



GRADE 8

NATURAL SCIENCES

JUNE 2015

TIME: 2 HOURS

MARKS: 100

INSTRUCTIONS:

1. The paper consists of THREE SECTIONS divided into NINE questions.
Answer all the questions.
2. Number all questions exactly as in the question paper.
3. In case of calculations show all steps as well as all substitutions.
4. A periodic table has been attached at the end of the question paper.

SECTION A

QUESTION 1

- 1.1 Various options are provided as possible answers to the following questions.
Choose the answer and write only the letter (A – D) next to the question number (1.1.1 – 1.1.10).

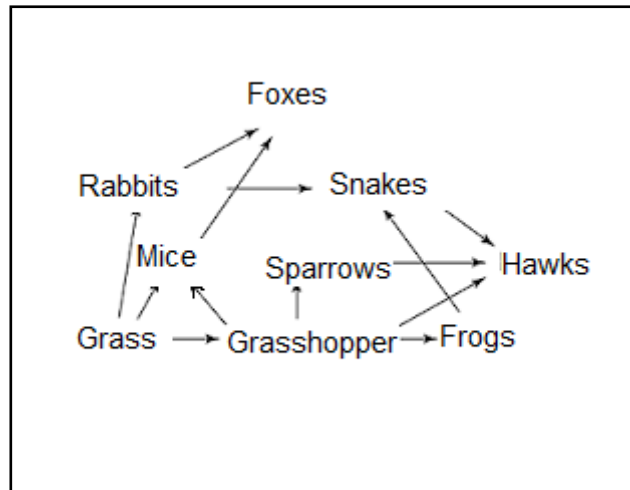
- 1.1.1 What are the five levels of environmental organization from the simplest to the the most complicated?

- A Biosphere, Ecosystem, Community, Population, Organism
- B Ecosystem, Population, Organism, Community, Biosphere
- C Biosphere, Community, Population, Organism, Ecosystem
- D Organism, Population, Community, Ecosystem, Biosphere

- 1.1.2 The process in which the sun's energy is converted into chemical energy?

- A Combustion
- B Respiration
- C Photosynthesis
- D Digestion

Questions 1.1.3 and 1.1.4 are based on the diagram below of a food web.
Study it and answer the questions.



1.3 In the food web shown below, which organism is the autotroph?

- A hawk
- B rabbit
- C grass
- D snake

1.1.4 Which important biotic factor is missing from the above food web?

- A water
- B decomposers
- C producers
- D consumers

1.1.5 A certain plant requires moisture, oxygen, carbon dioxide, light and minerals in order to survive. This statement shows that living organisms depend on...

- A biotic factors.
- B abiotic factors.
- C symbiotic relationships.
- D carnivore-herbivore relationships.

1.1.6 Which ONE of the following particles in an atom is electrically neutral?

- A chloroplast
- B electrons
- C protons
- D neutrons

1.1.7 Which of the following statements is correct regarding the particle model of matter?

- A. The forces between the particles are stronger in liquids than in solids.
- B. The energy of solid particles is higher than the energy of gas particles.
- C. There are bigger open spaces between particles of liquids than between gas particles.
- D. The particles of solids move slower than the liquid particles.

1.1.8 An element is.....

- A the smallest particle of a compound.
- B a substance that can be broken down into simpler substances.
- C a substance that cannot be broken down into simpler substances by chemical methods.
- D a substance of which the smallest particles consist of molecules.

1.1.9 Choose the term that best describes the following process: "When matter changes phases from a gaseous phase to a liquid phase."

- A condensation
- B solidification
- C sublimation
- D melting

1.10 An object sinks in water. The density of the object is possibly....

- A 1, 2 g/cm³
- B 0, 9 g/cm³
- C 0, 8 g/cm³
- D 0, 7 g/cm³

[10]

1.2 Give ONE word/term for each of the following statements. Write only the word/term next to the question number.

1.2.1 A sub-atomic particle with a positive charge. (1)

1.2.2 A change of state of matter as a result of a change in physical conditions
increase in temperature). (1)

1.2.3 The amount of mass per unit volume. (1)

1.2.4 A pure substance formed as a result of a chemical reaction between two or more different elements. (1)

1.2.5 Matter that flows and does not have a specific shape. (1)

[5]

1.3 Choose the item from COLUMN B that matches the description in COLUMN A. Write only the letter (A – E) next to the question number (1.3.1 – 1.3.5).

