

553/1
**BIOLOGY
THEORY**
Paper 1
27th July 2022
2 Hours

Name :

Signature : Personal No :



KAMPALA WAKISO GIANT SCHOOLS' ASSOCIATION (KWGSA)

National Joint Mock Examination 2022

Uganda Certificate of Education

BIOLOGY THEORY

Paper 1

2 Hours

INSTRUCTIONS TO CANDIDATES

*This paper consists of **three** sections **A**, **B** and **C***

*Write **all** answers to section **A** and **B** and choose any **two** questions in Section **C***

*Write the answer for Section **A** in the boxes provided and write all answers to section **B** in the spaces provided.*

*Answers to Section **C**, must be written on the answer sheet provided*

Drawings and illustrations are to be drawn neatly

For Examiners' Use Only	
SECTION	SCORE
A : 1 – 30	
B : 31	
32	
33	
C : No.	
No.	
TOTAL	

SECTION A (30 MARKS)

Answer all questions in this section

1. Which **one** of the following organisms doesn't use blood to transport oxygen in its body?

A. Fish.

C. Snake.

B. Bee.

D. An earth worm.

☐

2. Which, among the following glands plays both endocrine and exocrine functions in the body?

A. Pituitary gland.

C. Pancreas.

B. Gastric gland.

D. Thyroid.

☐

3. Insects and worms are the main foods in the diet of toads. This means that the toads are;

A. Carnivores.

C. Amphibians.

B. Insectivores.

D. Herbivores.

☐

4. Simple aquatic plants containing Chlorophyll and usually not differentiated into roots, stems and hairy areas are

A. fungi.

C. mosses.

B. liver worms.

D. algae.

☐

5. A vertebra with a short neural spine and vertebrarterial canals belong to;

A. Cervical.

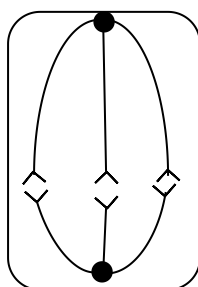
C. lumbar.

B. Thoracic region.

D. caudal region.

☐

6. What stage of cell division is shown in the diagram below.



A. Ana phase.

B. Pro phase.

C. Meta phase.

D. Telo phase.

☐

7. Which **one of** the following animals is said to have a longer gestation period?

A. Man.

C. Rabbit.

B. Elephant.

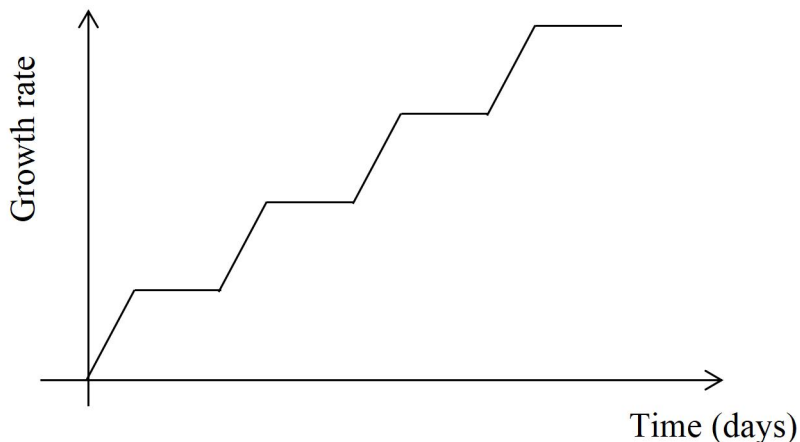
D. Guinea pig.

