

Province of the

**EASTERN CAPE**

EDUCATION

**SENIOR PHASE**

**GRADE 9**

**NOVEMBER 2010**

|  |
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| **NATURAL SCIENCES** |

**MARKS: 100**

**TIME: 2 hours**

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| This question paper consists of 13 pages. |

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| **INSTRUCTIONS AND INFORMATION** | |  |
|  | |  |
| 1. | Read all questions carefully before you start answering. |  |
|  |  |  |
| 2. | Answer all questions. |  |
|  |  |  |
| 3. | Number your answers correctly according to the numbering system used in this question paper. |  |
|  |  |  |
| 4. | Write neatly and legibly. |  |

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| **QUESTION 1** | |  |
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| Various possible answers are suggested for the following questions. Choose the correct answer and write the LETTER representing your chosen answer next to the question number. | |  |
|  |  |  |
| 1.1 | From what source do animal cells get their food? |  |
|  |  |  |
| A. | Blood |  |
| B. | Oxygen |  |
| C. | Other cells |  |
| D. | Carbon dioxide | (1) |
|  |  |  |
| 1.2 | Why is oxygen important to blood and to the cells? |  |
|  |  |  |
| A. | Oxygen helps the blood to clot. |  |
| B. | Oxygen brings food to the cells. |  |
| C. | Oxygen is necessary for cell growth and energy. |  |
| D. | Oxygen is not important; carbon dioxide is the most important substance to the body. | (1) |
|  |  |  |
| 1.3 | The spinning of the earth on its axis once in 24 hours causes … |  |
|  |  |  |
| A. | day and night. |  |
| B. | weather change. |  |
| C. | eclipse of the moon. |  |
| D. | solar eclipse. | (1) |
|  |  |  |
| 1.4 | Instrument used to measure rainfall is called the … |  |
|  |  |  |
| A. | rain gauge. |  |
| B. | manometer. |  |
| C. | barometer. |  |
| D. | thermometer. | (1) |
|  |  |  |
| 1.5 | Which of the following properties apply to an acid? |  |
|  |  |  |
| A. | It has a bitter taste. |  |
| B. | It turns blue litmus red. |  |
| C. | It feels soapy when dissolved in water. |  |
| D. | It has a pH of 9. | (1) |
|  |  |  |
| 1.6 | When a substance reacts with oxygen the following is formed: |  |
|  |  |  |
| A. | Oxide |  |
| B. | Water |  |
| C. | Sulphate |  |
| D. | Carbonate | (1) |
|  |  |  |
| 1.7 | Rusting is the result of the reaction of iron with … |  |
|  |  |  |
| A. | oxygen in water. |  |
| B. | an acid. |  |
| C. | hydrogen in water. |  |
| D. | metal oxides. | (1) |

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| 1.8 | An atom is electrically neutral because it has … | | | |  |
|  |  | | | |  |
| A. | an equal number of protons and electrons. | | | |  |
| B. | protons that are moving. | | | |  |
| C. | electrons that are moving in orbits. | | | |  |
| D. | an equal number of neutrons and protons. | | | | (1) |
|  |  | | | |  |
| 1.9 | Combustion involves the reaction of a substance with … | | | |  |
|  |  | | | |  |
| A. | water. | | | |  |
| B | wood. | | | |  |
| C. | oxygen. | | | |  |
| D. | copper. | | | | (1) |
|  |  | | | |  |
| 1.10 | | The main function of red corpuscles in the blood is to … | | |  |
|  |  | | | |  |
| A. | clot blood. | | | |  |
| B. | fight disease. | | | |  |
| C. | transport oxygen to the body’s cells. | | | |  |
| D. | transport carbon dioxide to the body’s cells and carry away oxygen from the cells. | | | | (1) |
|  |  | | | | **[10]** |
| **QUESTION 2** | | | | |  |
|  | | | | |  |
| 2.1 | Match each of the descriptions in COLUMN A with one of the terms in COLUMN B. Write the question number and the correct letter of your chosen answer from COLUMN B next to the question number. | | | |  |
|  |  | | | |  |
| **COLUMN A** | | | | **COLUMN B** | |
| 2.1 The ability of animals to be seen as part of their environment. | | | | A. Resistor | |
| 2.2 The unit of energy. | | | | B. Semiconductor | |
| 2.3 A device that restricts the flow of electrons. | | | | C. Switch | |
| 2.4 A material that when combined with some other material can be turned into an insulator or a conductor. | | | | D. Adaptation | |
| 2.5 The flow of electrons from one place to another. | | | | E. Joule | |
| 2.6 The control unit placed in a circuit that provides the ability to open or close the circuit. | | | | F. Camouflage | |
| 2.7 A particle that is held loosely in orbit around the atom's nucleus. | | | | G. Electric charge | |
| 2.8 The potential of electrons or protons to attract each other. | | | | H. Insulator | |
| 2.9 Converts alternating current to direct current. | | | | I. Watt | |
| 2.10 A material that does not let electricity flow through it. | | | | J. Electric current | |
|  | | | | K. Electron | |
|  | | | | L. AC power adapter | |
|  | | | | M. Conductor | |
|  |  | | (10 x 1) | | **[10]** |