COLUMN A		COLUMN B	
1.3.1	Body covering that makes an animal hard to see	A	herbivore
1.3.2	When all the individuals of a type of plant or animal die out.	B	camouflage
1.3.3	The animal that is caught by a carnivorous animal for food.	C	pollution
1.3.4	Animals that eat plants only	D	prey
1.3.5	The introduction of a substance which can contribute to an imbalance in an ecosystem	E	extinction

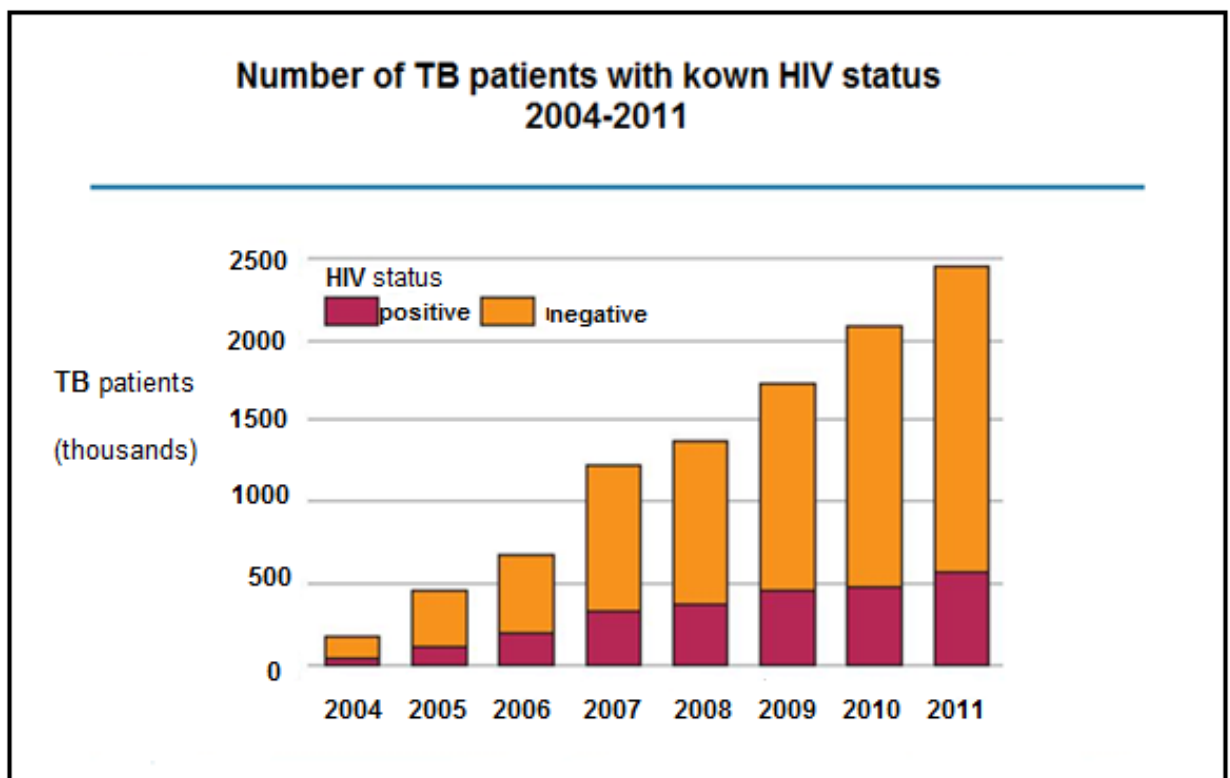
[5]

Section A: [20]

