

**GAUTENG DEPARTMENT OF EDUCATION
PROVINCIAL EXAMINATION
JUNE 2019
GRADE 9**

NATURAL SCIENCES

NAME OF LEARNER: _____

GRADE: 9 _____

MARKS: 100

TIME: 2 hours

22 pages + 1 data sheet

QUESTION	1	2	3	4	5	6	7	8	9	10	11	TOTAL
LEARNER MARK												
MARKS	8	6	6	9	14	10	7	6	14	10	10	100

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TIME: 2 hours

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INSTRUCTIONS AND INFORMATION

- 1 Write your name, surname and class on this question paper that serves as an answer sheet.
- 2 Answer ALL questions on the question paper provided.
- 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 ELEVEN questions.
- 6 All drawings should be done in pencil and labelled in blue or black ink.
- 7 Write neatly and legibly.

SECTION A**QUESTION 1: MULTIPLE-CHOICE QUESTIONS**

- 1 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 one of the following organelles is found in both plant and animal cells?

- A Cell wall
- B Chloroplast
- C Cell Membrane
- D Large vacuole

(1)

1.2 The part of the excretory system where urine is stored before it is excreted is the ...

- A kidney.
- B ureter.
- C urethra.
- D bladder.

(1)

1.3 The elements that lie to the left of the zigzag line on the periodic table are ...

- A gases.
- B metal.
- C semi-metals.
- D non-metals.

(1)

1.4 The removal of metabolic waste products such as urine, sweat and carbon-dioxide from the body is called...

- A excretion.
- B digestion.
- C absorption.
- D exhalation.

(1)

1.5 A pH meter (pH scale) detects 3.06 for a substance. The substance is...

- A an acid.
- B a base.
- C neutral.
- D an ion.

(1)

1.6 The prefix in "di" in diatomic atoms means...

- A one.
- B two.
- C three.
- D four.

(1)

1.7 Which process is shown in the diagram below...



- A Implantation
- B Fertilization
- C Ovulation
- D Gestation

(1)

1.8 Select the letter of the diagram where digestion and absorption take place.



A



B



C



D

- A Diagram A
- B Diagram B
- C Diagram C
- D Diagram D

(1)
[8]

QUESTION 2**TERMINOLOGY**

2 Give the correct scientific term for each of the following descriptions. Write only the term in the spaces provided.

2.1 The organelle in a cell that carries hereditary information

(1)

2.2 The place where the embryo develops and grows

(1)

2.3 The blood that is rich in oxygen and nutrients

(1)

2.4 An arrangement of elements according to their properties in an organized pattern

(1)

2.5 The monthly breakdown and discharge of the uterus lining

(1)

2.6 A compound that is formed when non-metal burns in oxygen.

(1)

[6]

QUESTION 3**MATCHING ITEMS**

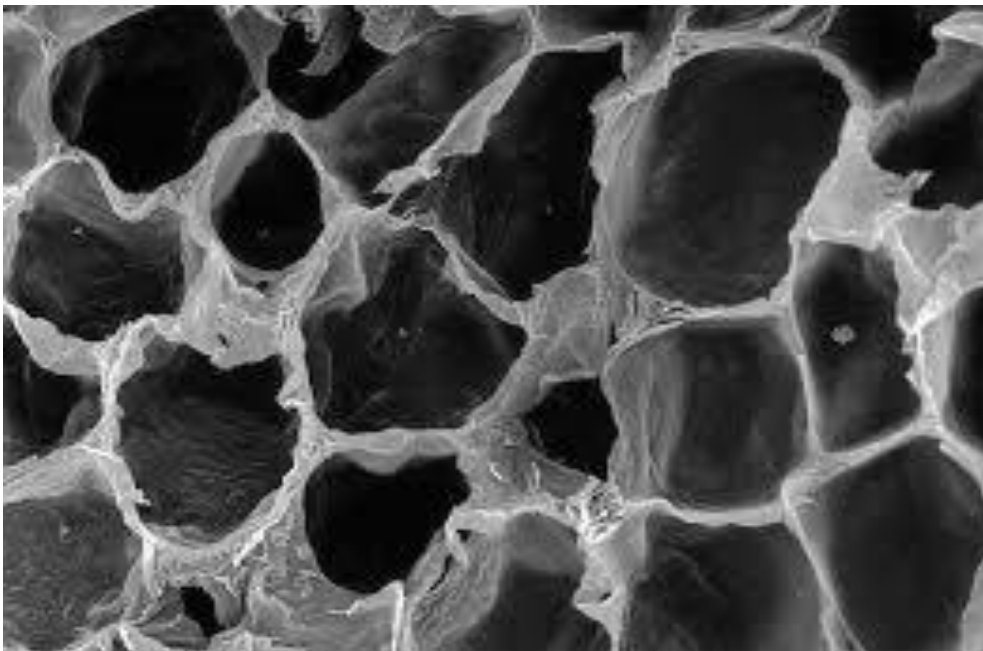
- 3 Choose an item from COLUMN B that matches a statement in COLUMN A. Write only the letter (A – J) next to the question number (3.1 – 3.6) in the space provided:

