



GAUTENG PROVINCE

EDUCATION
REPUBLIC OF SOUTH AFRICA

**GAUTENG DEPARTMENT OF EDUCATION
PROVINCIAL EXAMINATION
JUNE 2018
GRADE 9**

NATURAL SCIENCES

NAME OF LEARNER: _____

GRADE 9: _____

DATE: _____

TIME: 2 hours

MARKS: 100

20 pages + 1 data sheet

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	TOTAL
8	6	6	11	9	8	8	4	6	9	11	14	
												100

P.T.O.

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**TIME: 2 hours
MARKS: 100**

INSTRUCTIONS AND INFORMATION

- 1 Write your name and class on the cover page of this EXAMINATION PAPER.
- 2 Answer all questions in the spaces provided on this paper.
- 3 This question paper consists of SECTION A, SECTION B and SECTION C based on the prescribed content framework in the CAPS document.
- 4 Allocation of marks:
SECTION A: 20
SECTION B: 40
SECTION C: 40
- 5 This examination paper consists of twelve questions.
- 6 Follow the instructions of each question carefully.
- 7 All drawings should be done in pencil and labelled in blue or black ink.
- 8 Write neatly and legibly.

SECTION A

QUESTION 1

MULTIPLE-CHOICE QUESTIONS

Various options are provided as possible answers to the following questions. Choose the correct option by circling, or placing a cross over the correct letter (A – D).

- 1.1 Which of the following is the main function of the heart?
- A Physical manipulation of solid food
 - B Regulation of digested food
 - C Giving the cell its shape
 - D To pump blood
- (1)
- 1.2 The symbol for Copper is
- A Cu
 - B Co
 - C K
 - D C
- (1)
- 1.3 The by-products of respiration are ...
- A oxygen, carbon dioxide and energy.
 - B water and glucose.
 - C carbon dioxide and oxygen.
 - D carbon dioxide, water and energy.
- (1)
- 1.4 Arrange according to the pH scale from the least to the most acidic.
- A 6 : 4 : 2 : 1
 - B 1 : 4 : 2 : 6
 - C 6 : 2 : 1 : 4
 - D 1 : 2 : 4 : 6
- (1)

- 1.5 The sequence in which food moves along the alimentary canal is
- A Oesophagus, stomach, large intestine, small intestine.
 - B Oesophagus, small intestine, large intestine, stomach.
 - C Oesophagus, stomach, small intestine, large intestine.
 - D Oesophagus, small intestine, stomach, large intestine. (1)
- 1.6 Which indicator is green in a natural solution?
- A Red litmus paper
 - B Universal indicator
 - C Blue litmus paper
 - D Bromothymol blue (1)
- 1.7 Exhalation is the process when ...
- A muscles of diaphragm relax, the intercostal muscles relax and air is forced out of the lungs.
 - B the muscles of the diaphragm contract, the intercostal muscles contract and air is forced out of the lungs.
 - C the muscles of the diaphragm relax, the intercostal muscles relax and air flows down the air passages into the lungs.
 - D the muscles of the diaphragm contract and air flows down the air passages into the lungs. (1)
- 1.8 The gas that is produced when acid reacts with a metal is ...
- A Carbon dioxide.
 - B Oxygen.
 - C Hydrogen.
 - D Water vapour. (1)
- [8]**

QUESTION 2

TERMINOLOGY

Give the correct scientific term for each of the following statements. Write only the term next to the question number (2.1 – 2.6) in the space provided.

- 2.1 The stage in the human life cycle when sexual organs mature for reproduction.
_____ (1)
- 2.2 A substance where two or more atoms are chemically bonded in a fixed ratio.
_____ (1)
- 2.3 The removal of the waste products of a chemical reaction that takes place in cells.
_____ (1)
- 2.4 The salts of hydrochloric acid.
_____ (1)
- 2.5 The mixing of food with digestive enzymes and hydrochloric acid.
_____ (1)
- 2.6 The statement or possible explanation for an investigation.
_____ (1)
- [6]**

QUESTION 3

MATCHING ITEMS

Choose a concept in **COLUMN B** that matches a statement in **COLUMN A**. Write only the letter (A – H) next to the question number (3.1 – 3.6) in the space provided.