SECTION B

QUESTION 2

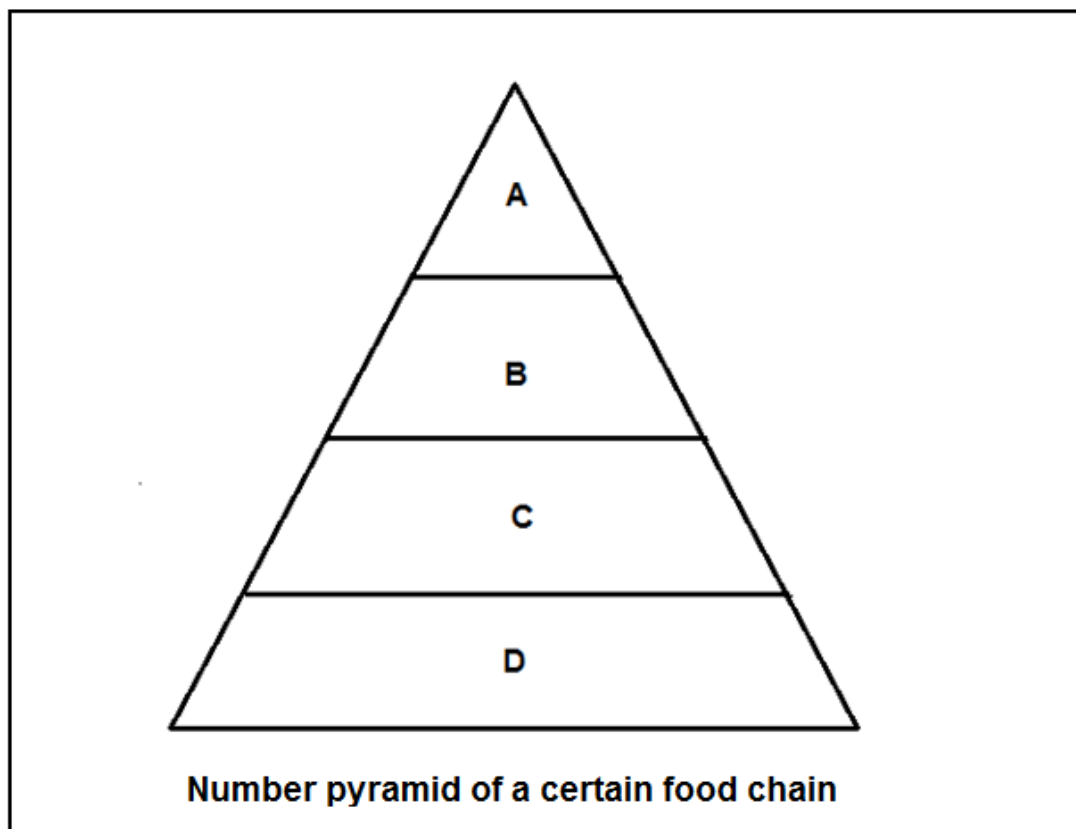
- 2.1 The graph below depicts the number of TB patients with known HIV status in South Africa, for the period 2004 to 2011. The diseases mentioned are caused by micro-organisms. Micro – organisms include Viruses, Bacteria and Protista. Study the graph and answer the questions that follow.



- 2.1.1 Aids (Disease A) and TB (Disease B) are caused by harmful micro-organisms. Identify the micro-organism that cause disease A and disease B. (2)
- 2.1.2 Other micro-organisms are classified as useful to human beings. Name TWO ways in which they are used to our advantage. (2)
- 2.1.3 Name TWO ways in which the spread of disease A can be prevented or minimised? (2)
- 2.1.4 Is disease B curable? Motivate your answer. (2)
- 2.1.5 How many cases of TB patients were recorded in the year 2009? (1)
- 2.1.6 How many of the TB patients of 2009 were HIV positive? (1)
- 2.1.7 What is the major difference in the trend between HIV prevalence and TB patients? (2)

QUESTION 3

3.1 The diagram below represents the number of different organisms in a certain food chain.



- 3.1.1 Which letter represents the producers? What is the main role of the producers in the food chain? (2)
- 3.1.2 Which TWO LETTERS represent the carnivores? (2)
- 3.1.3 Name the type kind of consumer that is represented by the letter C? (1)