COLUMN A	COLUMN B	
3.1 A piece of glass that is specially curved to produce an enlarged image of an object	A Arteries	3.1 _____
3.2 Ensuring that the total number and type of atoms of the reactants is the same as the products	B Photosynthesis	3.2 _____
3.3 Blood vessels transporting blood away from the heart	C Wet mount	3.3 _____
3.4 The process in which plants use chlorophyll to convert radiant energy into sugar	D Veins	3.4 _____
3.5 Chemical substances that make food last longer and / or add flavor	E Rust	3.5 _____
3.6 Red-brownish solid formed by the reaction of iron and oxygen in the presence of water	F Magnifying lens	3.6 _____
	G Additives	
	H Balancing	

[6]**TOTAL SECTION A:****20**

SECTION B**LIFE AND LIVING****CELLS AS BASIC UNITS OF LIFE****QUESTION 4**

4 Study the micrograph below and answer the questions that follow.



4.1 Are the above tissues from a plant- or an animal cell?

(1)

4.2 Give ONE observable reason for your answer.

(1)

4.3 Draw and label the general structure of a cell from the above tissues.

(4)



4.4 Briefly explain why it is important for the mitochondria to be present in both plant and animal cells.

(2)

4.5 State ONE difference between a plant cell and an animal cell.

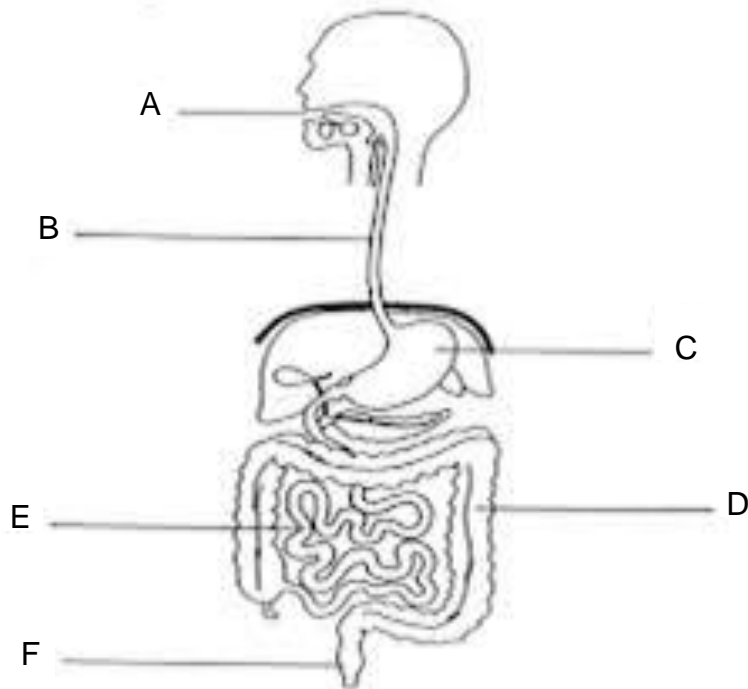
PLANT CELL	ANIMAL CELL

(1)

[9]

QUESTION 5**THE HUMAN DIGESTIVE SYSTEM**

5.1 Study the diagram on the human digestive system and answer the questions that follows.



5.1.1 Label parts B, D and F.

B _____ (1)

D _____ (1)

F _____ (1)

