GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

GAUTENG DEPARTMENT OF EDUCATION

EXEMPLAR 1

2020

LIFE SCIENCES

MAY/JUNE

QUESTION PAPER

GRADE : 11

TIME : 2½ hours

MARKS: 150

NUMBER OF PAGES : 18

GAUTENG DEPARTMENT OF EDUCATION

EXEMPLAR

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. Answer ALL the questions.
2. Write ALL the answers in your ANSWER BOOK.
3. Start the answers to each question at the top of a NEW page.
4. Number the answers correctly according to the numbering system used in this question paper.
5. Present your answers according to the instructions of each question.
6. ALL drawings should be done in pencil and labelled in blue or black ink.
7. Draw diagrams or flow charts only when asked to do so.
8. The diagrams in this question paper are NOT necessarily drawn to scale.
9. Do NOT use graph paper.
10. You must use a non-programmable calculator, protractor and a compass.
11. Write neatly and legibly.

SECTION A

QUESTION 1

1.1 Various options are provided as possible answers to the following questions. Choose the correct answer and write only the letter (A to D) next to the question number (1.1.1 to 1.1.10) in your ANSWER BOOK, for example 1.1.11 D.

1.1.1 The process that involves the removal of undigested food from the anus is called…

A egestion.
B excretion.
C secretion.
D digestion.

1.1.2 If all green plants in the world were destroyed, the atmospheric gas that would increase would be:

A Oxygen
B Nitrogen
C Carbon dioxide
D Hydrogen

1.1.3 The cartoon below illustrates the possible human impact on our environment.

Which ONE of the following basic requirements for human survival is produced by the innovative design, as illustrated in the cartoon?

A Water
B Oxygen
C Antibodies
D Optimum body temperature

1.1.4 Which micro-organism is not classified into a kingdom?

A Fungus
B Virus
C Bacterium
D Protozoan

1.1.5 The capsid of the virus is a…

A protective protein coat.
B method of reproduction.
C nucleic acid.
D nuclease enzyme.

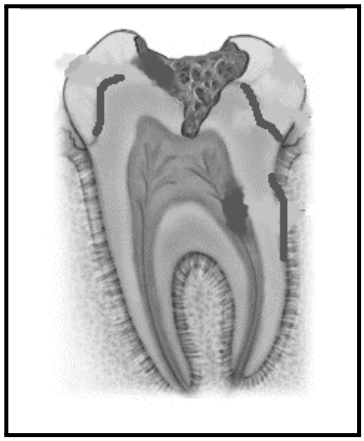
1.1.6 All viruses are …

A unicellular and disease-causing.
B acellular and non-living.
C eukaryotes.
D cellular in structure.

1.1.7 Deamination occurs in the …

A stomach.
B jejunum.
C liver.
D Ileum.

1.1.8 Which of the following elements are thought to decrease the incidence of the condition shown in the diagram, if added to drinking water?



A Fluoride
B Chlorine
C Oxygen
D Calcium

1.1.9 Which of the following is present in the Bryophytes?

A Seeds
B Xylem
C Spores
D Flowers

1.1.10 The stomach is protected against bacterial invasion by …

A hydrochloric acid.
B mucus.
C enzymes.
D white blood cell. (10x2) **(20)**

1.2 Give the correct **Biological Term** for each of the following descriptions. Write only the term next to the question number (1.2.1 to 1.2.8) in your ANSWER BOOK.