3.2 Carefully read through the list of organisms given below:

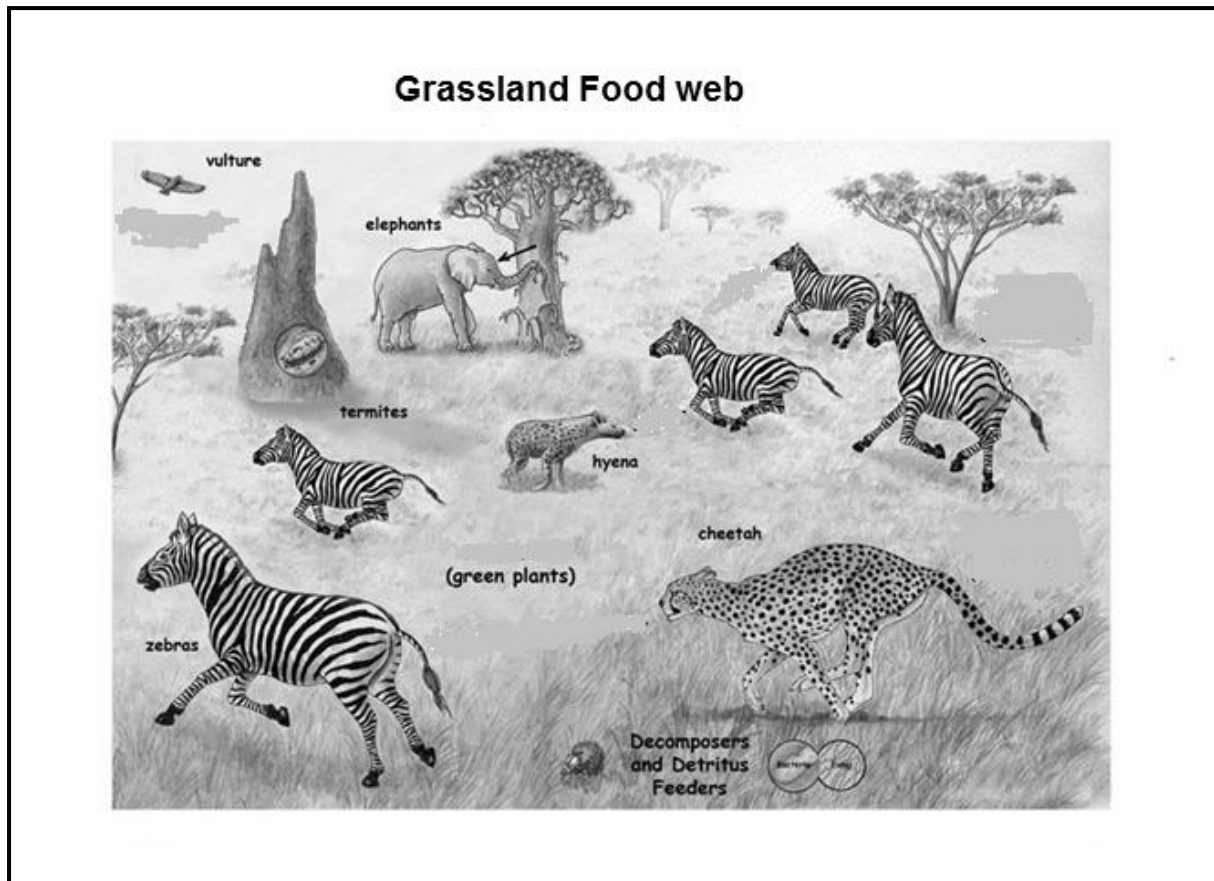
caterpillars, snakes, trees, birds

From the list of organisms given above, choose an organism that will best fit the letter of the above pyramid:

- 3.2.1 A (1)
- 3.2.2 C (1)

QUESTION 4

4. 1 Study the diagram of a grassland ecosystem and answer the questions.



4.1.1 Explain in your own words what an ecosystem is. (2)

4.2 Which organism represents a

4.2.1 predator

4.2.2 scavenger? (2)