COLUMN A	COLUMN B
3.1 A group of cells with the same structure that performs the same functions.	A. Digestion
3.2 A base that is soluble in water.	B. Antibiotics
3.3 The structure or device which can be used to prevent unwanted pregnancy and sexually transmitted diseases like HIV/AIDS.	C. Tissue
3.4 New substances that form during a reaction.	D. Products
3.5 The breaking down of food into dissolved nutrients that can be absorbed into the blood stream.	E. Alkali
3.6 Substances that can be used to kill harmful bacteria.	F. Reactants
	G. Absorption
	H. Condom

3.1 _____

3.2 _____

3.3 _____

3.4 _____

3.5 _____

3.6 _____

[6]

TOTAL SECTION A: [20]

P.T.O.

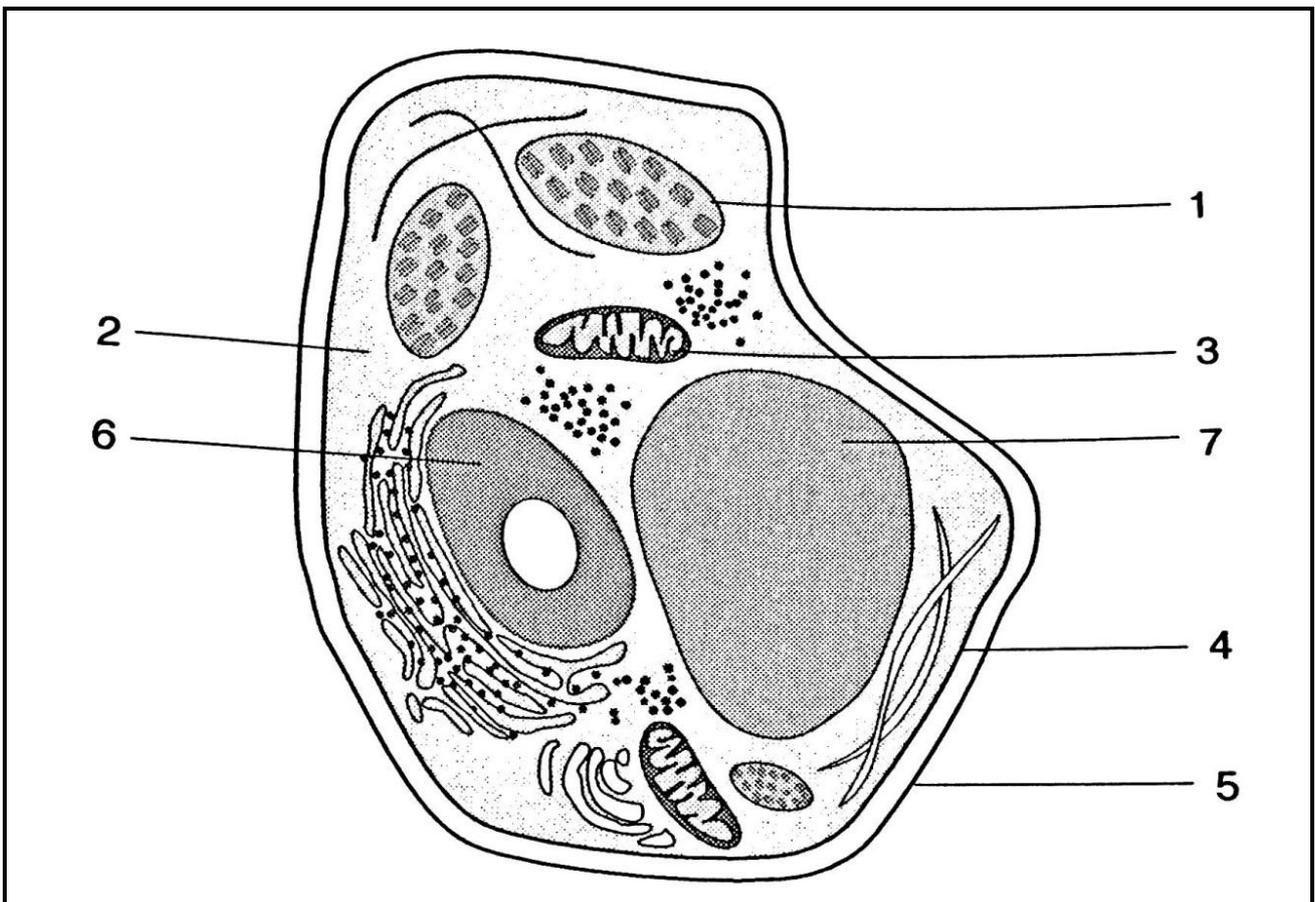