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| **QUESTION 3 Life and Living** | | | | | | | | | | | |  |
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| Study the diagrams below and answer the questions that follow: | | | | | | | | | | | |  |
|  | | | | | | | | | | | |  |
|  | |  | | | **A.** | | | | | | |  |
|  | | 1  2 | | | 5  4  3 | | | | | | |  |
|  | |  | | |  | | | | | | |  |
|  | |  | | | **B.** | | | | | | |  |
|  | |  | | |  | | | | | | |  |
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| 3.1 | Identify cells A and B. | | | | | | | | | | | (2) |
|  |  | | |  | | | | | | | |  |
| 3.2 | Label the parts 1 – 5. | | | | | | | | | | | (5) |
|  |  | | |  | | | | | | | |  |
| 3.3 | Explain the functions of parts 2 and 5. | | | | | | | | | | | (2) |
|  |  | | |  | | | | | | | | **[9]** |
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| **QUESTION 4 Life and Living** | | | | | | | | | | | |  |
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| Study the table below that shows the percentages of carbohydrates, protein and fat content of four different foods and answer the questions that follow. | | | | | | | | | | | |  |
|  | | | | | | | | | | | |  |
| **% Composition** | | | | | | | | | |
| **Food** | | | | | **Carbohydrates** | | **Protein** | **Fat** | **Other** |
| Bread | | | | | 47 | | 10 | 3 | 40 |
| Butter | | | | | 0 | | 1 | 82 | 17 |
| Fish | | | | | 8 | | 20 | 10 | 62 |
| Fried rice | | | | | 37 | | 4 | 19 | 40 |
|  | | | | | | | | | | | |  |
| 4.1 | Which food would provide the most energy if the foods were consumed in equal quantities? | | | | | | | | | | | (1) |
|  |  | | | | | | | | | | |  |
| 4.2 | Which is the best food to build the body? | | | | | | | | | | | (1) |
|  |  | | | | | | | | | | |  |
| 4.3 | Draw a bar graph to represent the percentage of nutrients in the four foods.  *Use the graph sheet provided. (Annexure 1)*  *Provide the graph with:*   * *A key representing the different foods* * *An appropriate heading* | | | | | | | | | | | (7) |
|  |  | | | | | | | | | | |  |
| 4.4 | Name any TWO nutrients that could be included in the column named “Other”. | | | | | | | | | | | (2) |
|  |  | | | | | | | | | | |  |
| 4.5 | Would you choose these foods in your diet? Explain your answer. | | | | | | | | | | | (3) |
|  |  | | | | | | | | | | | **[14]** |
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| **QUESTION 5 Energy and Change** | | | | | | | | | | | |  |
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| Below is a list of gases. Study the names of gases given below and match the gas to its use given below. | | | | | | | | | | | |  |
|  | | | | | | | | | | | |  |
| Oxygen (O2), Carbon dioxide (CO2), Chlorine(Cl2), Fluorine (F), Neon(N), Helium (He). | | | | | | | | | | | |  |
|  | | | | | | | | | | | |  |
| 5.1 | To put out fire | | | | | | | | | | | (1) |
|  |  | | | | | | | | | | |  |
| 5.2 | In a weather balloon | | | | | | | | | | | (1) |
|  |  | | | | | | | | | | |  |
| 5.3 | When a person is struggling to breath | | | | | | | | | | | (1) |
|  |  | | | | | | | | | | |  |
| 5.4 | In cleaning agents | | | | | | | | | | | (1) |
|  |  | | | | | | | | | | |  |
| 5.5 | In plants to make food | | | | | | | | | | | (1) |
|  |  | | | | | | | | | | | **[5]** |
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| **QUESTION 6 Matter and Materials** | | | | | | | | | | | |  |
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| A Grade 9 learner took a beaker of ice and placed a thermometer in the beaker and recorded the temperature, then began to heat the beaker and recorded the temperature every 2 minutes. | | | | | | | | | | | |  |
|  | | | | | | | | | | | |  |
| The learner recorded the information in the table given below: | | | | | | | | | | | |  |
|  | | | | | | | | | | | |  |
| **Time in minutes** | | | | **Temperature in °C** | |
| 0 | | | | 0 | |
| 2 | | | | 4 | |
| 4 | | | | 15 | |
| 6 | | | | 35 | |
| 8 | | | | 57 | |
| 10 | | | | 76 | |
| 12 | | | | 100 | |