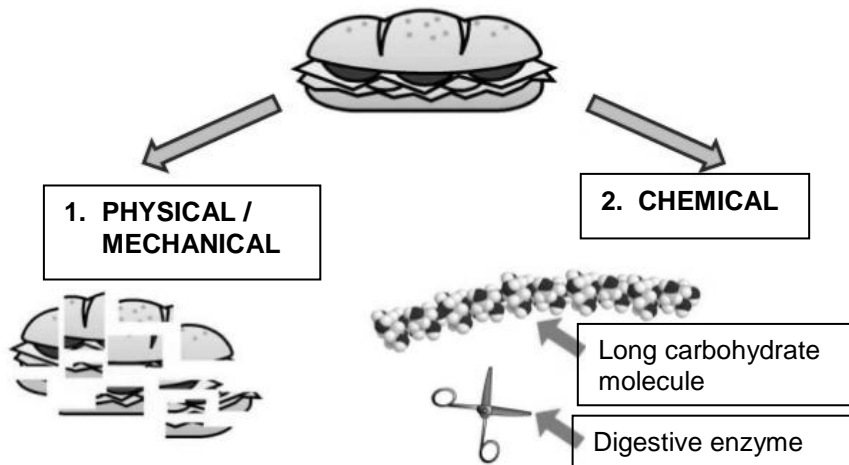
5.1.2 Write down the processes that occur in parts A and C.

A _____ (1)

C _____ (1)

5.2 Study the following diagram and answer the questions that follow.

Food is broken down by two actions:



5.2.1 Digestion is an important part of our nutrition. Briefly distinguish between mechanical and chemical digestion.

1 Mechanical

(2)

2 Chemical

(2)

5.3 Read the text and answer the questions that follow.

Thembi, Sheina and Roxy are participants in the school's beauty contest. They want to be in the final top three. The girls know that a balanced diet is going to play a major role in their success. They decided to use a food pyramid to work out their diets. The foods they have at their disposal are: chicken, spinach, olive oil, carrots, eggs, fish, rice, milk, cheese, brown bread, apples, butter and bananas.

5.3.1 Explain what is meant with a *balanced diet*.

(2)

5.3.2 Do you think the above-mentioned foods will contribute to a balanced diet? Give a reason for your answer.

(2)

5.3.3 Name the health disorder that leads to rejection of all food types due to an obsession with losing weight.

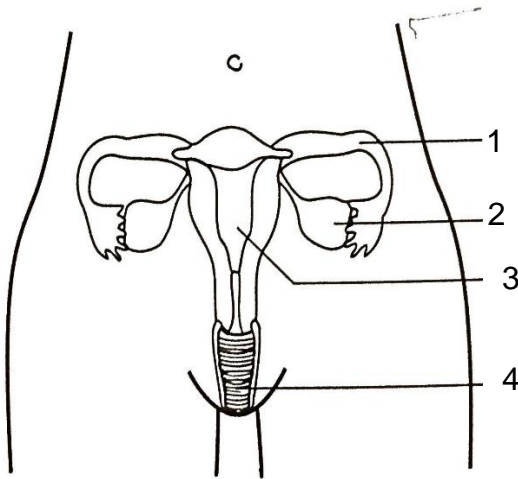
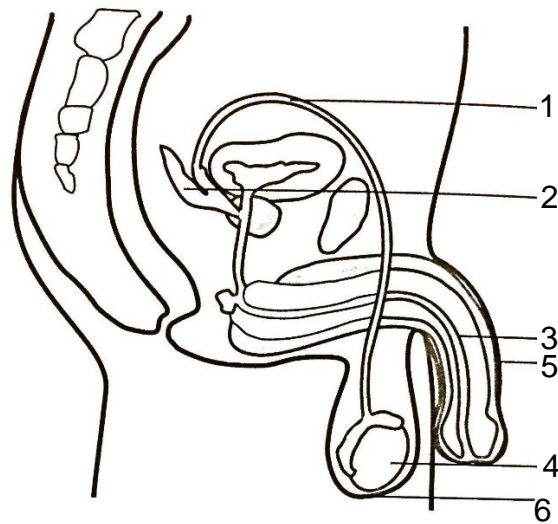
(1)

[5]

[14]

QUESTION 6**HUMAN REPRODUCTIVE SYSTEM**

6.1 Study the diagrams below and answer the questions that follow.

**STRUCTURE A****STRUCTURE B**

6.1.1 Identify Structure A and Structure B.

Structure A _____ (1)