SECTION B

LIFE AND LIVING THINGS

QUESTION 4

CELLS AS BASIC UNITS OF LIFE

Study the diagram below and answer the questions that follow:



4.1 Identify the cell shown above.

_____ (1)

4.2 Suggest ONE observable reason for your answer.

_____ (1)

4.3 Provide labels for parts numbered 1 and 4.

1. _____

4. _____ (2)

4.4 Name the part numbered 3 and give its function.

(2)

4.5 What is the main function of part numbered 7?

(1)

4.6 Part numbered 6 is referred to as the “brain” of the cell. Suggest a possible reason to justify this statement.

(2)

4.7 Tabulate TWO differences between a plant cell and an animal cell.

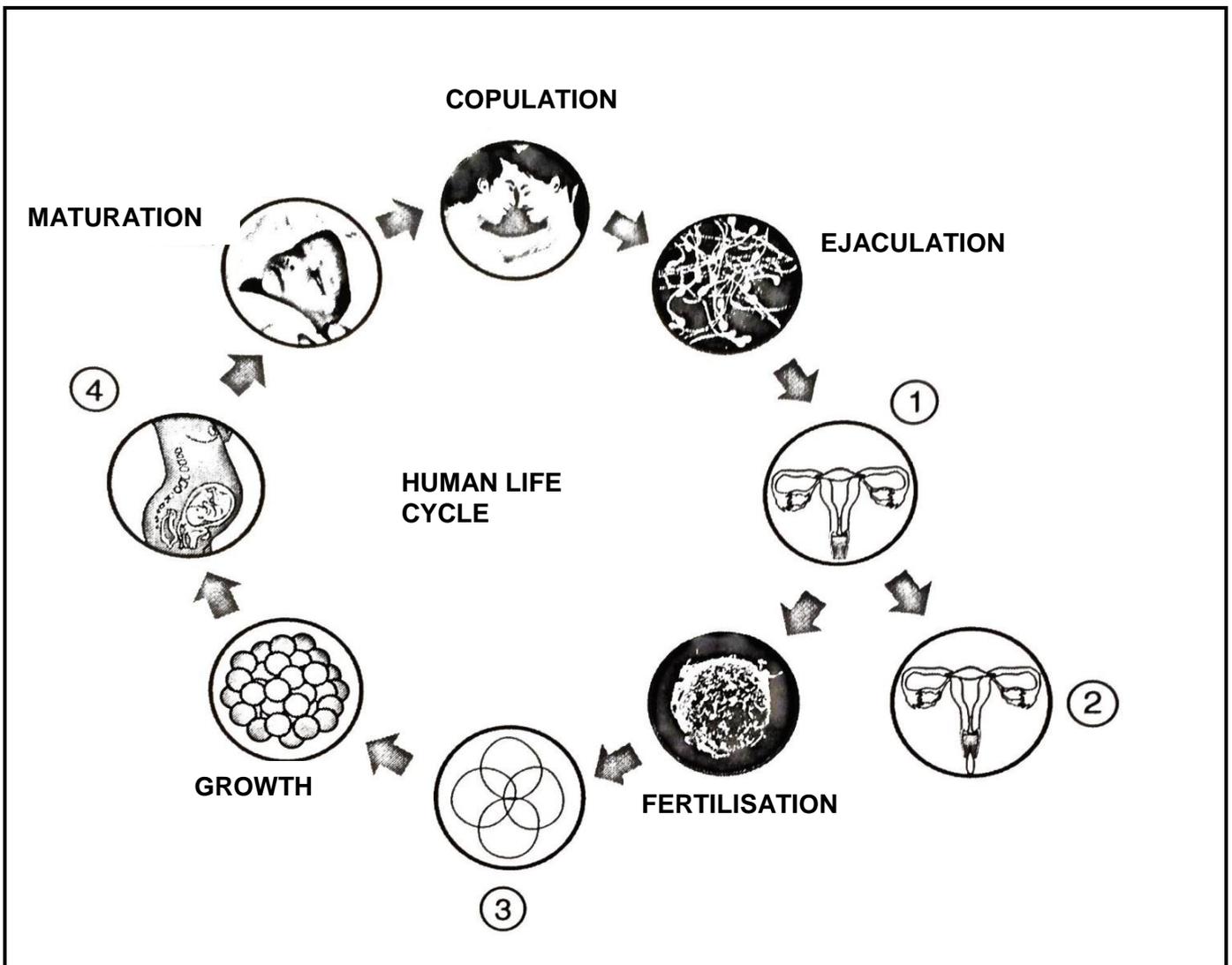
PLANT CELL	ANIMAL CELL
1.	1.
2.	2.

