

NORMAN HENSILWOOD HIGH SCHOOL EXAMINATIONS



DATE	15 June 2011
GRADE	9
SUBJECT	Natural Science
TIME	1.5 hours
MARKS	100 marks
EXAMINER	A. Campher
MODERATOR	R. Primo, S. Bezuidenhout, M. McGavin and P. Prince

d. G. R.
Checked 10.6

[Signature]

Instructions

- Answer ALL the questions.
- Write ALL the answers on the ANSWER PAPER.
- Number the answers correctly according to the numbering system used in this question paper.
- If answers are NOT presented according to the instructions of each question, candidates will lose marks.
- ALL drawings should be done in pencil and labelled in blue or black ink.
- Draw diagrams and flow charts ONLY when requested to do so.
- The diagrams in this question paper may NOT necessarily be drawn to scale.
- The use of graph paper is NOT permitted.
- Non-programmable calculators, protractors and compasses may be used.
- Write neatly and legibly.

Section A

Question 1

1.1 Various possible options are provided as answers to the following questions. Choose the correct answer and write only the letter (A – D) next to the question number (1.1.1 – 1.1.10) in the ANSWER BOOK, for example 1.1.6 D.

1.1.1 There is a thin leaf of this metal in an electroscope ...

- A) Gold
- B) Platinum
- C) Copper
- D) Silver

1.1.2 The loss of water or water vapour from small openings in the leaf is known as ...

- A) osmosis.
- B) photosynthesis.
- C) transpiration.
- D) excretion

1.1.3 One of the following is NOT a possible particle in any gas, solid or liquid:

- A) atom
- B) crystal
- C) ion
- D) molecule

1.1.4 The SI unit for electric charge is the:

- A) ampere
- B) joule
- C) coulomb
- D) volt

1.1.5 Which of the following pairs of substances are compounds?

- A) water and water vapour
- B) sulphuric acid and bromine
- C) table salt and chlorine
- D) carbon and carbon dioxide

1.1.6 When the lid of an ice-cream cart is lifted, gas escapes from the 'dry-ice' because of a change of phase (state) from:

- A) gas to solid
- B) solid to liquid
- C) solid to gas
- D) liquid to gas

1.1.7 The symbol Ar is that of the element ...

- A) Argon.
- B) Aluminium.
- C) Anthracite.
- D) Americium.

1.1.8 Two objects which are positively charged carry charges which are:

- A) stored.
- B) similar.
- C) unlike.
- D) like.

1.1.9 Elements in Group VII on the periodic table are called:

- A) halogens
- B) noble gases
- C) alkaline metals
- D) alkali metals

1.1.10 Which one of the following is an example of an oxidation reaction?

- A) $\text{Na} + \text{Cl} \rightleftharpoons \text{NaCl}$
- B) $\text{Mg} + \text{H}_2\text{SO}_4 \rightleftharpoons \text{MgSO}_4 + \text{H}_2$
- C) $\text{Mg} + \text{O} \rightleftharpoons \text{MgO}$
- D) $\text{C} + \text{H}_4 \rightleftharpoons \text{CH}_4$

[10]

1.2 Give the correct biological term for each of the following descriptions. Write only the term next to the question number (1.2.1 – 1.2.10) on the ANSWER SHEET.

- 1.2.1 The type of reaction that 'takes in energy'.
- 1.2.2 An atom or molecule which is positively or negatively charged.
- 1.2.3 The phenomenon of a substance that crumbles upon being struck.
- 1.2.4 A measure of how much a conductor limits the flow of electric charges in the circuit.
- 1.2.5 Membrane that allows for only certain substances to pass through it.
- 1.2.6 Table set up to show the ability of objects to hold onto its electrons.
- 1.2.7 An element which is unreactive.
- 1.2.8 A machine that can make a large amount of static electricity.
- 1.2.9 Phase change from a liquid to solid change.
- 1.2.10 The liquid that a substance dissolves in.

[10]



1.3 Read the following statements and state if they are TRUE or FALSE. If FALSE, then correct the statement.

1.3.1 An object that does not allow electricity to flow is called an insulator.

1.3.2 The only type of subatomic particles that can travel along wire carrying electricity are protons.

1.3.3 When a positively charged glass rod is brought close to a neutral pithball, it is attracted to the glass rod.

1.3.4 The sound of thunder comes before the associated lightning discharge because sound travels faster than light.

1.3.5 When you rub a balloon on your hair, the balloon gains a negative charge. If you place the balloon on a wall, a positive charge is induced on the wall and the balloon and wall now attract causing the balloon to stick. [5]

1.4 Provide the definition for the following terms:

1.4.1 Polarisation

1.4.2 Lustre

1.4.3 Induction

1.4.4 Osmosis

1.4.5 Stomata

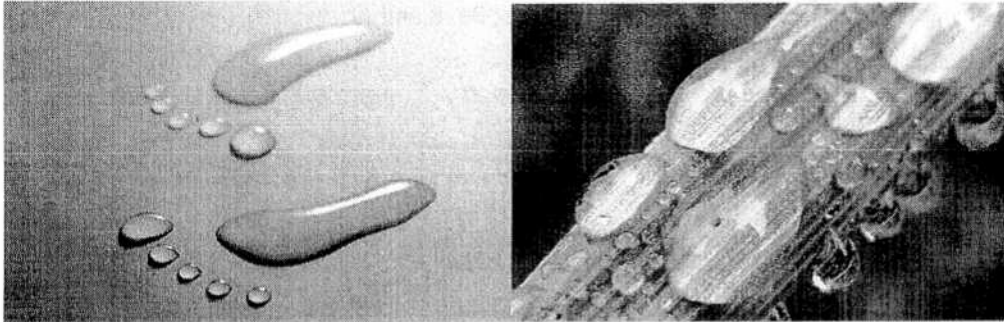
[5]

