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PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION

VHEMBE WEST WEST

GRADE 08

NATURAL SCIENCES

2024

JUNE EXAMINATION

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MARKS: 90

TIME: 2 Hours

This **question paper** consists of **NINE (09)** pages, including the front page and periodic table.

INSTRUCTIONS:

1. **Read the question carefully before answering.**
2. **Number your answer correctly and exactly as in the question**
3. **Answer all questions in the answer sheet provided.**

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QUESTION 1

Various options are provided as possible answers to the following questions. Choose the correct answer and write the corresponding LETTER (A – D) next to the question number (1.1 - 1.8) on your answer sheet, for example 1.9 B.

1.1 What are the vertical columns on the Periodic Table called?

A Groups
B Columns
C Families
D Periods (2)

1.2 If an atom has 12 protons in the nucleus, then it must also have ... to be neutral.

A 12 protons around the nucleus
B 12 neutrons in the nucleus
C 12 electrons around the nucleus
D 12 electrons in the nucleus (2)

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1.3 Freezing is the change in state of a…

A liquid to a solid.
B liquid to a gas.
C solid to a gas.
D solid to a liquid. (2)

1.4 Which of the following is a property of a gas?

A It flows.
B It moves around very quickly
C It vibrate
D It has a defined shape. (2)

1.5 Water is different from other substances because it is …

A More dense as a solid than a liquid.
B Less dense as a solid than a liquid.
C More dense as a solid than a gas.
D less dense as a solid than a gas. (2)

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1.6 The melting point of element X is 25°C. The boiling point of the same element is 70°C. At 10°C the element is a …

A Vapour.
B liquid.
C Gas.
D Solid. (2)

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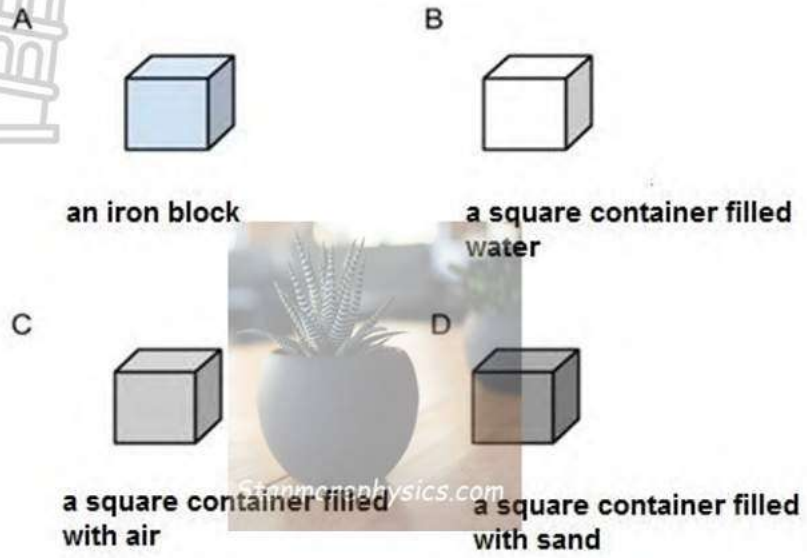
1.7 In which one of the following substances will the distances between the particles inside the substance be the greatest? All substances shown have the same volume



(2)

1.8 Forces that hold atoms together.

A. Products.
B. Reactants.
C. Bonds.
D .Compounds. (2)

[16]

QUESTION 2

Give one word/term for each of the following descriptions:

2.1 Negatively charged particles spinning around the nucleus of an atom. (2)
2.2 A chemical reaction in which heat is used to decompose a compound. (2)
2.3 The spontaneous spreading of particles from an area of high concentration to an area of low concentration. (2)
2.4 The amount of space an object takes up. (2)
2.5 Substances that are produced in a reaction (2)

[10]

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QUESTION 3

Choose the description in COLUMN B that best matches the item in COLUMN A. Only write down the letter (A -G) next to the correct question number (3.1– 3.5) in your ANSWER SHEET e.g. 3.7 J.

COLUMN A	COLUMN B
3.1. Condensation	A. Diatomic element
3.2. Anode	B. Energy that an object has because of its motion
3.3. Kinetic energy	C. Process when a gas turns into a liquid
3.4. Nitrogen	D. The energy that a substance stores for later use
3.5 Number of protons is equal to……..	E. The positive electrode
	F. The atomic number
	G. The process when a gas turns into a liquid

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[10]

QUESTION 4

Look at the symbol below and answer questions that follows.