(2)
[11]

QUESTION 5

HUMAN REPRODUCTIVE SYSTEM

Study the diagrams of the processes in the human reproduction cycle and answer the questions that follow.



5.1 Provide the number on the diagram in the cycle where an egg cell is released.

_____ (1)

5.2 Identify the name of the process taking place in 5.1.

_____ (1)

5.3 Name and explain the process taking place at number 4.

(2)

5.4 Briefly explain the process of fertilisation.

(2)

5.5 Name the hormone that plays a vital role in the male reproductive system.

(1)

5.6 In females the vagina is also referred to as the copulation canal as well as the birth canal. Briefly explain this statement.

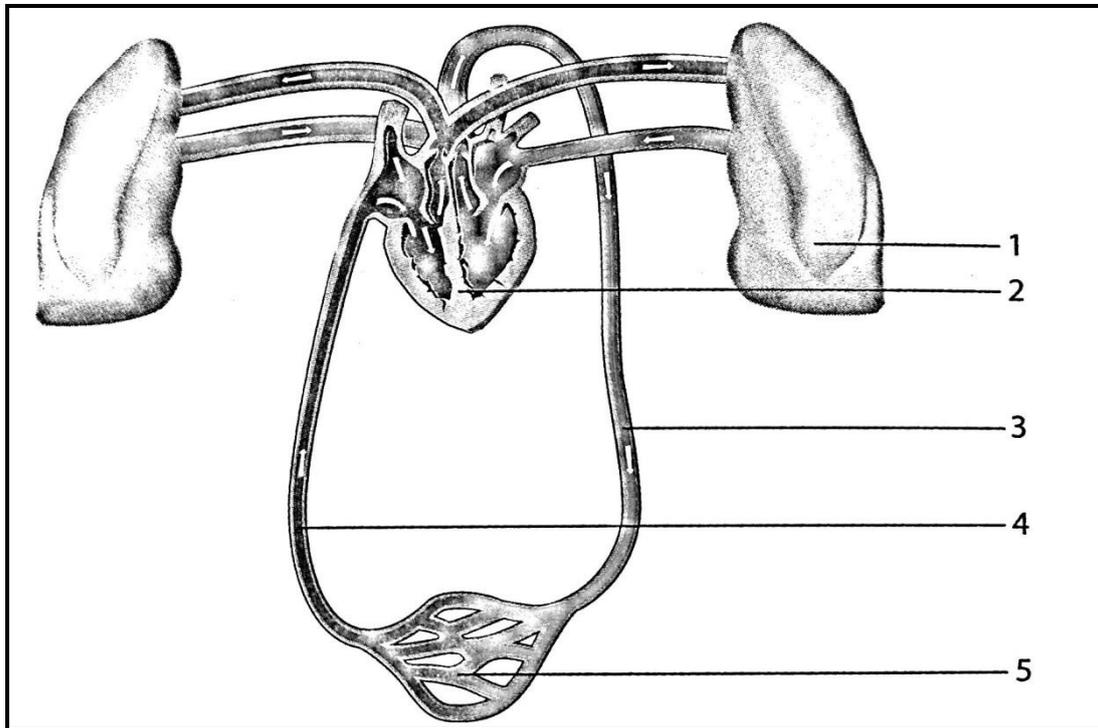
(2)

