

Candidate's Name: _____ Centre No: _____

Signature: _____

553/1

BIOLOGY

Theory

Paper 1

2 ½ Hours

August 2022



TORORO ARCHDIOCESE EXAMINATIONS BOARD

Uganda Certificate of Education

MOCK EXAMINATIONS 2022

BIOLOGY THEORY

Paper 1

2 Hours 30 Minutes

INSTRUCTIONS TO CANDIDATES

- This paper consists of Sections A, B and C.
- Answer all questions in sections A and B and any two questions from section C.
- Write the answers to section A in the boxes provided.
- Answers to section B in the spaces provided.
- Answers to section C should be written in the answer booklets provided.

FOR EXAMINER'S USE ONLY

Section	Marks	Examiner's Sign
Section A (1 – 30)		
B No. 31		
32		
33		
C		
Total		

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Turn Over

SECTION A

1. The red blood cells are specialized for oxygen transportation by having
 A. a cell wall
 B. a large vacuole
 C. haemoglobin
 D. a nucleus
2. Which one of the following features distinguishes a scorpion from a crab?
 A. Two body parts
 B. Segmented body
 C. Number of legs
 D. Presence of exoskeleton
3. Which one of the following structures produces simple sugars?
 A. Cell wall
 B. Chloroplast
 C. vacuole
 D. cytoplasm
4. The graph in figure 1 below shows the production of substance X when an enzyme works on starch solution.

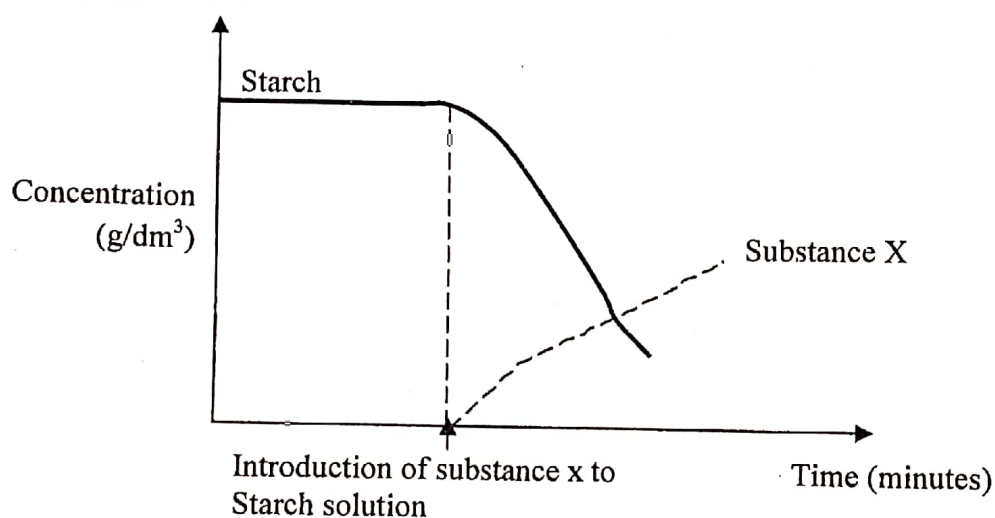


Figure 1

- Which one of the following represents substance X?
- A. Amylase
 B. Maltose
 C. Amino acid
 D. Glycerol
 5. The role of magnesium to a plant is to make
 A. Auxin hormone
 B. Cellulose
 C. Proteins
 D. Chlorophyll
 6. In which one of the following atmosphere conditions does water move most quickly through the xylem in a leaf?
 A. Cool and damp
 B. Dry and warm
 C. damp and warm
 D. cool and dry
 7. Which of the following events occur to the ciliary muscles and the lens when focusing on an approaching object?

Part	ciliary muscle	lens
A.	Contracts	becomes fatter

B.	Contracts	becomes thinner
C.	Relaxes	becomes fatter
D.	Relaxes	becomes thinner

8. Which one of the following statements about mitosis is true?

- A. Occurs only in animals only
- B. Results in formation of gametes
- C. Results in growth of the organism
- D. Occurs in plants only

9. The correct sequence of events during human reproduction is

- A. Menstruation → ovulation → fertilization → implantation
- B. Menstruation → ovulation → implantation → fertilization
- C. Ovulation → menstruation → fertilization → implantation
- D. Implantation → menstruation → fertilization → ovulation

10. The least effective method of controlling the spread of malaria parasite is

- A. Drainage of swamps and mashes
- B. Safe disposal of sewage solids
- C. Sleeping under a mosquito net
- D. Introduction of fish in water ponds

11. The self supporting unit of an environment consisting of living and non-living factors is called

- A. Habitat
- B. Community
- C. ecosystem
- D. niche

12. Which one of the following characteristics is discontinuous variation?

- A. Height
- B. Weight
- C. Number of grains on a cob
- D. Tongue rolling

13. The importance of seed dormancy to plants is that it

- A. Helps in the healing of wounds
- B. Increases the girth of stems and roots
- C. Helps in regeneration of plant parts
- D. Improves on the chances of the seed to become mature