Total Section A: 30 Marks

Section B

Question 2

2.1 Study the pictures below and answer the following questions:



2.1.1 Make a labelled drawing which shows the absorption of water by root hairs. (5)

2.1.2 List and explain three ways in which living things need water. (3)

2.1.3 Explain the following statement:
 "Air pollution by factories is an example of diffusion in nature." (2)

[10]

2 Study the diagram below and answer the following questions:

Periodic Table of the Elements

1 H																	2 He																												
3 Li	4 Be											5 B	6 C	7 N	8 O	9 F	10 Ne																												
11 Na	12 Mg											13 Al	14 Si	15 P	16 S	17 Cl	18 Ar																												
19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr																												
37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe																												
55 Cs	56 Ba	57 La	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn																												
87 Fr	88 Ra	89 Ac	104 Unq	105 Unp	106 Unh	107 Uns	108 Uno	109 Une	110 Uun																																				
<table border="1"> <tr> <td>58 Ce</td> <td>59 Pr</td> <td>60 Nd</td> <td>61 Pm</td> <td>62 Sm</td> <td>63 Eu</td> <td>64 Gd</td> <td>65 Tb</td> <td>66 Dy</td> <td>67 Ho</td> <td>68 Er</td> <td>69 Tm</td> <td>70 Yb</td> <td>71 Lu</td> </tr> <tr> <td>90 Th</td> <td>91 Pa</td> <td>92 U</td> <td>93 Np</td> <td>94 Pu</td> <td>95 Am</td> <td>96 Cm</td> <td>97 Bk</td> <td>98 Cf</td> <td>99 Es</td> <td>100 Fm</td> <td>101 Md</td> <td>102 No</td> <td>103 Lr</td> </tr> </table>																		58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu	90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	103 Lr
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2.2.1 By means of a labelled drawing show the structure of a neutral atom. [Include charges.] (5)

2.2.2 Find the following information from the Periodic Table:

- a.) The symbol for Magnesium, Calcium and Neon. (3)
- b.) The names of the elements with the symbols: Be, B and Al. (3)
- c.) Two non-metals in group 16. (2)
- d.) Two metals in period 4. (2)
- e.) A non-metal with 8 electrons. (1)
- f.) A n element with 8 electrons. (1)

2.2.3 Balance the following equation :



2.2.4 When looking at the elements on the periodic table, they all have their own distinct properties.

With this information in mind, **EXPLAIN WHY** the following statements are true:

- a.) Cars at the coast rust more quickly than cars inland, far from the sea. (2)
- b.) Carbon dioxide is used to extinguish fires. (2)
- c.) Galvanised iron roofing lasts longer than a iron roof which has not been galvanised. (2)

2.2.5 Define the term: metalloids. (1)

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2.3 Answer the following questions with reference to the picture below :



2.3.1 Tabulate 3 differences between Gases and Liquids. (3)

2.3.2 Draw the particle diagram showing the process of sublimation. (2)

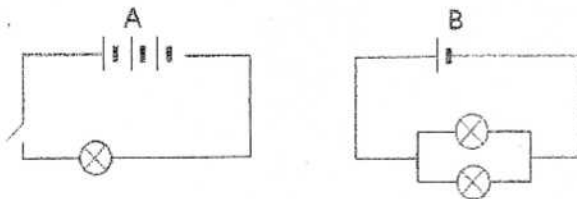
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Total Section B: 40 Marks

Section C

Question 3

3.1 Answer the following questions with reference to the picture below :



3.1.1 Draw the symbols for the following circuit components:

- a.) Cell
- b.) Battery
- c.) Light bulb
- d.) Connector
- e.) Switch

(5)

3.1.2 Select the most appropriate word or phrase that will make each statement correct:

- a.) The positive terminal of the cell is represented by the (long/short line).
- b.) In circuit A, the light bulb (will/will not) shine.
- c.) In circuit A the light bulbs are connected in (series/parallel).
- d.) In circuit B the light bulbs are connected in (series/parallel).
- e.) Will the light bulbs in circuit B shine if the cell is reversed? (Yes/No) (5)

[10]

3.2 Answer the following questions and show all calculations:

- 3.2.1 A car's windscreen wiper motor has a resistance of 6Ω . What is the current strength in the motor when it is connected to the 12 V battery of the car? (4)

3.2.2 If a current of 4 A flows through a car headlamp when it is connected to a 12 V car battery, so providing a voltage of 12 V across the lamp, what is the resistance? (4)

[8]

3.3 Draw a circuit diagram which includes the following:

3.3.1 a.) * Battery of 2 cells in parallel

* 1 ammeter

* 1 voltmeter

* 1 light bulb

* 1 closed switch.

(5)+1

b.) * Battery of 3 cells in series

* 2 resistors in parallel and 1 in series

* 1 ammeter in the series part of a cell

* 1 open switch

* 2 bulbs in series

(5)+1

[12]

Total Section C: 30 Marks

Total: 100 Marks