[9]

QUESTION 6

CIRCULATORY SYSTEM

Study the diagram below that represents the human circulatory system and answer the questions.



6.1 Provide labels for the organs numbered 1 and 2.

1. _____

2. _____ (2)

6.2 State the general names for the blood vessels represented by parts numbered 3, 4 and 5.

3. _____

4. _____

5. _____

(3)

6.3 Identify the process that takes place at parts numbered 1 and 5.

(1)

6.4 Differentiate between the blood contained in parts 3 and 4.

(2)

[8]

QUESTION 7

RESPIRATORY SYSTEM AND THE DIGESTIVE SYSTEM

Read the following extract below and answer the questions that follow:

Tuberculosis is one of South Africa's worst killing diseases. Up to a million people in the world die from TB each year. It used to be called consumption because it consumes the body, causing it to waste away. TB is caused by a bacterial infection of body parts especially the lungs. It is spread from one person to another by inhaling the bacteria into the lungs when someone who has the disease coughs. The symptoms of TB are: loss of appetite, losing weight, having a fever and sweating, chest pains and coughing up blood. The disease can be discovered through an x-ray of the lungs. Fortunately TB can be cured if it is detected early enough. It is treated using drugs called antibiotics.

7.1 What micro-organism causes tuberculosis?

_____ (1)

7.2 Explain briefly how tuberculosis is spread.

_____ (2)

7.3 Suggest any measures to prevent the spread of tuberculosis.

_____ (1)

7.4 Differentiate between mechanical and chemical digestion.

_____ (2)

7.5 Supply TWO reasons and explain why roughage (fibre) is important in the digestion of food.

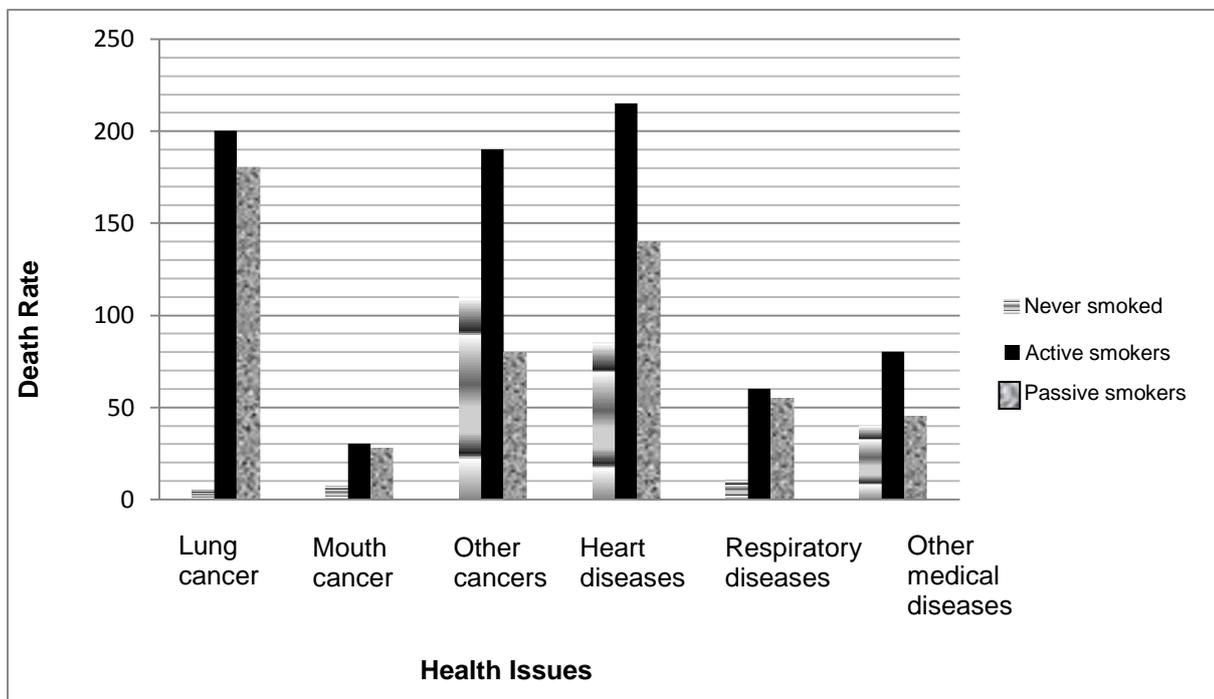
_____ (2)