☐

8. Which of the following gases covers the highest percentage by composition in the exhaled air?

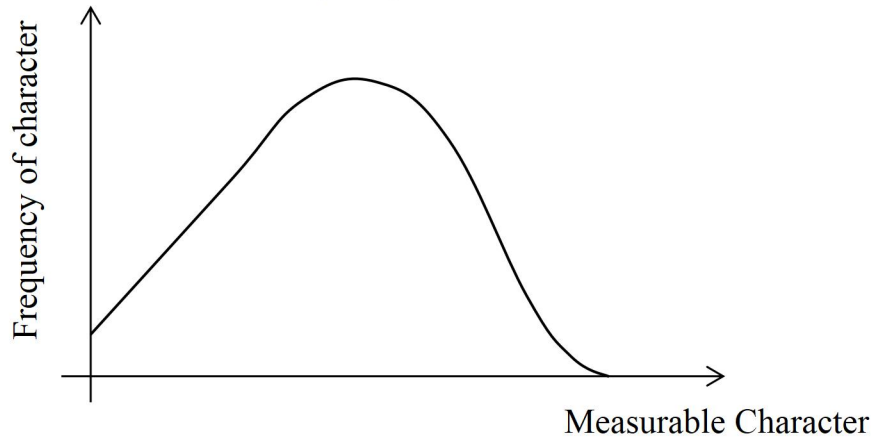
- | | | |
|--------------------|-----------------|---|
| A. Carbon dioxide. | C. Oxygen. | <input style="width: 50px; height: 40px;" type="text"/> |
| B. Nitrogen. | D. Water vapor. | |
9. A certain nerve cell has the following characteristics;
- (i) Short dendrons.
 - (ii) long axon
 - (iii) terminal cell body.
- The nerve cell is likely to be;
- | | | |
|-------------------|-----------------|---|
| A. Motor nerve. | C. Relay nerve. | <input style="width: 50px; height: 40px;" type="text"/> |
| B. Sensory nerve. | D. Reflex arc. | |
10. The main advantage brought by chromosomes crossing over during pro phase 1 of meiosis is;
- A. genetic variation.
 - B. formation of four daughter cells.
 - C. sex linkage.
 - D. cell entering into meta phase 1.
-
11. Which of the following features of birds does not aid them during flight?
- | | | |
|---------------------|-------------------|---|
| A. Rectalis muscle. | C. Hollow bones. | <input style="width: 50px; height: 40px;" type="text"/> |
| B. Quill feather. | D. Down feathers. | |
12. When **one** enters a dark room, he is able to see clearly after some time. This is due to presence of;
- | | | |
|----------|----------------|---|
| A. Cons. | C. Retina. | <input style="width: 50px; height: 40px;" type="text"/> |
| B. Rods. | D. Blind spot. | |
13. Which **one** of the following is not an adaptation of the ileum to absorption of products or digestion?
- A. Presence of very many villi.
 - B. Being very long.
 - C. It is between the duodenum and the colon.
 - D. Has thin epithelium
-
14. Binary fission describe a type of reproduction where an organism divides to form
- | | | |
|-------------------|-----------------------|---|
| A. many spores. | C. many buds. | <input style="width: 50px; height: 40px;" type="text"/> |
| B. two daughters. | D. numerous rhizomes. | |
15. Which, among the following will prevent soil erosion?
- | | | |
|----------------------------|-----------------------------|---|
| A. Regular hoeing. | C. addition of fertilizer. | <input style="width: 50px; height: 40px;" type="text"/> |
| B. Growth of grass plants. | D. ploughing down the slope | |

16. The graph below shows the growth pattern of an organism.



- Which of the following organisms has the above growth pattern?
- | | | |
|----------------|----------------|--------------------------|
| A. Amphibians. | C. Arthropods. | <input type="checkbox"/> |
| B. Mammals. | D. Reptiles. | |
17. Which **one** of the following is not an animal specialized cell?
- | | | |
|--------------------|-------------------|--------------------------|
| A. Neurone. | C. Sperm cell. | <input type="checkbox"/> |
| B. Red blood cell. | D. Palisade cell. | |
18. The pioneer organism during primary succession on the bare rock are the;
- | | | |
|-------------|-------------|--------------------------|
| A. Herbs. | C. Mosses. | <input type="checkbox"/> |
| B. Grasses. | D. Lichens. | |
19. Which **one** of the following relationship is parasitic?.
- | | |
|---|--------------------------|
| A. Nitrifying bacteria in the root nodules. | <input type="checkbox"/> |
| B. Fungus and algae. | |
| C. Ticks living on skin of a cow getting blood. | |
| D. Hen picking biting flies from the cow.. | |
20. The gene for normal skin (**A**) is dominant over the gene for albinism (**a**). An albino man married a carrier woman, what would be the genotype of the children?
- | | | |
|-------------|---------------|--------------------------|
| A. AA only. | C. Aa and aa. | <input type="checkbox"/> |
| B. aa Only. | D. Aa only. | |
21. Which of the following methods is most effective method of controlling pregnancy?
- | | |
|-------------------------------------|--------------------------|
| A. Use of safe days. | <input type="checkbox"/> |
| B. Use of condoms. | |
| C. Use of oral contraceptive pills. | |
| D. Abstaining from sex. | |

22. The graph below shows the frequency of a certain character in humans.



Which of the following characters conforms to the above group?

- A. Blood group.
B. Thumb print.

- C. Eye colour.
D. Intelligence.