1.2.1 The pigment in plants that traps radiant energy for photosynthesis

1.2.2 Finger-like projections in the wall of the small intestine for absorption

1.2.3 The indicator used to test for the presence of starch

1.2.4 The type of alimentary canal which stretches from the mouth to the

1.2.5 anus

An evolutionary trend in the animal kingdom toward centralization of

1.2.6 neural and sensory organs in the head or anterior region of the body

1.2.7 Yellow, green alkaline liquid that has no enzymes

1.2.8 An important energy carrier in cells

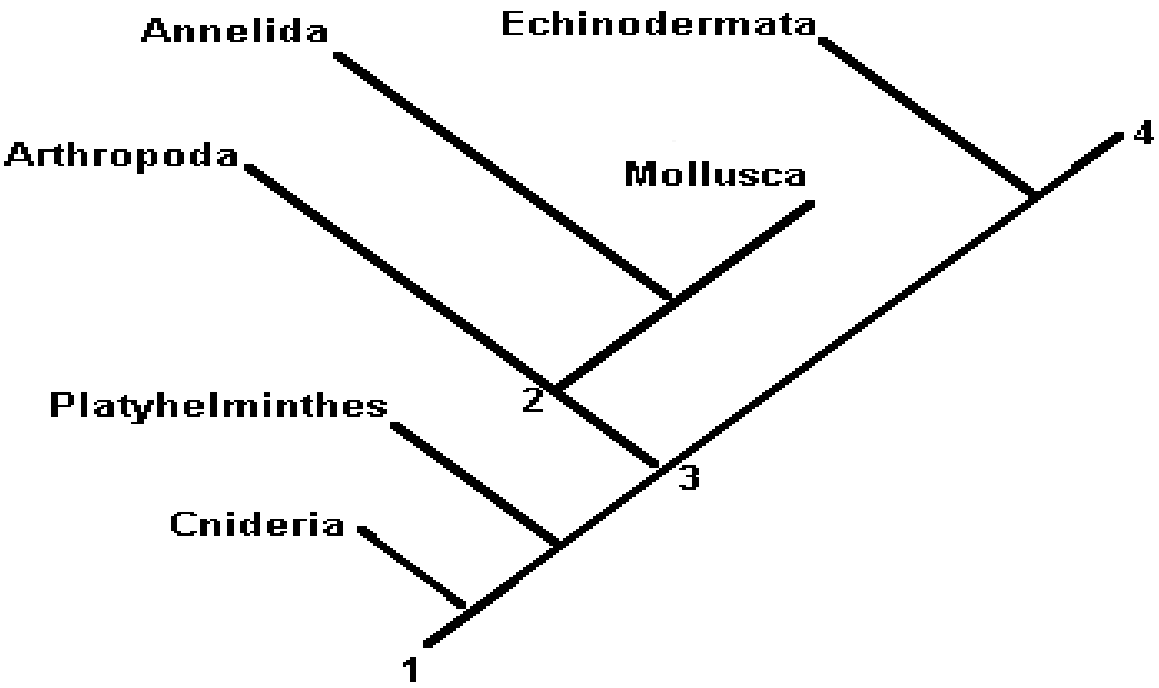
The energy used for photosynthesis **(8)**

1.3 Indicate whether each of the statements in COLUMN I applies to **A ONLY**, **B ONLY**, **BOTH A AND B or NONE** of the items in COLUMN II. Write **A only**, **B only**, **both A and B,** or **none** next to the question number (1.3.1 to 1.3.6) in the ANSWER BOOK.

	COLUMN I	COLUMN II
1.3.1	The body's response to the presence of disease-causing organisms before it has a chance to cause an illness	A: Immunity B: Vaccination
1.3.2	A substance found in the central part of a virus that affects animals	A: RNA B: DNA
1.3.3	The part of the flower from which the fruit develops	A: Calyx B: Corolla
1.3.4	Organism that causes ringworms, rust and thrush	A. Fungi B. Porifera
1.3.5	The rhythmic contraction of muscles to help move food through the alimentary canal	A: Hydrolysis B: Peristalsis
1.3.6	Can occur as saprotrophs, autotrophs or parasites	A: Fungi B: Bacteria

(6x2) **(12)**

1.4 Study the flow diagram and answer the questions that follow:



1.4.1 Give the scientific name for this diagram. (1)

1.4.2 Name one phylum in which the animals are mostly radial symmetrical. (1)

1.4.3 Which phylum was the first to evolve into bilateral symmetrical organisms? (1)

1.4.4 Is *Annelida* more related to *Arthropoda* or *Platyhelminthes*? Give a reason for your answer. (2)

1.4.5 Name the phylum that evolved last. (1)

1.4.6 Which number on the diagram represents the following?

a) The common ancestor (1)
b) The first point of diversion (1)