[8]

QUESTION 8

CIRULATORY AND RESPIRATORY HEALTH ISSUES

Study the bar graph below that shows how many people in every 100 000, aged between 35 and 69, die from smoking and diseases related to smoking.



8.1 Use the bar graph to find out how many active smokers die of heart diseases.

_____ (1)

8.2 Look at the different groups of people (smokers, passive smokers and non-smokers) who die of respiratory diseases. From which group does the largest number of people die?

_____ (1)

8.3 Would you prefer to be an active smoker, a passive smoker or a non-smoker? Give a possible reason to support your answer.

 _____ (2)
[4]

TOTAL SECTION B: [40]

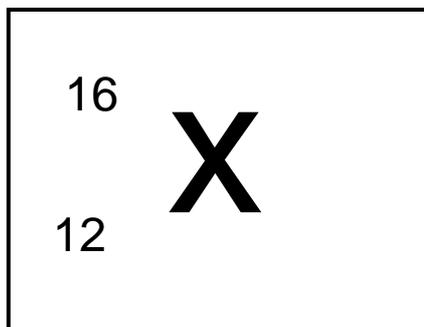
SECTION C

MATTER AND MATERIALS

QUESTION 9

PERIODIC TABLE OF ELEMENTS AND COMPOUNDS

Use the attached periodic table of elements to answer the questions below:



- 9.1 The symbol for the element represented by X in the above diagram is ...
 _____ (1)
- 9.2 The name of the element is ...
 _____ (1)
- 9.3 How many protons does this element have in its nucleus?
 _____ (1)
- 9.4 Is the element a metal or a non-metal?
 _____ (1)
- 9.5 The element forms an oxide when it reacts with oxygen. What is the name of the oxide that formed?
 _____ (1)
- 9.6 When the oxide is mixed with water, what will the pH of the solution be?
 _____ (1)
- [6]**

QUESTION 10

REACTION OF METALS WITH OXYGEN

Rust is a form of iron oxide formed when iron (Fe) reacts with oxygen (O).

Complete the table below by providing the missing equations for the reaction between iron and oxygen:

Word Equation	10.1	(3)
Picture Equation		
Balanced chemical Equation	10.2	(4)

KEY ELEMENTS:



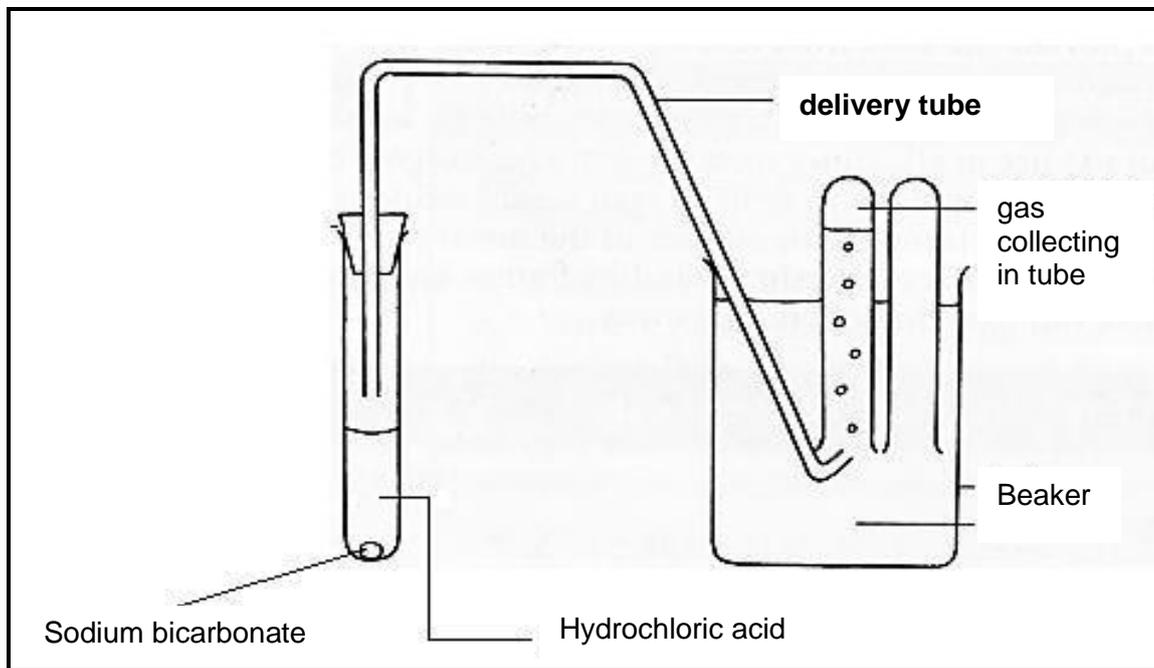
10.3 List any TWO ways in which the formation of rust can be prevented:

1. _____ (1)
 2. _____ (1)
- [9]**

QUESTION 11

REACTIONS OF ACIDS WITH CARBONATE

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



11.1 From the pH values given below, what pH value would you expect hydrochloric acid to have? _____

pH=1 pH=6 pH=7 pH=8 pH=13

(1)

11.2 Explain why drinking sodium bicarbonate helps to relieve indigestion.

(2)

11.3 Identify the name of the gas that is released during the above experiment.

(1)

11.4 Describe briefly how you would test for the gas released during the experiment.

(2)

11.5 Write down a balanced chemical equation for the reaction taking place in the experimental setup above.

(5)
[11]

QUESTION 12

INVESTIGATIVE EXPERIMENT

Study the following extract and answer the questions that follow.

Asanda's grandfather likes to bake his own bread. Asanda noticed that after he makes the dough, he then leaves it in the sun to rise. Asanda wanted to know why it was necessary to leave the dough in the sun. She thought that it might have something to do with temperature. She decided to conduct an investigation. She made some dough with 100 g of flour; 2 g of sugar; 4 g of dried yeast and 25 ml of water at 38 °C. She placed 10 ml of dough into each of three measuring cylinders. One cylinder was kept at 5 °C; one at 20 °C and the third cylinder at 35 °C. Asanda then left the cylinders for 20 minutes and measured how much the dough had risen in each cylinder. She recorded her results as follows:

TEMPERATURE (°C)	VOLUME DOUGH ROSE (cm ³)
5	15
20	25
35	35

12.1 Formulate an aim for Asanda's experiment.

_____ (2)

12.2 Do you think this was a fair test? Give TWO reasons for your answer.

_____ (3)

12.3 Identify the **dependent** and **independent** variables in the experiment.

_____ (2)

12.4 Draw a conclusion that Asanda can make based on the results from the table.

(2)

12.5 Plot a line graph to show the results shown in the table.



(5)

[14]

TOTAL SECTION C: [40]