☐

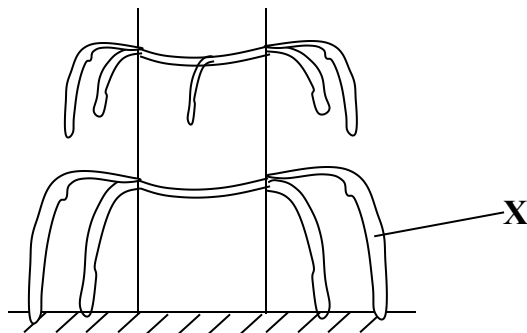
23. Hydrolysis of lactose gives?

- A. Glucose and galactose.
B. Glucose only.

- C. Glucose and fructose.
D. Galactose and fructose.

☐

24. The **figure** below shows the part of a plant



The root modification by **X** in the figure is used for;

- A. Storage of food materials.
B. Extra support.

- C. Breathing.
D. excretion.

☐

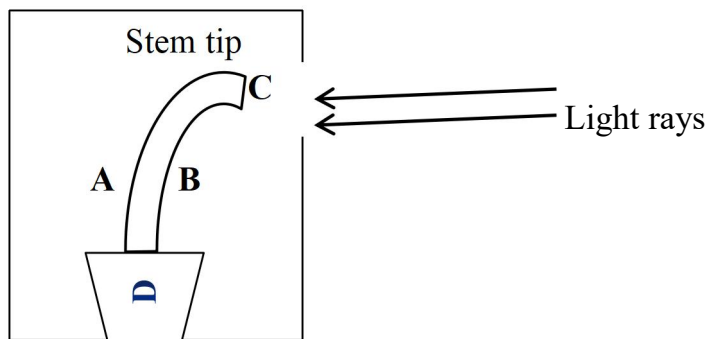
25. Which **one** of the following enzymes appears in both pancreatic juice and ileum juices?

- A. Lipase.
B. Maltase.

- C. Peptidase.
D. Sucrase.

☐

26. The figure below shows the coleoptile enclosed in a box with light coming from a single direction



Which region of the tip has the highest concentration of auxin?

- A. C. C. B.
B. A. D. D.

☐

27. Which **one** of the following is an advantage of sexual reproduction?

- A. It is enjoyable and brings satisfaction.
B. Promotes variation among off springs.
C. Rapid multiplication of special number.
D. Maintenance of special characters.

☐

28. Which **one** of the following is not a function of blood in the body?

- A. Defence. C. Temperature regulation.
B. Protection. D. Digestion.

☐

29. What is the physiological advantage of the existence of testis outside the body of mammals

- A. The scrotum are well protected between the thighs.
B. The testes hang loosely and freely in the scrotum.
C. Sperms swim freely and actively in such environments.
D. Sperms develop better below 37°C.

☐

30. The mouth parts of a housefly is described as;

- A. Piercing. C. Biting.
B. Sucking D. Cutting.

☐

SECTION B (40 MARKS)

