GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

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

GAUTENG DEPARTMENT OF EDUCATION

PROVINCIAL EXAMINATION

JUNE EXAM 2019

NATURAL SCIENCES

TIME: 2 hours

MARKS: 100

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)

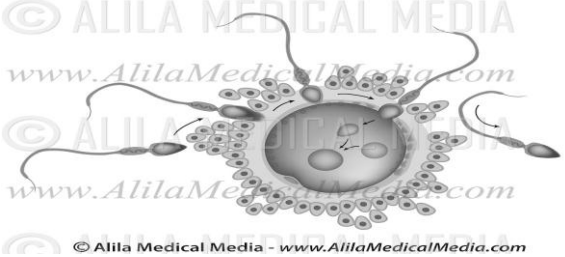
1.5 A pH meter (pH scale) detects 3.06 for a substance. The substance is…

A an acid.
B a base.
C neutral.
D an ion. (1)

1.6 The prefix in “di” in diatomic atoms means…

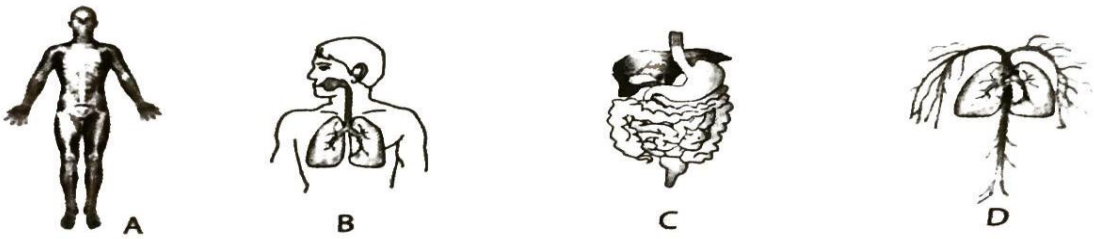
A one.
B two.
C three.
D four. (1)

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 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