11
Na
23

4.1 Name the element that this symbol represents. (1)

4.2 Name one other element that belongs to the same group as the element above. (1)

4.3 Write the mass number of the element above. (1)

4.4 Is the element represented above a METAL, a NON-METAL or a SEMI- METAL? (1)

4.5 Say whether the following statement are true or false. If it is false, write the correct statement.

4.5.1 All non-metals are bad conductors of electricity. (2)

4.5.2 The rows in the periodic table is knows as periods. (1)

[7] [7]

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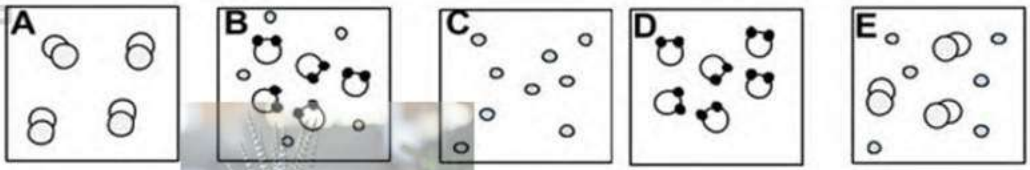
QUESTION 5

5.1 Different types of substances are represented in the diagrams below. Answer questions that follows:



Write down the LETTER (A-E) of the diagram which best represents:

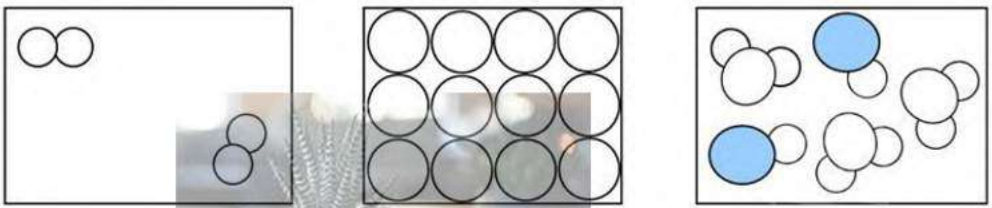
5.1.1 An element that consists of single atoms. (1)
5.1.2 An element that consists of diatomic molecules. (1)
5.1.3 A compound. (1)
5.1.4 A mixture of elements. (1)

5.2 The boiling point of pure water is 100°C at sea level. If a certain sample of water boils only at 101.5°C, what do you know about the Sample? Give a reason for your answer. (2)

[6]

QUESTION 6

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



A B C

6.1.1 Which diagram, **A**, **B** or **C**, represents a diatomic molecule? Give a reason for your answer. (3)
6.1.2 For each diagram A, B and C state whether it represents a liquid, a gas or a solid. (3)
6.1.3 How many types of molecules are found in diagram **C**? (1)

6.1.4 Which diagram represents particles with the highest average kinetic energy? Explain your answer in terms of the particle model of matter. (2)
6.1.5 Why does diffusion not take place in **B**? (2)

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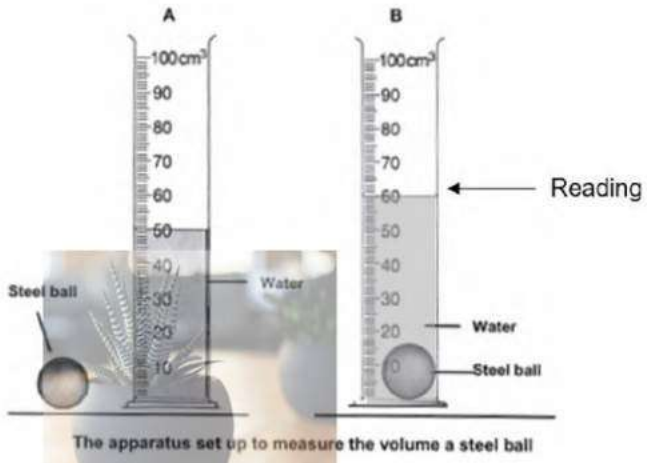
6.2 A learner sets up the apparatus shown below to measure the volume of a steel ball. Study the diagrams and answer the questions that Follow.



The apparatus set up to measure the volume a steel ball

6.2.1 Give the name of the apparatus, which is used to measure Volume of the steel ball. (1)

6.2.2 When a steel ball is carefully placed into apparatus A, the water level increases to show a new volume as shown in B. Write down the new reading for the volume of the water in Apparatus B. (1)

6.2.3 Calculate the volume of the steel ball from the information shown above. Show all your calculations. (2)

6.2.4 Explain why the steel ball sinks to the bottom. (2)

6.3 Complete the ARRANGEMENT, FORCES AND SPACES BETWEEN the particles in SOLIDS, LIQUIDS and GASES in the table below. Write the answer next to correct question number in your answer book.