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| 6.1 | Draw a line graph of the information in the table. *Use the graph sheet provided. (Annexure 2)* | | (5) |
|  |  | |  |
| 6.2 | On your graph, label where you think the following occurred:  freezing, melting, boiling. | | (3) |
|  |  | |  |
| 6.3 | Suppose your classmates decide to cool down a bottle of cold drink very quickly and placed it in the deep freezer. They then forgot it in the freezer and went back after six hours to discover that the bottle broke into pieces.  Explain, with reasons, what happened. | | (2) |
|  |  | |  |
| 6.4 | 5 g of the cold drink occupies a volume of 4 cm3. Calculate its density.  (Use the equation: Density = mass ÷ volume) | | (2) |
|  |  | | **[12]** |
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| **QUESTION 7 Matter and Materials** | | |  |
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| Complete the reactions and the equations below and balance the equations where necessary. The general reaction of an acid with a carbonate is:  **Acid + Carbonate → Salt + Gas** | | |  |
|  |  | |  |
|  | Fill in the missing items numbered (a – e). | |  |
|  |  | |  |
| 7.1 | Hydrochloric Acid + Calcium Carbonate → Calcium chloride +....(a).... + ...(b)... | | (2) |
|  |  | |  |
| 7.2 | ...(c)...+ CaCO3 → CaCl2 + ...(d)...+ ...(e)... | | (3) |
|  |  | |  |
| 7.3 | The general reaction of an acid and a metal oxide is:  Acid + metal oxide → salt + water  If Sulphuric acid is added to Copper (II) oxide, the reaction will be as follows:  Fill in the missing items numbered (f – h) below.  Sulphuric acid + Copper(II) oxide → Copper sulphate + ...(f)... | | (1) |
|  |  | |  |
| 7.4 | H2SO4 + ...(g)... → ...(h)... + H2O | | (2) |
|  |  | |  |
| 7.5 | The following is the reaction between a dilute acid and a hydroxide.  Fill in the missing items numbered (i – j):  Sodium hydroxide + Hydrochloric Acid → ...(i)...+ ...(j)... | | (2) |
|  |  | | **[10]** |

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| **QUESTION 8 Energy and Change** | |  |
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| Study the diagram below and answer the questions that follow: | |  |