Structure B _____ (1)

6.1.2 Label the part marked 3 in Structure A.

Part 3 _____ (1)

6.1.3 In which part of structure A does fertilization take place? Give the name of the part.

_____ (1)

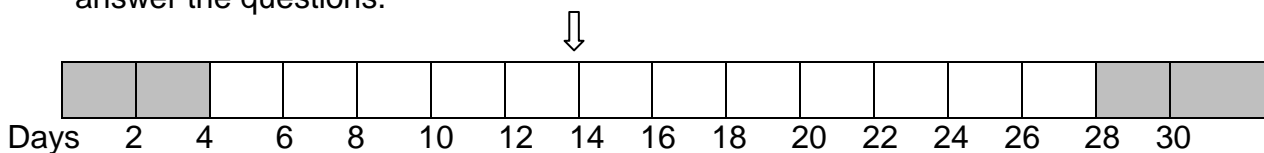
6.1.4 State the function of the part labeled 1 in Structure B.

(1)

6.1.5 If the part labeled 1 in Structure B is tied, explain how this will prevent a female from falling pregnant.

(2)

6.2 The following diagram represents the menstrual cycle. Study the diagram and answer the questions.



6.2.1 What process will occur on day 14?

(1)

6.2.2 How long is a menstrual cycle usually?

(1)

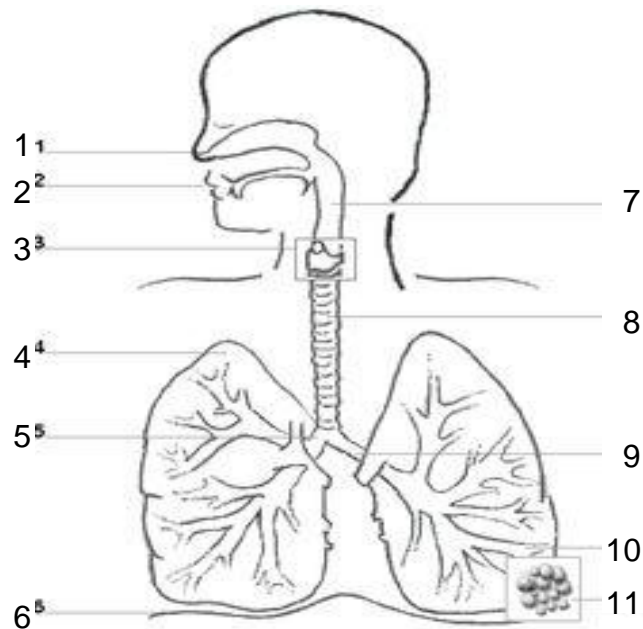
6.2.3 Of what importance is the thickening of the uterine wall?

(1)

[10]

QUESTION 7**RESPIRATORY SYSTEM**

7 Study the diagram. The questions are based on the diagram below.



7.1 Identify the system illustrated by the diagram above.

(1)

7.2 Which system in a human body goes hand in hand with the system mentioned in 7.1?

(1)

7.3 Suggest a reason why you think the two above-mentioned systems work hand in hand.

(3)

7.4 Differentiate between an *artery* and a *vein*.

Artery: _____

(1)

Vein: _____

(1)

[7]

SECTION C**MATTER AND MATERIALS****QUESTION 8****THE PERIODIC TABLE OF ELEMENTS**

8.1 Complete the following table using a Periodic Table of Elements.

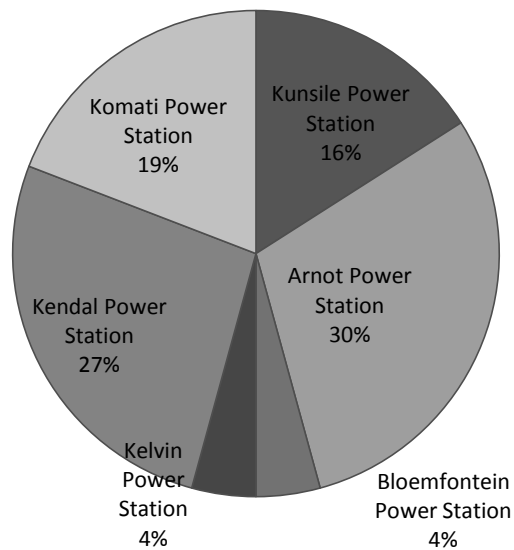
Write only the answer in the provided space in the table:

Symbols of elements	Atomic number	Mass number	Number of neutrons	Name of elements
11 Na	11	23	a. _____	b. _____
14 C	c. _____	14	d. _____	Carbon
56 Fe	e. _____	56	30	f. _____

(6)

QUESTION 9**NON-METALS WITH OXYGEN**

Power stations burn coal to generate electricity. The burning of coal releases carbon dioxide and sulfur dioxide gas into the atmosphere which can dissolve in rain water and make the rain acidic. Carbon dioxide reacts with the rain water to form carbonic acid. A study was done to find out which power station contributes the most to acid rain. The pie chart below shows a few power stations in South Africa and how much coal they burn.

Power Stations in South-Africa

9.1 Write a word equation for the formula of Carbonic acid.


(3)

9.2 Convert the above word equation into a balanced chemical equation.

(3)

9.3 Use the following key and draw a picture equation for the reaction in 9.2 in the space provided:

Key:

O - 

C - 

H - 

(3)

- 9.4 Analyse the data from the pie chart. Draw a conclusion about which power station contributes the most to acid rain. Give a reason for your answer.

(3)

- 9.5 State TWO negative impacts of acid rain on the environment.

(2)

[14]

QUESTION 10

ACIDS, BASES AND THEIR pH-VALUE

The table below shows the colours of universal indicator in a few substances. Answer the questions that follow.

SUBSTANCE	COLOUR OF SUBSTANCE IN UNIVERSAL INDICATOR
A	Purple
B	Green
C	Blue
D	Orange
E	Red

10.1 What is a *universal indicator*?

(2)

10.2 Use the letters from the table to indicate substances that are acids.

(2)

10.3 Indicate, using the letters from the table, the substances that are bases.

(2)

10.4 Which substance could be distilled water?

(1)

10.5 Give a reason for your answer in 10.4.

(1)

10.6 Write possible pH values for substances D and E.

(2)

[10]

QUESTION 11**NEUTRALISATION AND pH**

Read the extract below and answer the questions that follow:

Carbonates and hydroxides are often used to make antacids. A learner wanted to test the effectiveness of antacids to relieve heartburn caused by excess hydrochloric acid in the stomach. He crushed an antacid tablet and mixed it with water in a beaker, then he tested the pH of the solution. Next he poured diluted hydrochloric acid into another beaker and tested its pH. Lastly, the learner carefully poured the antacid mixture into the beaker with the acid and tested the pH of the solution formed.

11.1 Write a hypothesis for this investigation.

(2)

11.2 What results would the learner find if the antacid tablet was effective?

(1)

- 11.3 Write a balanced chemical equation for the reaction that occurs when the two solutions are mixed.

The word equation is:

Magnesium hydroxide + hydrochloric acid \rightarrow Magnesium Chloride + Water

(4)

- 11.4 Suggest what the learner could do to make sure that the results are reliable

(1)

- 11.5 Make TWO suggestions to ensure that the test is fair.

(2)

[10]

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)
1 H 1 2,1																	2 He 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
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
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
37 Rb 86 0,8	38 Sr 88 1,0	39 Y 89 1,2	40 Zr 91 1,4	41 Nb 92 1,8	42 Mo 96 1,8	43 Tc 99 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
55 Cs 133 0,7	56 Ba 137 0,9	57 La 139	72 Hf 179 1,6	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 Tl 204 1,8	82 Pb 207 1,8	83 Bi 209 1,9	84 Po 209	85 At 210	86 Rn 222
87 Fr 223 0,7	88 Ra 226 0,9	89 Ac															
			58 Ce 140	59 Pr 141	60 Nd 144	61 Pm 147	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 231	92 U 238	93 Np 237	94 Pu 244	95 Am 243	96 Cm 247	97 Bk 247	98 Cf 251	99 Es 252	100 Fm 257	101 Md 258	102 No 259	103 Lr 262	

KEY/SLEUTEL

Atomic number
*Atoomgetal*Electronegativity
*Elektronegatiwiteit*Symbol
*Simbool*Approximate relative atomic mass
Benaderde relatiewe atoommassa