Property	**Solids**	**Liquids**	**Gases**
Arrangement of particles	6.3.1	Close together and more loosely	6.3.2
Forces between particles	6.3.3	Weak	6.3.4
Spaces between particles	Very small	Small spaces	Very large

(4)

6.4 When you walk past a bakery, you can smell the fresh bread that is being baked. This is possible due to the diffusion of gases.

6.4.1 Explain what diffusion is. (2)

6.4.2 How does diffusion that take place in liquids compare to diffusion in gases? (1)

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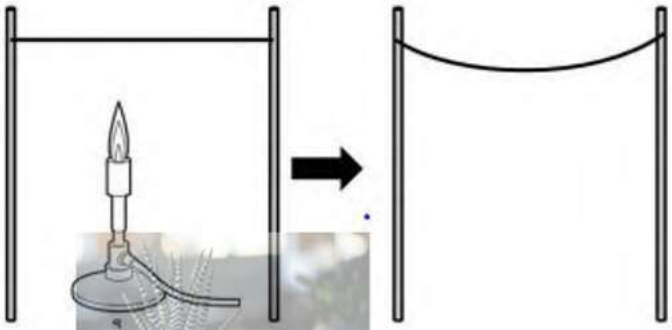
6.4.3 Explain why it is NOT possible for diffusion to take place in solids. (2)

6.5 A very thin piece of metal wire is suspended between two vertical rods. The wire is heated with a flame. After a while, the wire begins to sag as shown below.

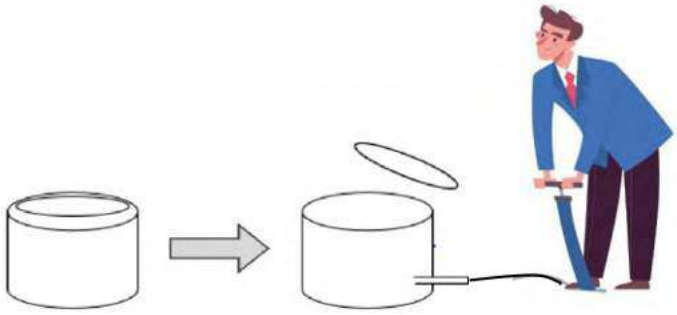


6.5.1 Give the scientific term for a wire that gets longer due to heat. (1)

6.5.2 What will happen to the wire when it cools down again? (1)

6.5.3 Explain the process mentioned in 6.5.2. (2)

6.6 Study the following diagram. An empty paint tin with its lid on, is full of air. When more air is pumped into the tin, the lid pops off at some stage.



6.6.1 Define gas pressure. (2)

6.6.2 Explain why the lid pops off when more air is pumped into the tin. (2)

[34]

QUESTION 7

The reaction between hydrogen gas (H_2) and chlorine gas (Cl_2) produces the hydrogen chloride gas (HCl)

$$H_{2\,(g)} + Cl_{2\,(g)} \rightarrow 2\,HCl_{(g)}$$

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7.1 Write the **name** of the product(s) for this reaction. (2)

7.2 Describe in which way the atoms in this reaction are the same before and after the reaction. (2)

7.3 Describe in which way the atoms in this reaction differ before and after the reaction. (2)

7.4 What does the arrow (→) represent? (1)

[7]

TOTAL MARKS: 90

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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)
2,1 **H** 1																	**He** 4
1,0 **Li** 7	1,5 **Be** 9											2,0 **B** 11	2,5 **C** 12	3,0 **N** 14	3,5 **O** 16	4,0 **F** 19	**Ne** 20
0,9 **Na** 23	1,2 **Mg** 24											1,5 **Aℓ** 27	1,8 **Si** 28	2,1 **P** 31	2,5 **S** 32	3,0 **Cℓ** 35,5	**Ar** 40
0,8 **K** 39	1,0 **Ca** 40	1,3 **Sc** 45	1,5 **Ti** 48	1,6 **V** 51	1,6 **Cr** 52	1,5 **Mn** 55	1,8 **Fe** 56	1,8 **Co** 59	1,8 **Ni** 59	1,9 **Cu** 63,5	1,6 **Zn** 65	1,6 **Ga** 70	1,8 **Ge** 73	2,0 **As** 75	2,4 **Se** 79	2,8 **Br** 80	**Kr** 84
0,8 **Rb** 86	0,9 **Sr** 88	1,2 **Y** 89	1,4 **Zr** 91	1,6 **Nb** 92	1,8 **Mo** 96	1,9 **Tc** 98	2,2 **Ru** 101	2,2 **Rh** 103	2,2 **Pd** 106	1,9 **Ag** 108	1,7 **Cd** 112	1,7 **In** 115	1,8 **Sn** 119	1,9 **Sb** 122	2,1 **Te** 128	2,5 **I** 127	**Xe** 131
0,7 **Cs** 133	0,9 **Ba** 137	1,0 **La** 139	1,6 **Hf** 179	1,5 **Ta** 181	1,7 **W** 184	1,9 **Re** 186	2,2 **Os** 190	2,2 **Ir** 192	2,2 **Pt** 195	2,4 **Au** 197	1,9 **Hg** 201	1,8 **Tℓ** 204	1,8 **Pb** 207	1,9 **Bi** 209	2,0 **Po**	2,5 **At**	**Rn**
0,7 **Fr**	0,9 **Ra** 226	1,1 **Ac**															