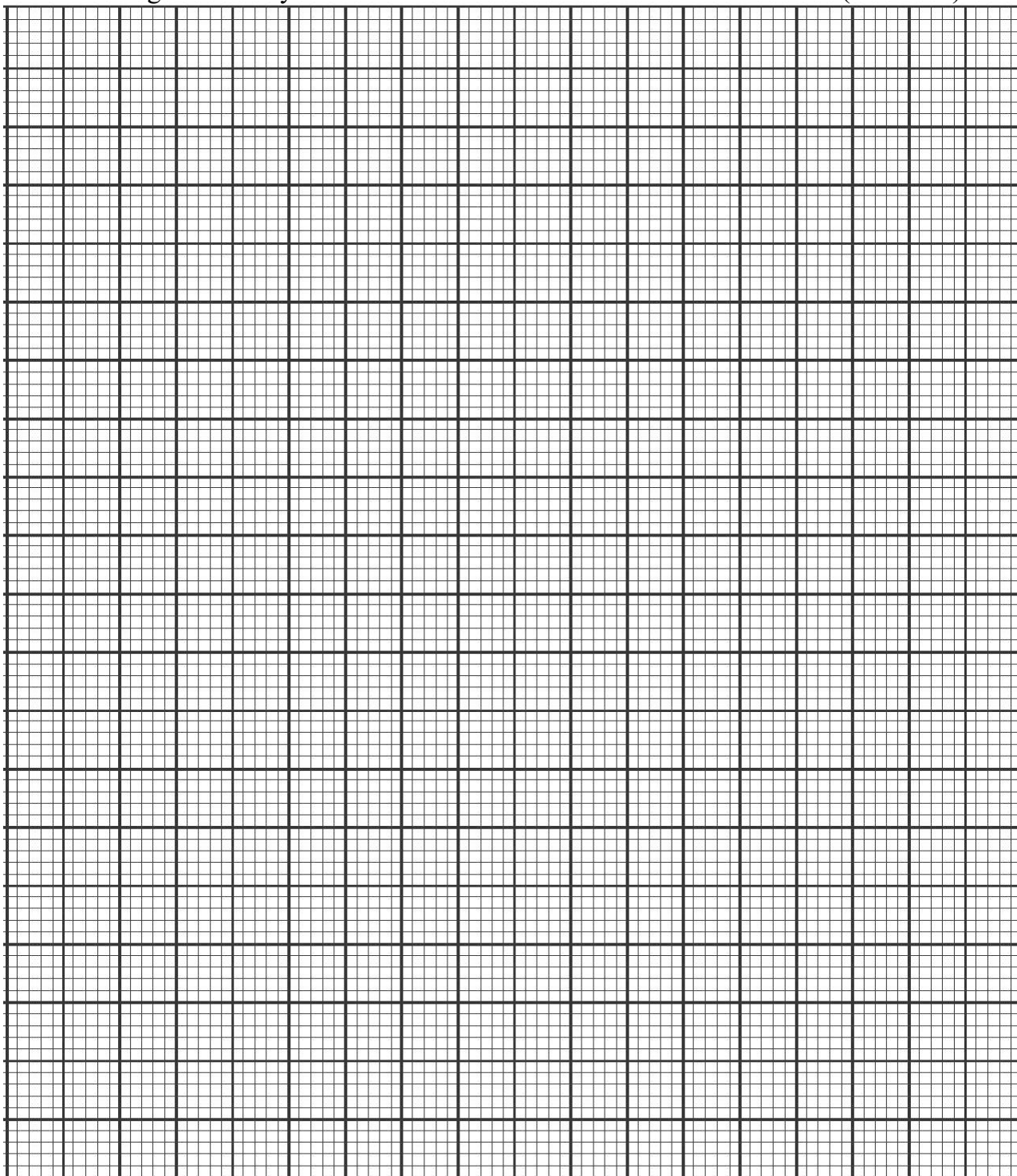
*Answer **all** questions in this section*

All answers to this section must be written in the spaces provided

31. An ecologist carried out a survey on the population of two organisms **A** and **B** in the locality. He recorded the population changes for the organisms as shown in the table below

Time (Years)		1960	1965	1970	1975	1980	1985	1990	1995
Population ($\times 10^6$)	Animal A	32	58	74	96	116	86	52	21
	Animal B	20	36	59	80	110	118	66	36

- (a) On the same axis, draw a graph to show how the population of the organisms vary with time. (08 marks)



- (b) Describe how the population of the organisms vary with time. (03 marks)

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- (c) Give reasons for the shape of the graph for organism **A** between (02 marks)
- (i) 1960 and 1980

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.....

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- (ii) 1980 and 1995 (02 marks)

.....

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.....

.....

- (d) State any **two** ecological factors that affect the population size of organism **B** in the environment. (02 marks)

.....

.....

.....

- (e) From the above table; identify the organisms which is a (03 marks)

- (i) Predator

.....

Reason

.....

(ii) Prey

.....

Reason

.....

32. (a) What is **transpiration**? (01 mark)

.....

.....

(b) In an experiment to determine the effect of Vaseline on the rate of transpiration in plants, four leaves were labeled **A**, **B**, **C** and **D**. The leaves were treated as follows;

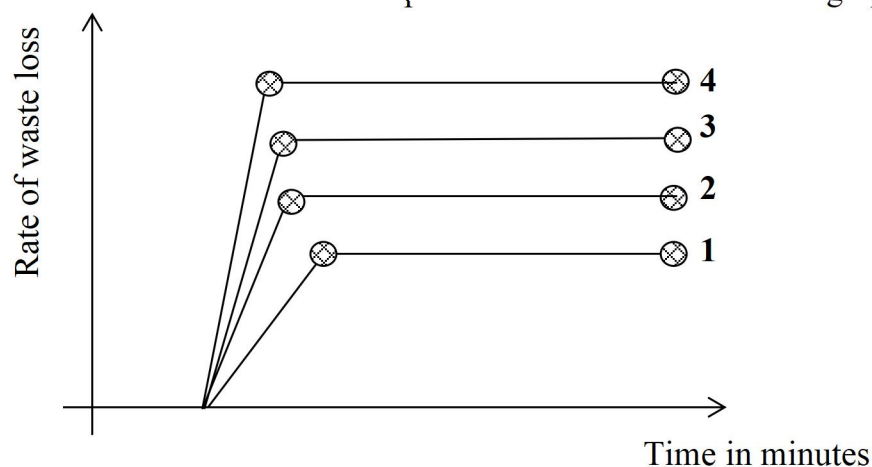
Leaf **A** was greased at its upper surface.