1.4.7 Give one example of a/an

a) Cnidarian (1)
b) Annelida (1)

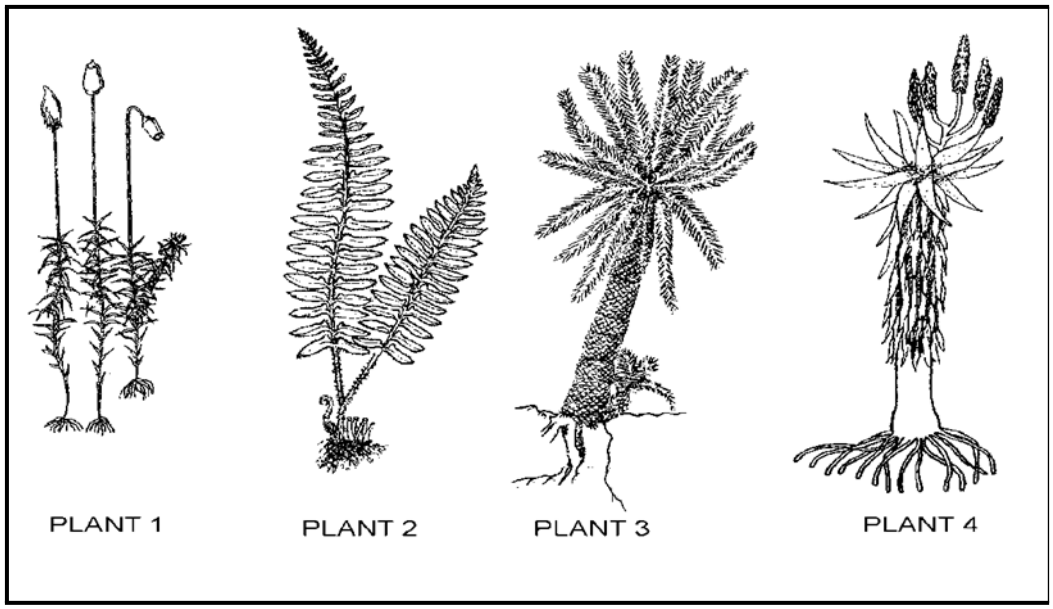
(10)

TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1 Study the diagrams below and answer the questions that follow



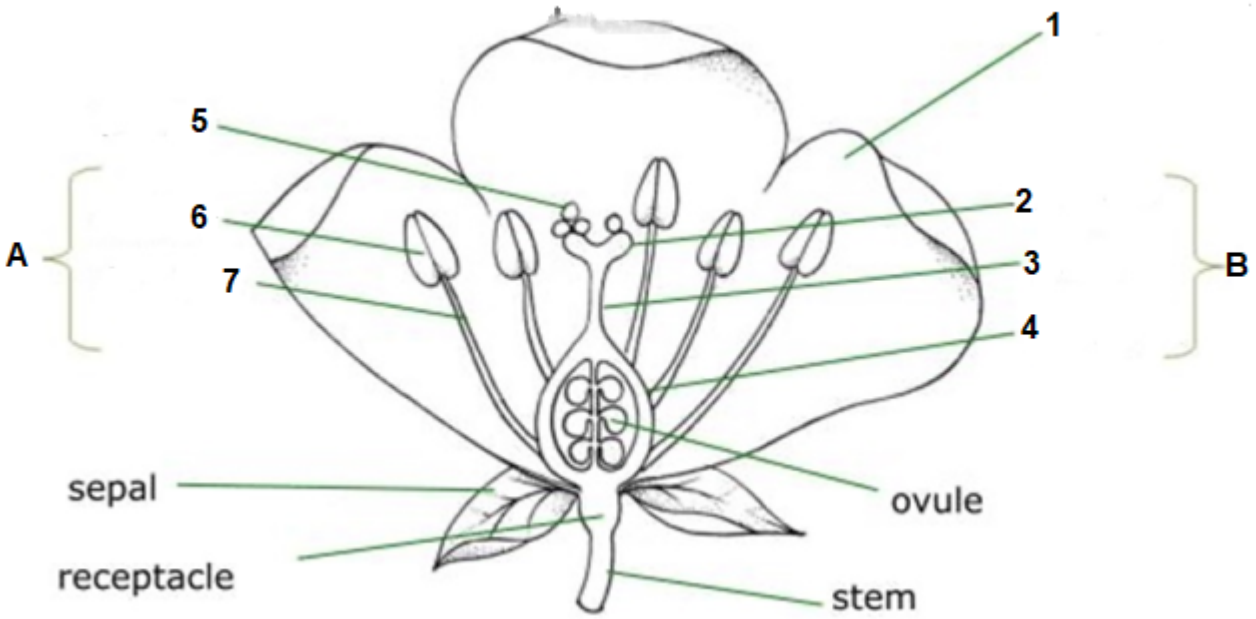
2.1.1 Identify the groups to which each of the above plants belong. (4)