**9 V**

**6 V 3 V**

**2 A**

|  |  |  |
| --- | --- | --- |
| 8.1 | Calculate the resistance of Resistor 1 and Resistor 2 in the diagram above.  Use the formula:  OR | (3) |
|  |  |  |
| 8.2 | There are different factors that influence the resistance of a metal conductor. Name TWO of these factors. | (2) |
|  |  | **[5]** |

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| **QUESTION 9 Matter and materials** | | |  |
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| Study the following experimental setup. Answer the questions that follow. | | |  |
|  | | |  |
| http://htmlimg3.scribdassets.com/5o2272nq50bodvk/images/3-3a2262d1c7/000.jpg  glucose solution + yeast  limewater  bubbles of gas  37 °C  thermometer | | |  |
|  |  | |  |
| 9.1 | | The experimental setup was left for 2 days. What gas would you expect to be released? | (1) |
|  | |  |  |
| 9.2 | | How do you test this gas? | (2) |
|  | |  |  |
| 9.3 | | Mention the importance of this gas in plant life. | (2) |
|  | |  | **[5]** |

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| **QUESTION 10 Earth and Beyond** | | |  |
|  | | |  |
| Read the following article and answer the questions that follow. | | |  |
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| **Mining** is the extraction of valuable minerals or other geological materials from the earth, usually from an ore body or seam. The nature of mining processes creates a potential negative impact on the environment both during the mining operations and for years after the mine is closed. This impact has led to most of the world's nations adopting regulations to moderate the negative effects of mining operations. Safety has long been a concern as well, though modern practices have improved safety in mines significantly. Environmental issues can include erosion, formation of sinkholes, loss of biodiversity, and contamination of soil, groundwater and surface water by chemicals from mining processes. In some cases, additional forest logging is done in the vicinity of mines to increase the available room for the storage of the created debris and soil. Contamination resulting from leakage of chemicals can also affect the health of the local population if not properly controlled.  There are many types of iron ore deposits. These are magnetite, massive hematite and pisolitic ironstone deposits. Hematite iron ore deposits are currently exploited on all continents. Iron ores consists of oxygen and iron atoms bonded together into molecules. To convert it to metallic iron it must be smelted or sent through a direct reduction process to remove the oxygen. Oxygen-iron bonds are strong, and to remove the iron from the oxygen, a stronger elemental bond must be presented to attach to the oxygen. Carbon is used because the strength of a carbon-oxygen bond is greater than that of the iron-oxygen bond, at high temperatures. Thus, the iron ore must be powdered and mixed with coke, to be burnt in the smelting process. | | |  |
|  |  | |  |
| 10.1 | | Name TWO iron ores from which iron metal is extracted. | (2) |
|  | |  |  |
| 10.2 | | Discuss the economic importance of mining. | (5) |
|  | |  |  |
| 10.3 | | Explain the negative impact of mining on the enviroment. | (5) |
|  | |  | **[12]** |

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| **QUESTION 11 Energy and Change** | | | |  |
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| Read the short extract from *The Eastern Province Herald* and answer the questions that follow. (Herald; Monday 08 February 2010) | | | |  |
|  | | | |  |
| *Monday 08 February 2010*  SCIENTISTS FEARS AS POLAR BEAR’S EXISTENCE IS THREATENED  **Washington** (USA) – *Ice in Antarctica and the North Pole is melting at an alarming rate, due to rising temperatures, caused by the emission of carbon dioxide and other green house gases into the atmosphere.* Scientists, yesterday expressed their concern on the possible extinction of one of the world’smost popular and amazing creatures, the polar ... | | | |  |
|  |  | | |  |
| 11.1 | | Name the phenomenon mentioned in the extract. | | (1) |
|  | |  | |  |
| 11.2 | | What other dangerous effects can this phenomenon have on the environment, except for the extinction of species? | | (4) |
|  | |  | |  |
| 11.3 | | Suggest ways to save the planet from this problem. | | (3) |
|  | |  | | **[8]** |
|  |  | |  |  |
|  |  | | **TOTAL:** | **100** |

**ANNEXURE 1**

**NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Gr: \_\_\_\_**

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**ANNEXURE 2**

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