4.3 What is the role of a scavenger in an ecosystem? (1)

4.4 Name and discuss the type of interaction that exists between any TWO organisms in the above ecosystem. (2)

4.5 What do you think would happen in this ecosystem if all the zebras got a disease and died? (2)

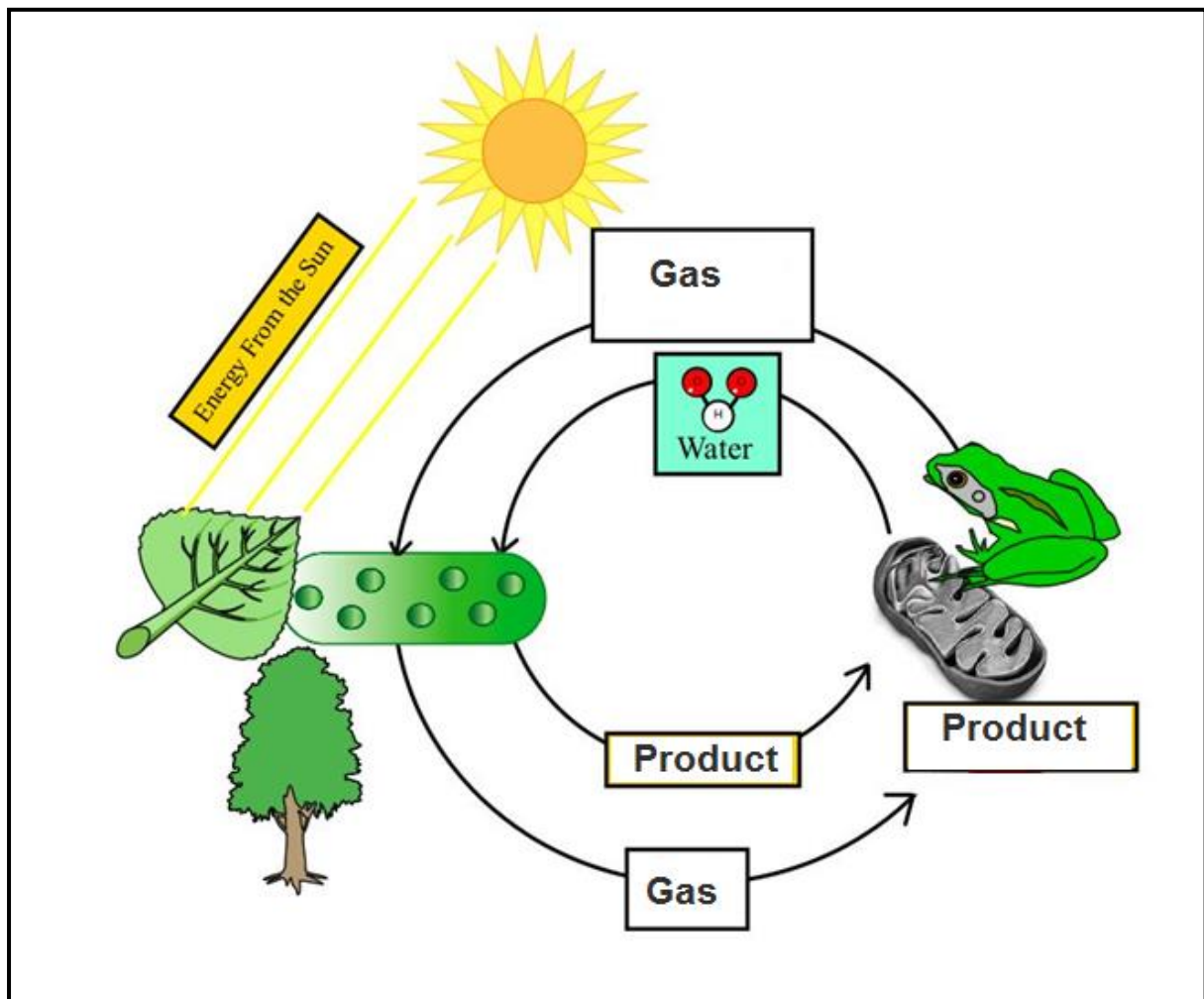
- 4.6 Discuss any TWO structural adaptations that the cheetah has in order to survive in this ecosystem.

(2)

[11]

QUESTION 5

The diagrams below represent important cellular processes. Complete the table by writing down the number and the correct answer.



