

**Name:** .....**Index No.:**.....

553/1  
BIOLOGY (THEORY)  
2022  
PAPER 1  
TIME: 2 ½ HOURS



**MATIGO MOCK EXAMINATIONS**  
**UGANDA CERTIFICATE OF EDUCATION**  
**553/1 BIOLOGY (THEORY)**  
**PAPER 1**  
**TIME: 2 HOURS 30 MINUTES**

**INSTRUCTIONS TO CANDIDATES:**

- This paper consists of Section A, B and C.
- Answer all questions in Section A and B plus Two questions in Section C.
- Answers to Section A are to be written in the boxes provided. Answer to Section B in the spaces provide and those to Section C in the answer sheet provided.

**FOR EXAMINERS' USE ONLY.**

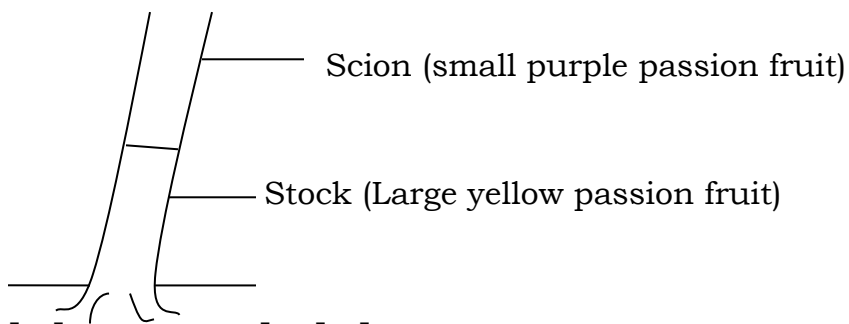
Section	Marks
A	
B 31	
32	
33	
C No.	
No.	
Total	

**Turn over**

**SECTION A: (30 MARKS)**

1. Magnification of a specimen by a microscope with objective lense of X40 was X600. What was the eye piece magnification?  
A. 15  
B. 10  
C. 2400  
D. 560
2. Which of the following is **not** a function of humus in the soil?  
A. Improve aeration  
B. Prevent soil erosion  
C. Increase fertility  
D. Increase water retention
3. Which of the following is a macro element?  
A. Zinc  
B. Copper  
C. Calcium  
D. Manganese
4. A group of different species in a given locality is  
A. Population  
B. Community  
C. Ecosystem  
D. Biosphere
5. When a ring of bark is cut round the stem of the tree, the tree dies because.  
A. Water supply to the roots is cut off  
B. Food supply to the roots is cut off  
C. Water and food supply to the roots is cut off  
D. Air supply to the roots is cut off
6. Which of the following is **not** a product of aerobic respiration?  
A. Energy  
B. Water  
C. Ethanol  
D. Carbon dioxide
7. In which place may such a composition of substances be found?  
Water 92%  
Proteins 0%  
Glucose 0.1%  
Urea 0.03%  
A. Blood  
B. Glomerulus  
C. Urine  
D. Bauman's capsule
8. The turning of a stem tendril round a support is a  
A. nastic response  
B. tactic response  
C. tropic response  
D. random response

9.



In the above graft the fruit produced will be

- A. Large yellow
- B. Small yellow

- C. Large purple
- D. Small purple

☐

10. Which of the following is a result of chromosome mutation?

- A. Down's syndrome
- B. Albinism

- C. Sickle cell anaemia
- D. Colour blindness

☐

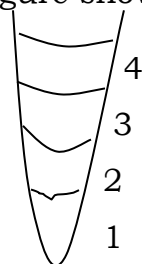
11. At a joint bones are kept in position by