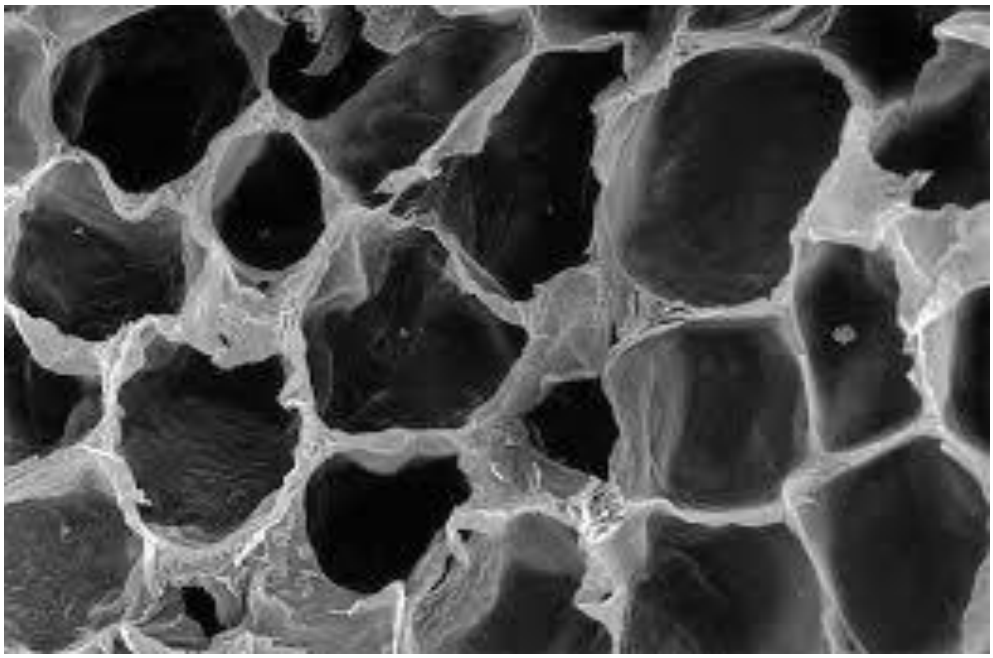
SECTION B

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

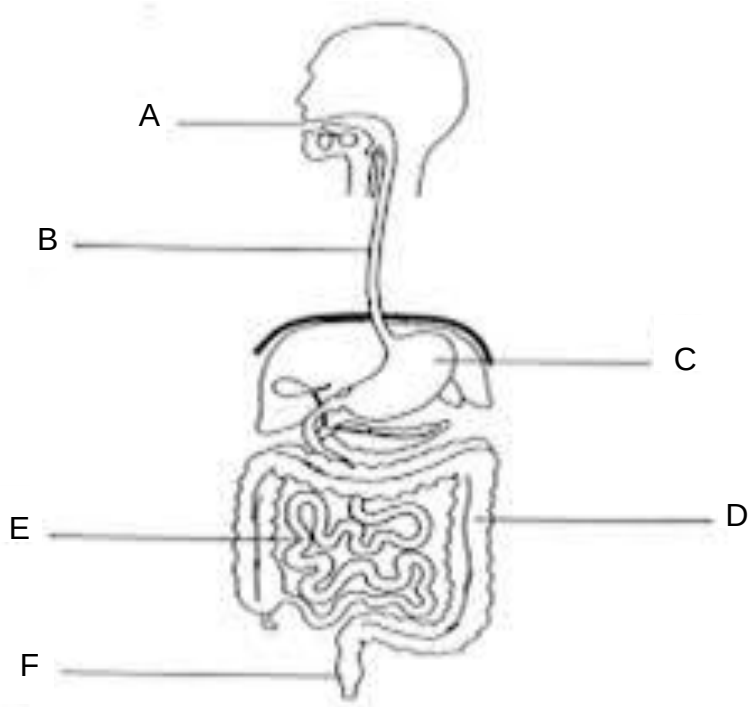
(1)

[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)

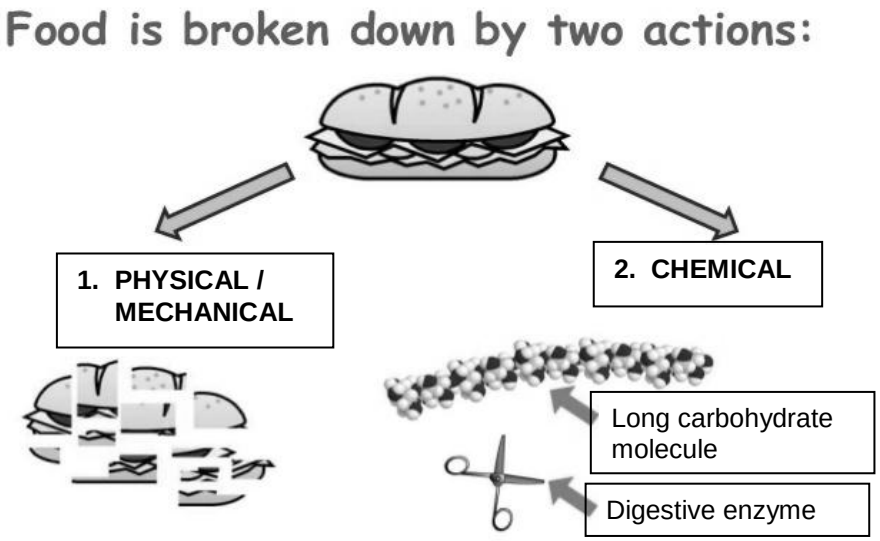
F _____ (1)

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.



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)

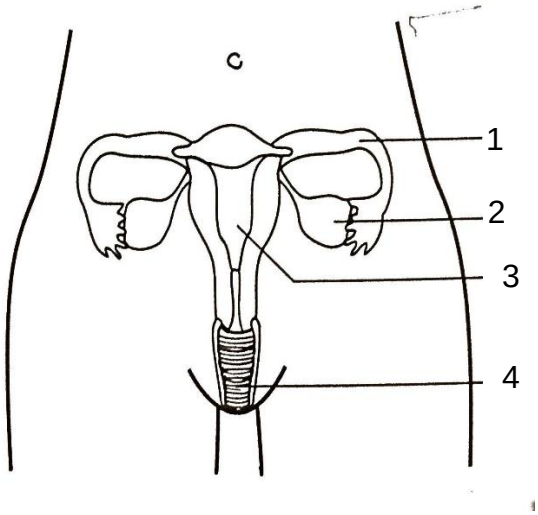
[5]

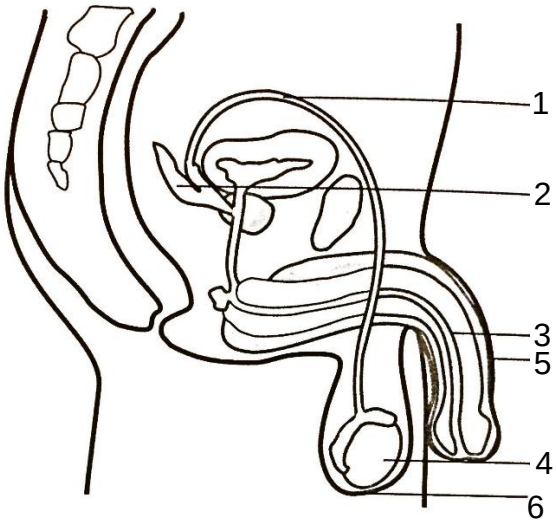
[14]

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)

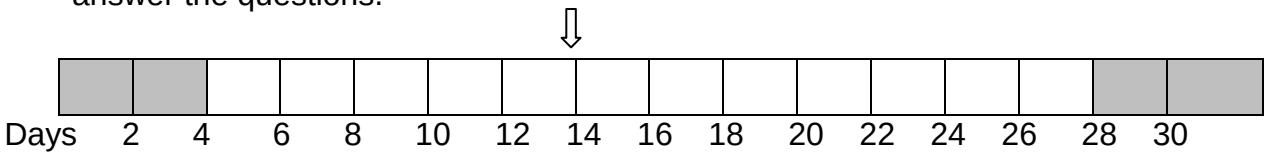
6.1.5 If the part labeled 1 in Structure B is tied, explain how this will prevent a female from falling pregnant.

