosion is a waterfall. You can see that in a waterfall, the river drops very suddenly from one level to another. This difference in levels is formed because a layer of hard rock slows erosion down at the higher level. The steep-sided valley below the waterfall is called a gorge. Waterfalls are very beautiful and impressive to look at. Big waterfalls are often tourist attractions, visited by many people.



14.1 From the diagram above, where do you think is erosion the most effective? Is it at **A**, **B** or **C**? Give a possible reason to support your answer.

(2)

14.2 What do you think will happen to the rock at **A** over time?

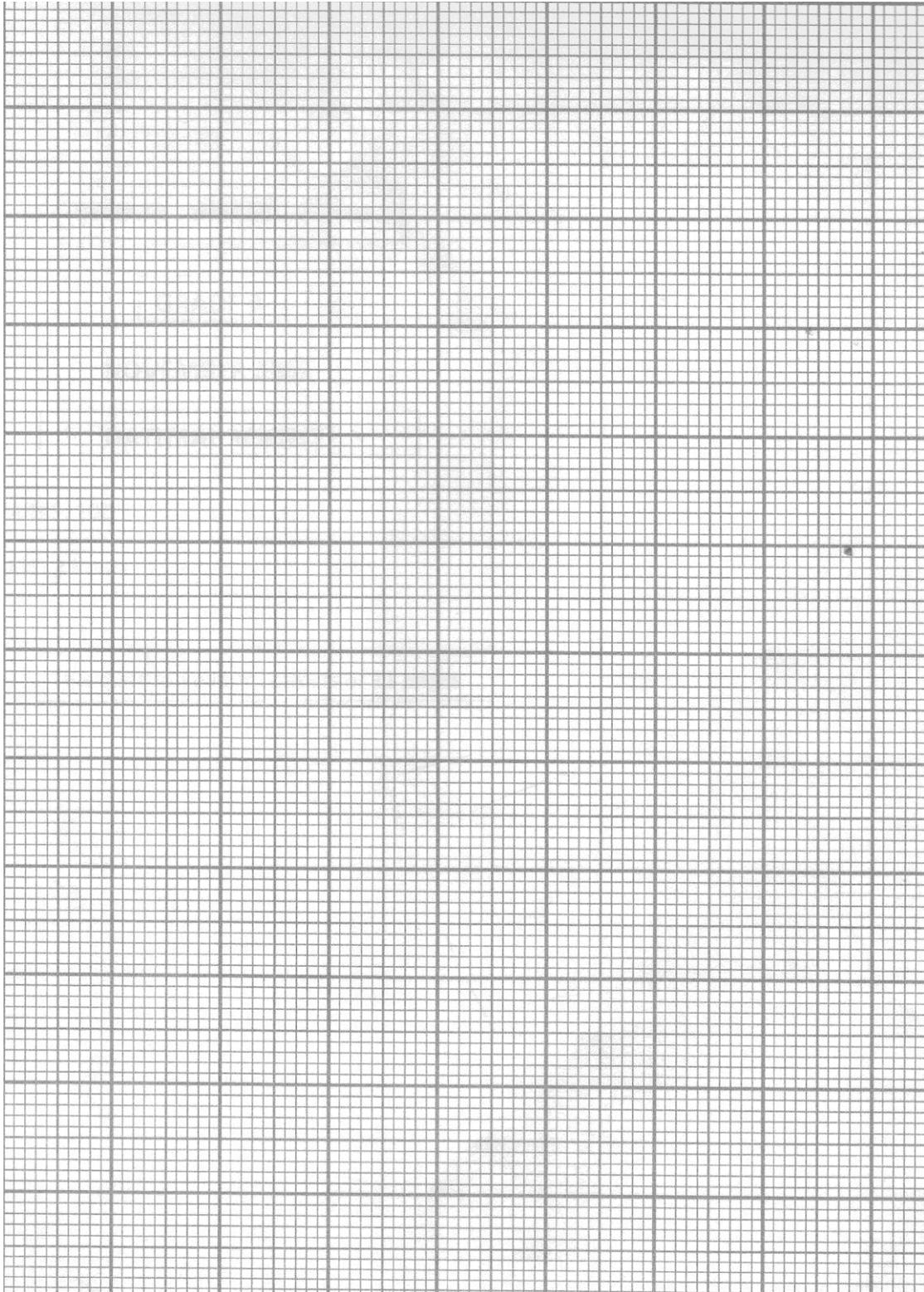
(1)

**[3]**

**TOTAL: 100**

**ANNEXURE 1**

**NAME:** \_\_\_\_\_ **GRADE:** \_\_\_\_\_



**ANNEXURE 2****FORMULAS**

1.  $R = \frac{V}{I}$

2.  $P = VI$

3.  $V = IR$

4.  $I = V/R$

5.  $R_T = R_1 + R_2$

6.  $R = \frac{R_1 \times R_2}{R_1 + R_2}$

7.  $\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2}$