- A. Ligaments
- B. Tendons

- C. Cartilage
- D. Muscles

☐

12. The figure shows a root tip. In which area are the cells actively dividing?



A. 1

B. 2

C. 3

D. 4

☐

13. A man of blood group AB marries a woman heterozygous for blood group

A. What is the probability of getting a child of blood group A.

- A. 25%
- B. 50%

- C. 75%
- D. 100%

☐

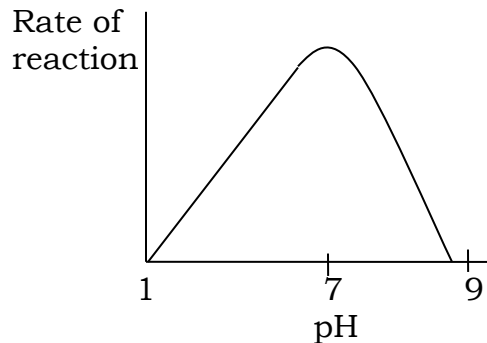
14. Contraceptive pills work by

- A. Destruction of ovum
- B. Preventing implantation

- C. Preventing ovulation
- D. Causing menstruation

☐

15. Destruction of snails in a water body is a control measure for  
 A. Malaria  
 B. Tape worms  
 C. Trypanosomiasis  
 D. Schistosomiasis ☐
16. Which of these is useful for dividing class insecta into its orders?  
 A. Body divisions  
 B. Number of legs  
 C. Number of wings  
 D. Number of antennae ☐
17. Pitching in fish is controlled by  
 A. Pectoral and pelvic fins  
 B. Pectoral and ventral fins  
 C. Dorsal and ventral fins  
 D. Dorsal and pelvic fins ☐
18. Which enzyme is involved in a reaction of activity shown by the graph



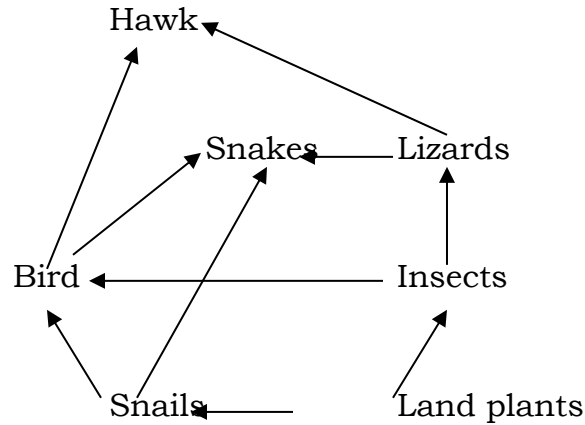
- A. Pepsin  
 B. Amylase  
 C. Rennin  
 D. Maltase ☐
19. Which is of the following is the right passage for sperms?  
 A. Epididymis, vasdeferens, bladder, urethra  
 B. Seminiferous, vasdeferens, Epididymis, Vas deferens, Urethra.  
 C. Epididymis, Vasdeferens, Prostate gland, Urethra.  
 D. Seminiferous tubule, vasdeferens bladder, Urethra ☐
20. Which of the following is an adaptation of aquatic plants for gaseous exchange?  
 A. Large air spaces  
 B. Very flexible stem  
 C. Absence of stomata  
 D. Thick cuticle ☐
21. 300cm<sup>3</sup> of water is added to 200cm<sup>3</sup> of sand which contains 25% air. After stirring what will be the total volume of the mixture.  
 A. 50cm<sup>3</sup>  
 B. 450cm<sup>3</sup>  
 C. 550cm<sup>3</sup>  
 D. 500cm<sup>3</sup> ☐
22. A dry fruit which opens along many longitudinal sutures is called a

- A. Capsule
- B. Follicle

- C. Legume
- D. Cypsela

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23. In the food web below which organisms are of the same trophic level?



- A. Land plant and snails
- B. Snake and snails

- C. Hawk and snake
- D. Land plant and Lizard

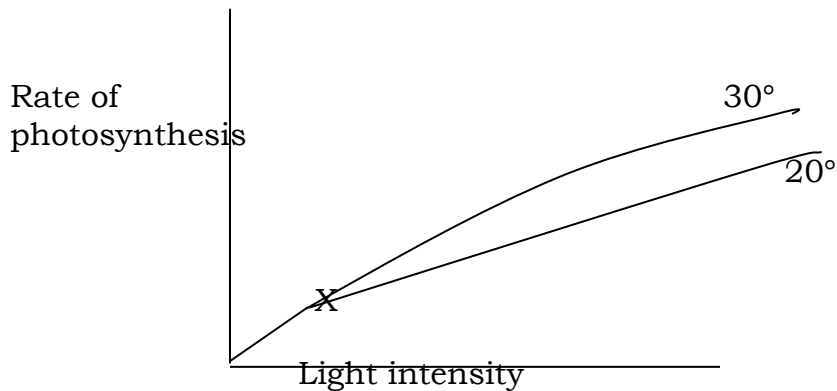
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24. Which of the following is not concerned with the sense of balance?

- A. Utriculus
- B. Succulus
- C. Cochlea
- D. Semi circular canals

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25.



The above graph shows the rate of photosynthesis with increasing light intensity at two different temperatures.

The limiting factor at point X is.