2.1.2 Which of the four groups identified in QUESTION 2.1.1

(a) are dependent on water for fertilisation? (2)
(b) produce seeds for reproduction? (2)

2.1.3 Why are ferns and mosses poorly adapted to a terrestrial life? (2)
(10)

2.2 The diagram below shows the structure of a flower.
Answer the questions using the diagram and your knowledge.



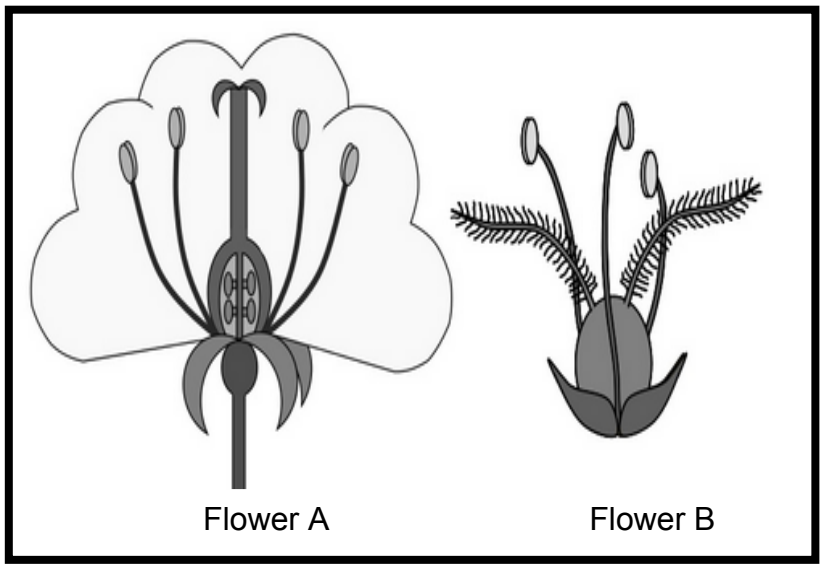
2.2.1 Identify the structures labelled **A** and **B** respectively. (2)

2.2.2 Describe one way in which structure numbered **2** is adapted for reproduction in plants. (1)

2.2.3 Name the process that occurs in part numbered **5.** (1)

2.2.4 Plants must spend a lot of energy to produce flowers.
Explain why it is still an evolutionary advantage to produce flowers in plants (6)
(10)

2.3 Study the diagram below and answer the questions that follow:

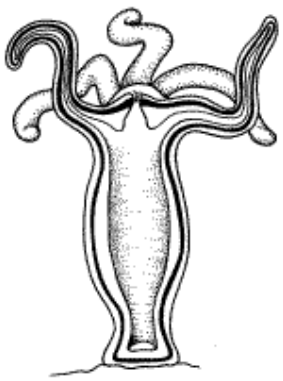


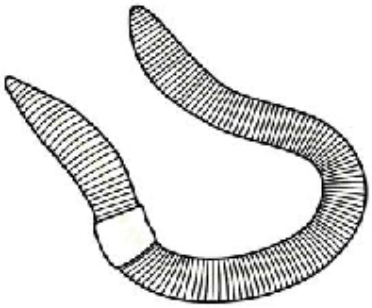
2.3.1 Name the pollinating agent for:

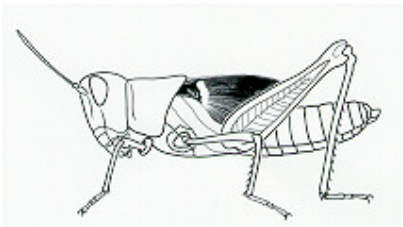
(a) Flower **A**
(b) Flower **B** (2)

2.3.2 Explain your answers using only structures visible in the diagram. (3)
(5)

2.4 Study the diagrams below on animal diversity and answer the questions that follow:


Organism A


Organism B

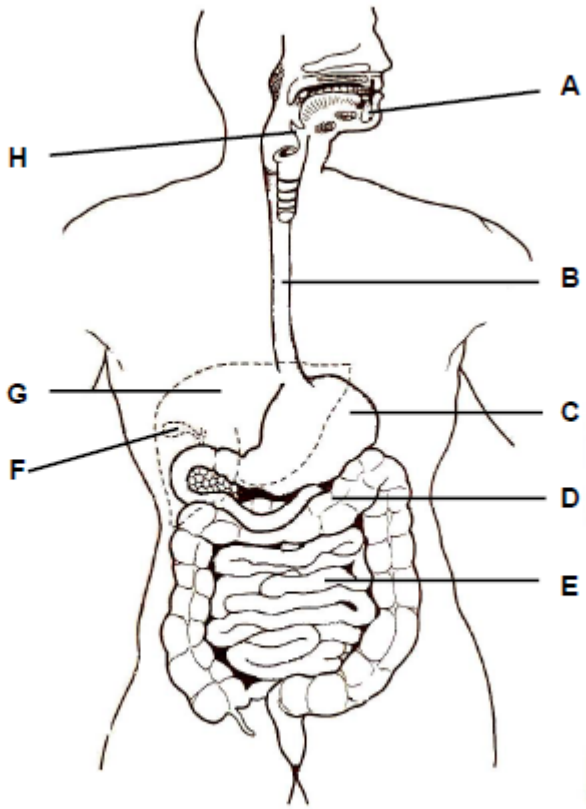

Organism C

ame the different phyla to which organisms **A**, **B** and **C** belong. (3)

entify organisms **A** and **B**. (2)

Which organisms **(A**, **B** or **C)** has the following characteristics?
(a) Triploblastic
(b) Cephalisation (4)
(9)

2.5 Study the diagram of the human alimentary canal and answer the questions that follow:



The human alimentary canal

ive the letter of ONE structure involved with each of the
llowing functions:
) Mastication
) Prevents choking
) Peristalsis
) Secretes hydrochloric acid
) Secretes intestinal juice (5)

tate THREE functions of the part labelled **G**. (3)

xplain TWO adaptations of structure **E** for the absorption of od. (4)
(12)

2.6 Study the following diagrams of differences between the dentition of herbivores, carnivores, and omnivores.

Diagram A **Diagram B** **Diagram C**

Which diagram (**A, B** or **C**) is representative of a carnivorous organism? (1)

Provide a reason for your answer in QUESTION 2.6.1. (1)

Identify the kind of digestion that takes place in the mouth. (1)

Identify the skull of a human from the above diagrams. (1)
(4)
[50]

QUESTION 3

3.1 The table below shows some results of a study which investigated the effect of different temperatures and levels of light on the growth of tomatoes. The amount of tomatoes produced by each plant is called the yield. The yield is measured in kilogram (kg) of tomatoes.

The yield of each plant was measured at different temperatures and light levels.