TOTAL: 100

END

THE PERIODIC TABLE OF ELEMENTS / 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)
<p style="text-align: center;">KEY/SLEUTEL</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>Atomic number <i>Atoomgetal</i></p> <p>↓</p> <div style="border: 1px solid black; padding: 2px;">29</div> </div> <div style="text-align: center;"> <p>Electronegativity <i>Elektronegatiwiteit</i></p> <p>→</p> <div style="border: 1px solid black; padding: 2px;">1,9</div> </div> <div style="text-align: center;"> <p>Symbol <i>Simbool</i></p> <p>←</p> <div style="border: 1px solid black; padding: 2px;">Cu</div> </div> </div> <p style="text-align: center; margin-top: 10px;">Approximate relative atomic mass <i>Benaderde relatiewe atoommassa</i></p> <p style="text-align: center;">↑</p> <div style="border: 1px solid black; padding: 2px; margin: 0 auto; width: 60px;">63,5</div>																	
1 H 1 2,1	2 He 4 4	3 Li 7 1,0	4 Be 9 1,5	5 B 11 2,0	6 C 12 2,5	7 N 14 3,0	8 O 16 3,5	9 F 19 4,0	10 Ne 20 4,0	11 Na 23 0,9	12 Mg 24 1,2	13 Al 27 1,5	14 Si 28 1,8	15 P 31 2,1	16 S 32 2,5	17 Cl 35,5 3,0	18 Ar 40 4,0
19 K 39 0,8	20 Ca 40 1,0	21 Sc 45 1,3	22 Ti 48 1,5	23 V 51 1,6	24 Cr 52 1,6	25 Mn 55 1,5	26 Fe 56 1,8	27 Co 59 1,8	28 Ni 59 1,8	29 Cu 63,5 1,9	30 Zn 65 1,6	31 Ga 70 1,6	32 Ge 73 1,8	33 As 75 2,0	34 Se 79 2,4	35 Br 80 2,8	36 Kr 84 4,0
37 Rb 86 0,8	38 Sr 88 1,0	39 Y 89 1,2	40 Zr 91 1,4	41 Nb 92 1,6	42 Mo 96 1,8	43 Tc 96 1,9	44 Ru 101 2,2	45 Rh 103 2,2	46 Pd 106 2,2	47 Ag 108 1,9	48 Cd 112 1,7	49 In 115 1,7	50 Sn 119 1,8	51 Sb 122 1,9	52 Te 128 2,1	53 I 127 2,5	54 Xe 131 5,4
55 Cs 133 0,7	56 Ba 137 0,9	57 La 139 1,3	58 Ce 140 1,6	59 Pr 141 1,6	60 Nd 144 1,6	61 Pm 147 1,6	62 Sm 150 1,6	63 Eu 152 1,6	64 Gd 157 1,6	65 Tb 159 1,6	66 Dy 163 1,6	67 Ho 165 1,6	68 Er 167 1,6	69 Tm 169 1,6	70 Yb 173 1,6	71 Lu 175 1,6	72 Hf 179 1,6
73 Ta 181 1,6	74 W 184 1,6	75 Re 186 1,6	76 Os 190 1,6	77 Ir 192 1,6	78 Pt 195 1,6	79 Au 197 1,6	80 Hg 201 1,6	81 Tl 204 1,6	82 Pb 207 1,6	83 Bi 209 1,6	84 Po 209 1,6	85 At 210 1,6	86 Rn 222 1,6	87 Fr 223 1,6	88 Ra 226 1,6	89 Ac 227 1,6	90 Th 232 1,6
91 Pa 231 1,6	92 U 238 1,6	93 Np 237 1,6	94 Pu 244 1,6	95 Am 243 1,6	96 Cm 247 1,6	97 Bk 247 1,6	98 Cf 251 1,6	99 Es 252 1,6	100 Fm 257 1,6	101 Md 258 1,6	102 No 259 1,6	103 Lr 262 1,6	104 Rf 261 1,6	105 Db 262 1,6	106 Sg 266 1,6	107 Bh 264 1,6	108 Hs 277 1,6