_____

_____

_____ (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?

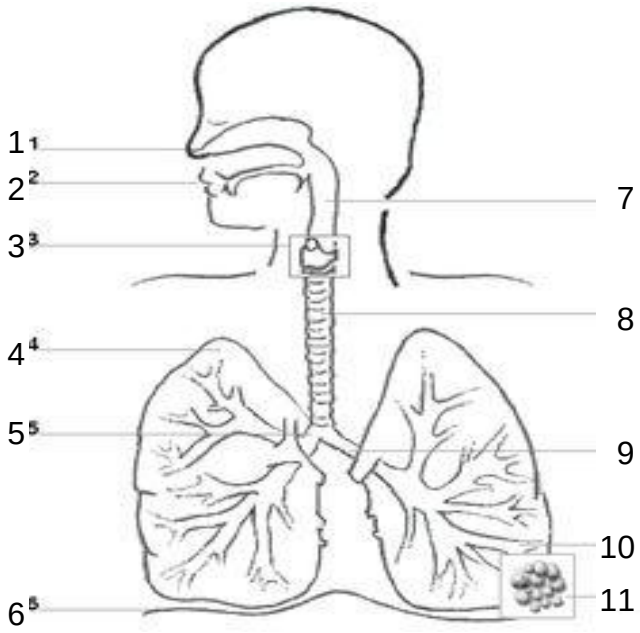
_____ (1)

[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:

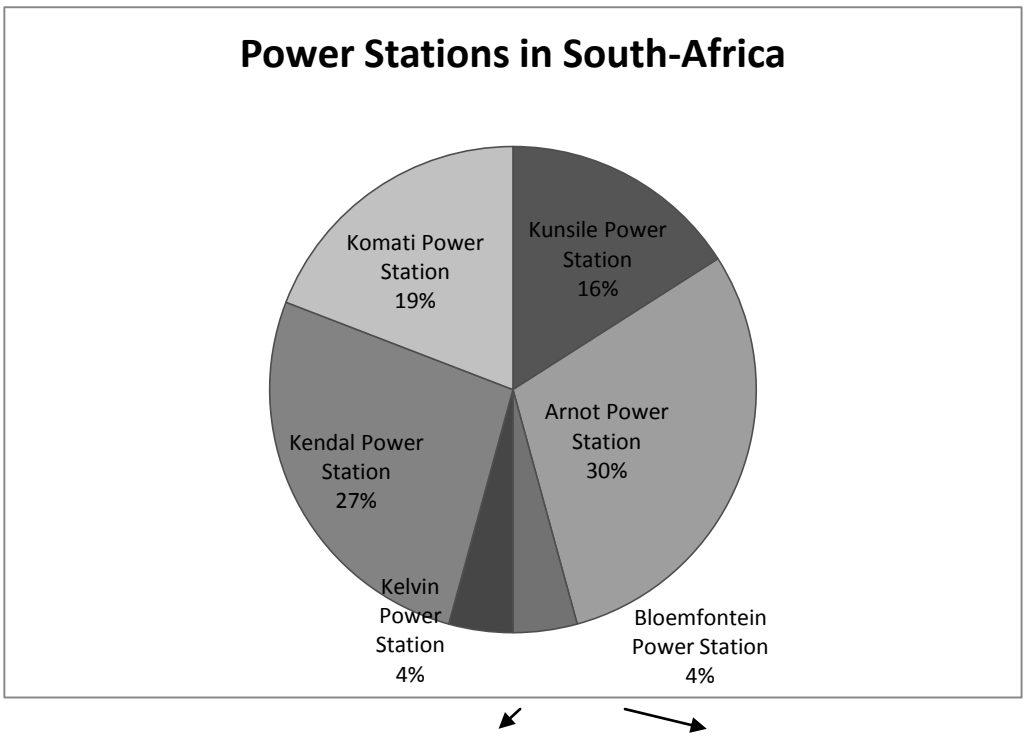
Symbols of elements	**Atomic number**	**Mass number**	**Number of neutrons**	**Name of elements**
11 Na	11	23	a. _____	b. _____
14 C	c. _____	14	d. _____	Carbon
56 Fe	e. _____	56	30	f. _____

(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.



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 -→ 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*