TEMPERATURE (°C)	YIELD (kg) at LOW LIGHT	YIELD (kg) at HIGH LIGHT
10	0.5	0.5
15	1.2	1.4
18	3.2	5.0
20	3.4	8.5
24	3.5	7.8
28	2.5	6.2

What is the best temperature for growing tomatoes? (1)

At which conditions were the highest yield of tomatoes? (2)

At which temperature does the light level not affect the yield? (1)

Why was there hardly any change in yield between 18°C and 24°C when the tomatoes were grown at low light levels? (2)

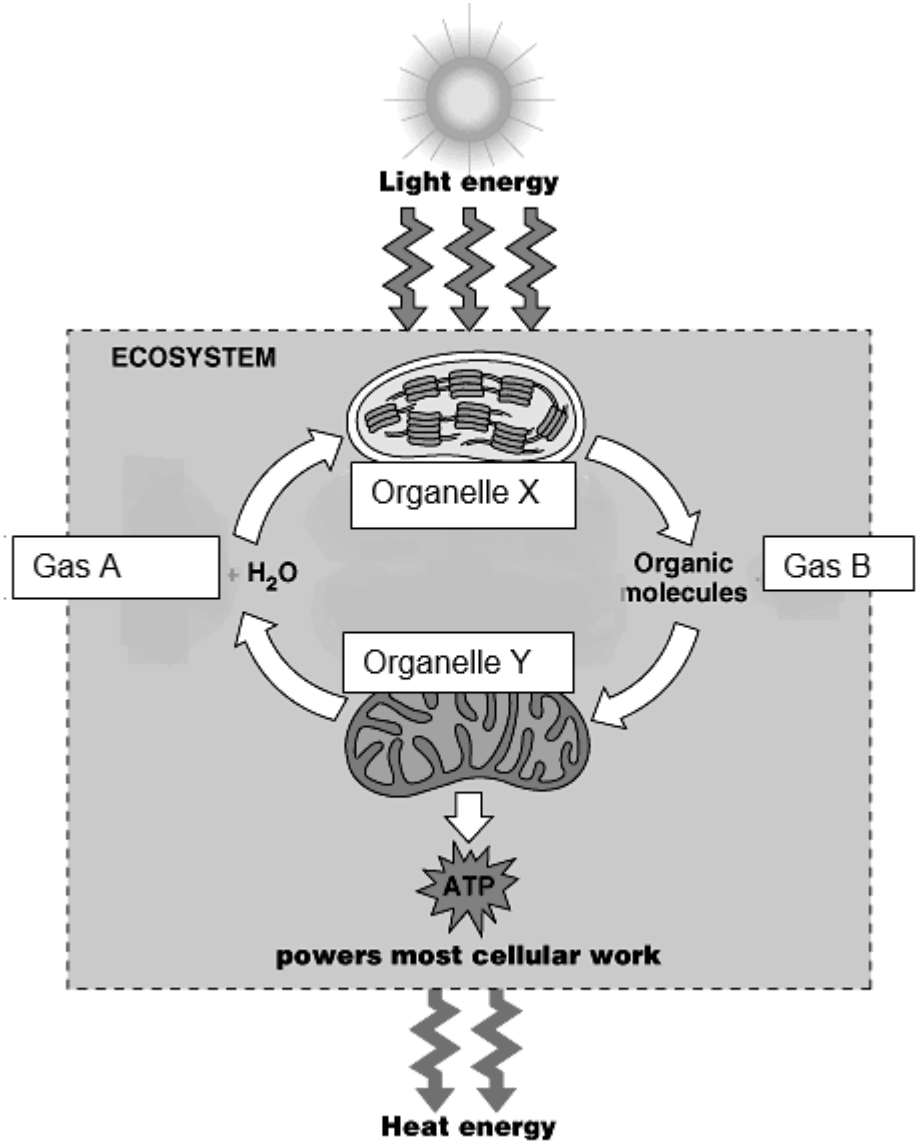
ame the independent variables in this experiment. (2)

ame the dependent variable in this experiment. (1)

he data above shows how temperature and the amount of light ffect the yield of tomatoes.