KEY/*SLEUTEL*

Atomic number *Atoomgetal*

Electronegativity *Elektronegatiwiteit*

29 **Cu** 1,9 63,5

Symbol *Simbool*

Approximate relative atomic mass *Benaderde relatiewe atoommassa*

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**

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GRADE 08

NATURAL SCIENCES

MARKING GUIDELINE: JUNE EXAMINATION

MARKS: **90**

This **marking guideline** consists of **FOUR (04)** pages only, including this front page.

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QUESTION 1

1.1 A ✓✓
1.2 B ✓✓
1.3 A✓✓
1.4 B ✓✓
1.5 A ✓✓
1.6 D ✓✓
1.7 C✓✓
1.8 C✓✓

[16]

QUESTION 2

2.1 Electrons ✓ ✓
2.2 Thermal / Heating ✓ ✓
2.3 Diffusion ✓ ✓
2.4 Volume ✓✓
2.5 Products ✓✓

[10]

QUESTION 3

3.1 C ✓✓
3.2 E ✓✓
3.3 B ✓✓
3.4 A ✓✓
3.5 F ✓✓

[10]

QUESTION 4

4.1 Sodium ✓

4.2 Hydrogen / Lithium / Potassium ✓ (Any ONE)

4.3 23 ✓

4.4 Metal ✓

4.5 4.5.1 False. ✓ Carbon is a good conductor of electricity. ✓
4.5.2 True ✓

(7)

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QUESTION 5

5.1.1 C ✓ (1)
5.1.2 A ✓ (1)
5.1.3 D ✓ (1)
5.1.4 E ✓ (1)

5.2 The sample of water isn't pure/ also contains other substances, ✓ as pure substances always has a specific boiling point. ✓

[6]

QUESTION 6

6.1
6.1.1 A✓ Consist of 2 atoms. ✓✓

6.1.2 A – Gas ✓
B– Solid ✓
C– Liquid ✓

6.1.3 Two (2) types ✓
6.1.4 **A**✓Spaces between particles of gasses is the largest OR the forces of attraction is smaller is the smallest and particles can move freely. ✓
6.1.5 Particles in solids does not move around, they only vibrate on the spot. ✓so it is not possible for the particles to travel from a place of high density to a place of lower density. ✓

6.2
6.2.1 Measuring cylinder✓

6.2.2 60 cm^3 ✓

6.2.3 60 cm^3 – 50 cm^3 ✓ = 10 cm^3✓ (unit must be indicated)

6.2.4 Because the density of the steel ball is greater than that of the water✓✓

6.3
6.3.1 Fixed and regular. ✓
6.3.2 No particular arrangement ✓
6.3.3 Strong ✓
6.3.4 Very weak ✓

6.4

6.4.1 Diffusion is a process in which particles in liquids and gases move (separate and spread) from a highly-concentrated area✓ to an area with a lower concentration of those particles.✓

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6.4.2 Diffusion in liquids occurs slower than diffusion in gases.

OR

Diffusion in gases occurs faster than diffusion in liquids. ✓ (1)

6.4.3 Particles in solids do not move around, they only vibrate on the **spot**.✓ Thus it is not possible for the particles to travel from a place of high density to a place of lower density. ✓

6.5

6.5.1 Expansion ✓

6.5.2 It will contract ✓

6.5.3 When the wire cools down, the particles move slower and come closer together ✓, causing the wire to contract (get shorter). ✓

6.6

6.6.1 Force created by gas particles ✓hitting the walls of their container.✓

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6.6.2 More air particles are pumped into the tin which causes more **collisions** with the lid and the sides of the tin.✓ that will increase the pressure inside the tin and the lid will pop off. ✓

[34]

QUESTION 7

7.1 Hydrogen gas ✓

Chlorine gas✓

7.2 The same amount of atoms before and after the reaction. ✓✓

7.3 Before the reaction, all the Hydrogen atoms were bonded with **each** other and all the Chlorine atoms were bonded with each other.✓
After the reaction the Hydrogen atoms have bonded with the Chlorine atoms. ✓

7.4 Form / Produce / Yield (Any one) ✓

[7]

TOTAL MARKS: 90