	PROCESS A	PROCESS B
Name the processes that take place at A and B respectively.	5.1	5.2
Name the cell organelles responsible for the above mentioned processes.	5.3	5.4
Name the most important gas required for each process.	5.5	5.6
Name the most important gas released by each process.	5.7	5.8
Name the main usable product formed at the end of each process.	5.9	5.10

[10]

Section B: [40]

SECTION C

QUESTION 6

6.1 Use the periodic table of elements provided and write down the following:

6.1.1 The NAME of the element represented by the symbol **Na**. (1)

6.1.2 The chemical FORMULAE of the noble gas that occurs in period 2. (1)

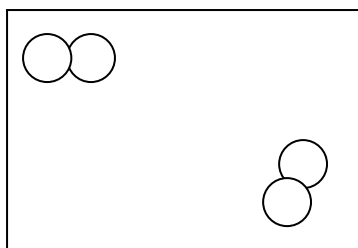
6.1.3 The name or the symbol of the element which has eight electrons in one neutral atom. (1)

6.1.4 Write down the chemical FORMULAE of the ion that forms when the element in group 2, period 3, loses two electrons. (2)

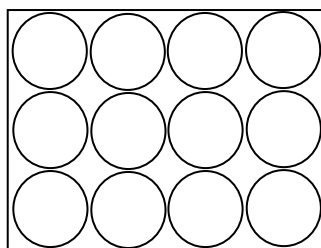
6.1.5 Write down the name or the symbol of the metal in group 2, period 2. (1)

[6]

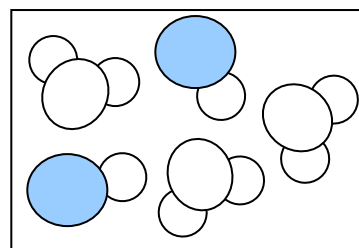
6.2 The particle model of matter can be used to represent different substances.



A



B



C

6.2.1 Write down the LETTER of the diagram representing a compound. (1)

6.2.2 Compare the THREE phases of matter in terms of the forces between particles. (3)

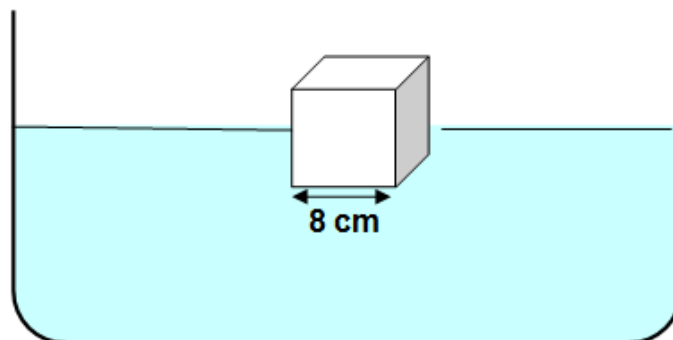
6.2.3 Which diagram, A, B or C, represents a mixture? (1)

6.2.4 How can you change state B to state A. (2)

[7]

QUESTION 7

7.1 A wooden **cube** which has a mass of 32g and a side length of 8cm is placed in a bowl filled with water; it floats with exactly half of its volume under water as indicated in the diagram below.



7.1.1 What is the density of water? (1)

7.1.2 Between water and dry wood which one has the smaller density? (1)

7.1.3 Calculate the volume of water that is displaced. (3)

7.1.4 Calculate the density of the wooden cube. (3)

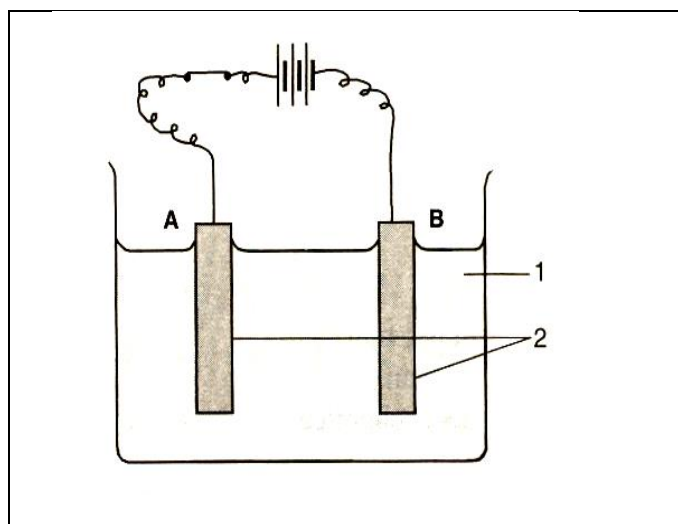
[8]