(a) Name another abiotic factor, besides light and temperature that affects the rate of photosynthesis. (1)

3.2 The flow diagram below shows two biochemical processes that are related to each other as the products of the one process is the raw materials in the other.



Identify organelles **X** and **Y** respectively. (2)

Name the pigment found in organelle **Y**. (1)

Explain the function of the pigment named in QUESTION 3.2.2. (1)

Identify the processes represented with organelle **X** and organelle **Y.** (2)

Name the gases labelled **A** and **B.** (2)

Explain a structural adaptation of organelle **Y** to perform its function. (2)
(10)

3.3 Read the passage below and answer the questions that follow:

COVID-19 pandemic

The **COVID19 pandemic**, also known as the **coronavirus pandemic**, is an ongoing pandemic of coronavirus disease 2019 (COVID19) caused by severe acute respiratory syndrome coronavirus 2 (SARSCoV2). The World Health Organization declared the outbreak a Public Health Emergency of International Concern on 30 January 2020.

The virus is spread primarily via small droplets from coughing, sneezing, and talking. People may also become infected by touching a contaminated surface and then touching their face.

Common symptoms include fever, cough, fatigue, shortness of breath or breathing difficulties, and loss of smell. The incubation period is typically around five days but may range from two to 14 days.

Recommended preventive measures include hand washing, covering mouth when coughing, social distancing, wearing a face mask in public, disinfecting surfaces, ventilating and air-filtering. Authorities worldwide have responded by implementing travel restrictions, lockdowns, workplace hazard controls, and facility closures to slow the spread of the disease.

Wikipedia, the free encyclopedia

(Redirected from 2019–20 Wuhan coronavirus outbreak

3.3.1 Identify the disease in the article that has caused international concern. (1)

3.3.2 Does this virus have a nucleus? (1)

3.3.3 *'The virus is spread primarily via small droplets from coughing, sneezing, and talking.'*

Why then must we sanitize our hands by washing them regularly? (2)

3.3.4 Why are antibiotics ineffective against viral diseases? (1)

3.3.5 Name FOUR symptoms that a person would display if they are positive for COVID -19. (4)

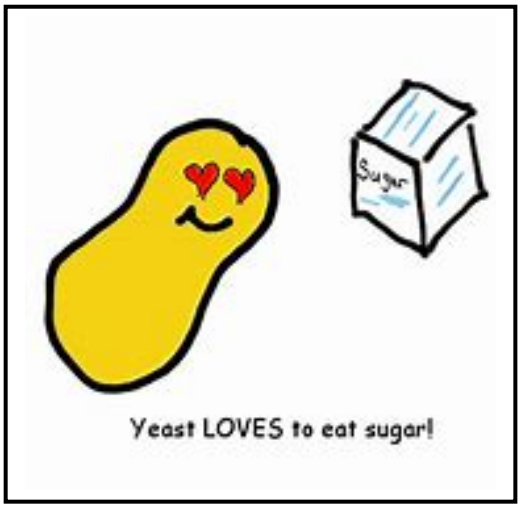
3.3.6 There are several vaccines in development, although none have completed clinical trials to prove their safety and efficiency.

Describe what happens in the immune system after a person is injected with a vaccine to prevent the person from getting the Corona Virus Disease. (5)

3.3.7 Name one method which the Government has employed to prevent the spread of the Corona Virus in South Africa. (1)

(15)

3.4 Micro-organisms derive their energy by a form of anaerobic respiration called 'Fermentation'. In industrial brewing processes, yeast is added to a sugary solution and left at 25°C. The sugars are converted to glucose and then this undergoes fermentation.



3.4.1 What are the products of fermentation? (2)

3.4.2 Name FOUR ways how the above-mentioned process can generate income in our industries. (4)

3.4.3 This type of biochemical process also occurs in animals.

(a) What product is produced in animal tissue? (1)
(b) What effect does this product have on the muscles? (1)

(c) Explain what the body does to ease the symptoms. (2)

(10)
[50]

TOTAL SECTION B: 100
GRAND TOTAL: 150