Leaf **B** was greased at its lower surface

Leaf **C** was not greased on both surfaces.

Leaf **D** was greased on both upper and lower surface.

The leaves were left for two hours and the rate of water loss from each leaf was measured and the results were plotted as shown below in the graph.



Identify the curve which represent; (04 marks)

(i) Leaf **A**.

(ii) Leaf **B**.

(iii) Leaf **C**.

(iv) Leaf **D**.

(c) Explain the answers above of each (04 marks)

(i) Leaf A.

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.....

(ii) Leaf B.

.....
.....

(iii) Leaf C.

.....
.....

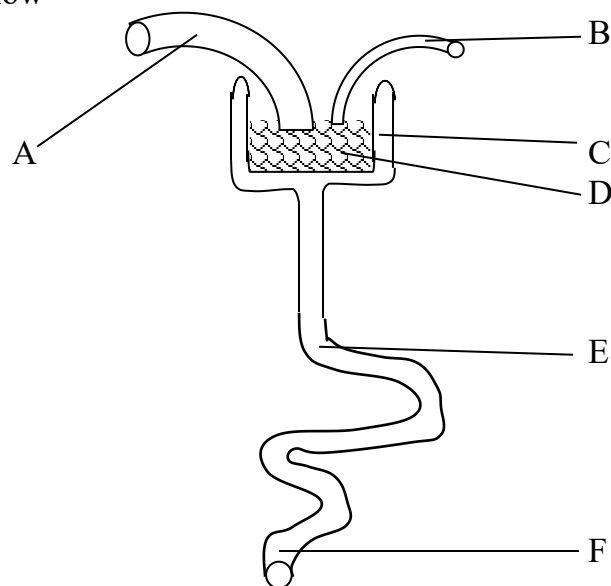
(iv) Leaf D.

.....
.....

(d) State **one** way in which plants benefit from transpiration.

.....
.....

33. The figure below shows part of the kidney neuphrone. Use it to answer the questions below



(a) Name the parts labeled **A - F**. (03 marks)

A.

B.

C.

D.

E.

F.

(b) (i) State **one** observable difference between the vessels **A** and **B**. (01 mark)

.....
.....

(ii) State the significance of the above difference in the working of each vessel. (02 marks)

A
.....

B
.....

(c) Name the process which occurs in the part labeled ; (01 mark)

(i) **C**
.....
.....

(ii) **E**
.....
.....

(d) How is the part labeled **E** adapted to its function? (02 marks)

.....
.....

- (e) (i) Name the hormone that enables the nephron to perform its function efficiently.

.....

- (ii) What disease can affect an individual who can not release the above hormone.

.....

SECTION C

*Attempt any **two** questions from this section*

- 34.** Explain the role of a pancreas in;
- (a) Digestion of food materials. (05 marks)
 - (b) Glucose regulation. (06 marks)
 - (c) Explain why diabetic individuals are advised to eat carbohydrates frequently than proteins. (04 marks)
- 35.** (a) Distinguish between the following terms
- (i) Genotype and Phenotype (02 marks)
 - (ii) Mutagen and mutation (02 marks)
- (b) In a population, colour blindness is caused by recessive genes. Using suitable symbols, carry out a cross to show the genotypes and phenotypes of their off springs of a normal man married a carrier woman for colour blindness. (08 marks)
- (c) How is the knowldge of genetics help to improve the plant breeds? (03 marks)
- 36.** (a) Distinguish between the terms implantation and fertilization. (02 marks)
- (b) State the functions of a placenta to the foetus. (05 marks)
 - (c) State the adaptations of the placenta to its functions. (04 marks)
 - (d) Give reasons why a mother's circulatory system is separate from that of the foetus. (04 marks)
- 37.** (a) State the ways in which the gills are adapted to the process of gaseous exchange. (05 marks)
- (b) Describe the mechanism of inspiration in a bonny fish. (05 marks)
 - (c) How is gaseous exchange in a cockroach different from that of a man? (05 marks)

END