Question 8

- 8.1 An experiment was conducted where an egg was placed in white vinegar and allowed to react with the vinegar.
- 8.1.1 What observations can be made that indicated a chemical reaction took place. (2)
- 8.2 What were the reactants in this reaction? (2)
- 8.3 What do you think happened to the reactants during the chemical reaction? (1)
- 8.4 Three products were formed during the reaction. Write down the NAMES of these products. (3)
- 8.5 Write down the FORMULAE of the gas which is formed during the chemical reaction. (1)
- [09]**

QUESTION 9

- 9.1 The diagram below shows the apparatus which are used to send an electric current through a copper (II) chloride solution.



Write down the following:

- 9.1.1 The effect of electric current illustrated in the diagram. (1)
- 9.1.2 Name of the process taking place. (1)

- 9.1.3 The general term used for the liquid in the container. (1)
- 9.1.4 The name of the material used as the inert electrodes labelled 2. (1)
- 9.1.5 The letter (A or B) that represents the positive electrode. (1)
- 9.1.6 The general name used for the negative electrode. (1)
- 9.1.7 The name of the product that will be formed at electrode A. (1)
- 9.1.8 Die balanced equation for the reaction that takes place. (3)
- [10]**

Section C: [40]

TOTAL: [100]

TABLE 3: THE PERIODIC TABLE OF ELEMENTS/TABEL 3: DIE PERIODIEKE TABEL VAN ELEMENTE

1 (I)	2 (II)	3	4	5	6	7	8	9	10	11	12	13 (III)	14 (IV)	15 (V)	16 (VI)	17 (VII)	18 (VIII)
1 2,1 H 1																	2 He 4
3 1,0 Li 7	4 1,5 Be 9											5 2,0 B 11	6 2,5 C 12	7 3,0 N 14	8 3,5 O 16	9 4,0 F 19	10 Ne 20
11 0,9 Na 23	12 1,2 Mg 24											13 1,5 Al 27	14 1,8 Si 28	15 2,1 P 31	16 2,5 S 32	17 3,0 Cl 35,5	18 Ar 40
19 0,8 K 39	20 1,0 Ca 40	21 1,3 Sc 45	22 1,5 Ti 48	23 1,6 V 51	24 1,6 Cr 52	25 1,5 Mn 55	26 1,8 Fe 56	27 1,8 Co 59	28 1,8 Ni 59	29 1,9 Cu 63,5	30 1,6 Zn 65	31 1,6 Ga 70	32 1,8 Ge 73	33 2,0 As 75	34 2,4 Se 79	35 2,3 Br 80	36 Kr 84
37 0,8 Rb 86	38 1,0 Sr 88	39 1,2 Y 89	40 1,4 Zr 91	41 Nb 92	42 1,8 Mo 96	43 1,9 Tc 98	44 2,2 Ru 101	45 2,2 Rh 103	46 2,2 Pd 106	47 1,9 Ag 108	48 1,7 Cd 112	49 1,7 In 115	50 1,8 Sn 119	51 1,9 Sb 122	52 2,1 Te 128	53 2,5 I 127	54 Xe 131
55 0,7 Cs 133	56 0,9 Ba 137	57 La 139	72 1,6 Hf 179	73 Ta 181	74 W 184	75 Re 186	76 Os 190	77 Ir 192	78 Pt 195	79 Au 197	80 Hg 201	81 1,8 Tl 204	82 1,8 Pb 207	83 1,9 Bi 209	84 2,0 Po	85 2,5 At	86 Rn
87 0,7 Fr	88 0,9 Ra 226	89 Ac															
58 Ce 140	59 Pr 141	60 Nd 144	61 Pm	62 Sm 150	63 Eu 152	64 Gd 157	65 Tb 159	66 Dy 163	67 Ho 165	68 Er 167	69 Tm 169	70 Yb 173	71 Lu 175				
90 Th 232	91 Pa	92 U 238	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	103 Lr				

KEY/SLEUTEL

Atomic number
Atoomgetal

Electronegativity
Elektronegatiwiteit

Symbol
Simbool

Approximate relative atomic mass
Benaderde relatiewe atoommassa