- A. Enzyme concentration
- B. Temperature
- C. Carbondioxide concentration
- D. Light intensity

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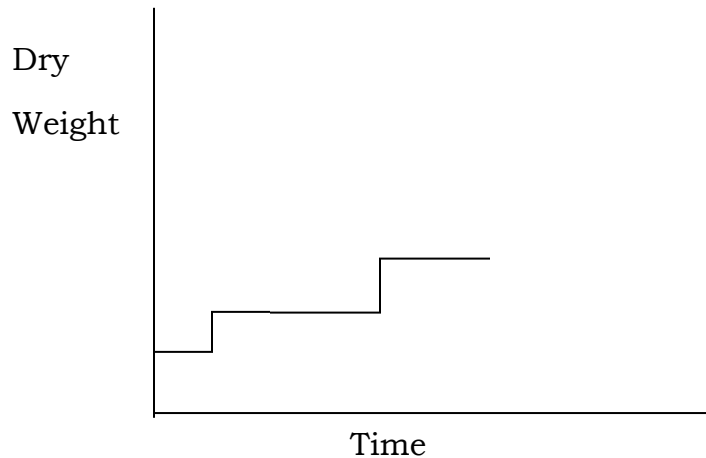
26. A faulty pituitary gland may result into
- A. Low secretion of insulin
  - B. High secretion of adrenalin
  - C. Low secretion of thyroxin
  - D. High secretion of insulin.

☐

27. Pruning plants makes them bushy due to
- A. Competition for light
  - B. Stunted growth
  - C. Accumulation of food materials
  - D. Breakage of apical dominance

☐

28.



The above graph shows growth by change in weight over time. This is a growth pattern for.

- A. Grass hopper
- B. Lizard
- C. Toad
- D. Man

☐

29. Lack of ADH causes
- A. Diabetes mellitus
  - B. Diabetes inspidus
  - C. Gigantism
  - D. Cretinism

☐

30. The passing on of antibodies from mothers to baby through breast feeding is
- A. Natural immunity
  - B. Acquired immunity
  - C. Hereditary immunity
  - D. Passive immunity
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**SECTION B: (40 MARKS)**

**ANSWER ALL QUESTIONS IN THIS SECTION. ANSWERS MUST BE WRITTEN IN THE SPACES PROVIDED.**

31. An investigation was carried out on rat population growth under laboratory conditions and under natural conditions.

The results obtained are given in the table below.

Time (months)	0	1	2	3	4	5	6
Laboratory population	20	40	100	240	400	600	820
Natural population	20	40	100	180	280	340	351

- (a) Draw a graph to show the population growth under the two conditions(06 marks)

(b) What similarity is there in population growth of the two populations? (03 marks)

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(c) What differences are there in growth of the two other populations? (02 marks)

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(d) Explain the difference you have given in (c) above. (06 marks)

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(e) Besides starting with the same number what two things must be done to have the right comparison of the populations? (02 marks)

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(f) What suitable method is used to find out the natural population?

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32. A germinating maize seedling with straight coleoptile and radical was laid horizontally under moist sand in a beaker. It was then kept in the dark. After three days, it had grown as shown below.

(a) What plant response is taking place? (01 mark)

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(b) What is the difference in response between the radical and coleoptiles? (01 mark)

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(c) Explain how the above difference comes about? (05 marks)

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(d) Of what importance is this plant response to the plant? (02 marks)

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(e) Why was the seedling kept in the dark? (01 mark)

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33. (a) In the menstrual cycle what do you understand by safe period? (01 mark)

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(b) What method of birth control applies the safe period? (01 mark)

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(c) Give advantages and disadvantages of the above method.

Advantages

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Disadvantages

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- (d) State four other methods of birth control and their prevention measure e.g. Diaphragm prevents sperms from reaching the ovum. (04 marks)

METHOD	PREVENTIVE MEASURE

### **SECTION C**

34. (a) What is seed dormancy? (01 mark)  
(b) What causes it? (2 ½ marks)  
(c) How can it be broken? (10 marks)  
(d) Of what advantage is it to the plant? (01 ½ marks)
35. (a) State the structural differences between an artery and vein. (03 marks)  
(b) How are these differences related to their function? (12 marks)
36. (a) State three mosquito transmitted diseases and the mosquito that transmit each. (03 marks)  
(b) How is the mosquito adapted for disease transmission? (07 marks)  
(c) How can the spread of mosquito-transmitted diseases be controlled? (05 marks)
37. (a) What is a sex linked characteristic? (01 mark)  
(b) Colour blindness is sex linked. A normal woman marries a colour blind man and all their children are normal. A boy of this family marries a girl whose parents were both normal. Half of the boys they produce are normal and half colour blind. Using suitable symbols, show this pattern of inheritance. (14 marks)

**END**