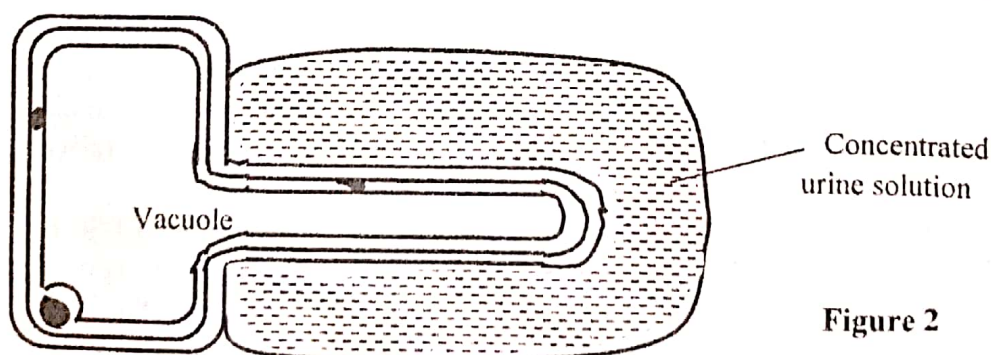
14. Which one of the following gamete cells are involved in sexual reproduction in plants?

- A. Egg cell and generative nucleus
- B. Antipodal cells and synergids
- C. Polar nuclei and tube nucleus
- D. Embryo sac and generative nucleus

15. Which one of the following hormones is not secreted by the anterior lobe of the pituitary gland?

- A. Vasopressin
- B. Prolactine
- C. Lutenising hormone
- D. Thyroxine

16. Which one of the following vertebrae consists of entirely the centrum only? ☐
- A. Sacral C. Caudal
B. Lumbar D. Thoracic
17. Which one of the following parts of a cell can be used to distinguish fungi from plants? ☐
- A. Nucleus C. Vacuole
B. Cytoplasm D. Cellulose cell wall
18. A horizontally growing stem that has roots at the nodes and develops buds growing into new plants is a ☐
- A. Runner C. Sucker
B. Stolon D. Rhizome
19. Which one of the following is not a function of soil particles? ☐
- A. Provide mineral elements
B. Give the rigid frame work of soil
C. Mix up air and water in the soil
D. Offer surface for anchoring plant roots
20. Which one of the following carbohydrates has no direct effect on Benedict's solution? ☐
- A. Ribose sugar C. Maltose
B. Fructose D. Deoxyribose sugar
21. Which one of the following factors does not affect the rate of movement of molecules during diffusion? ☐
- A. Pressure C. Concentration gradient
B. Temperature D. density of molecules
22. Muscles involved in vigorous exercises experience oxygen debt due to formation of ☐
- A. Ethanol C. Carbondioxide
B. Lactic acid D. Water
23. The diagram in figure 2 shows a root hair placed in a solution of concentrated urine



- Which one of the following statements explains what will happen to the root hair cells? ☐
- A. Water molecules move into the root hair due to their low concentration inside
B. Water molecules move into the root hair due to their low concentration outside
C. Water molecules move out of the root hair due to their low concentration inside
D. Water molecules move out of the root hair due to their low concentration outside

24. Which one of the following is the least effective way of controlling Covid-19 disease?

- A. Washing hands regularly with soap and water
- B. Isolating infected persons
- C. Eating food rich in proteins
- D. Social distancing

25. Which one of the following factors contribute to the dramatic decline in numbers of species of living organisms?

- A. Habitat loss
- B. Conflicts between nations
- C. Oil spillage
- D. Weathering of rocks

26. Which one of the following strategies is used by bees to avoid predators?

- A. Camouflage
- B. Mimicry
- C. stinging
- D. Crowd movements

27. The diagram in figure 3 below shows a stage in cell division

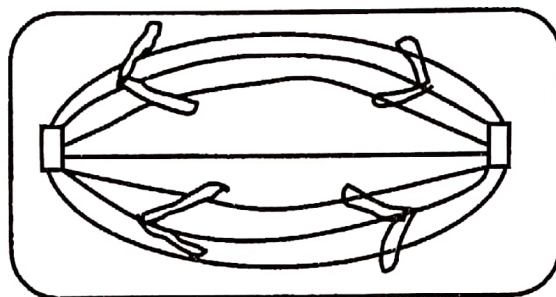


Figure 3

Which stage of cell division is represented by figure 3 above?

- A. Anaphase I
- B. Metaphase I
- C. Anaphase II
- D. Metaphase II

28. Which one of the following conditions is least important for seeds to germinate?

- A. pH of the soil
- B. Viability of the seed
- C. Temperature
- D. Light

29. Which one of the following activities is NOT displayed by birds during pair formation?

- A. Plumage
- B. Territorial behavior
- C. Body movements
- D. soaring flight

30. Which one of the following types of Nucleus ore myogenic?

- A. Cardiac muscles
- B. Skeletal muscles
- C. Smooth muscles
- D. Flight muscles

SECTION B

Attempt all questions in this section

31. (a) What is meant by the following terms;

(i) Growth

(1 ½ marks)

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(ii) Development

(1 ½ marks)

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(b) State four factors that affect the rate of growth of a living organism. (2 marks)

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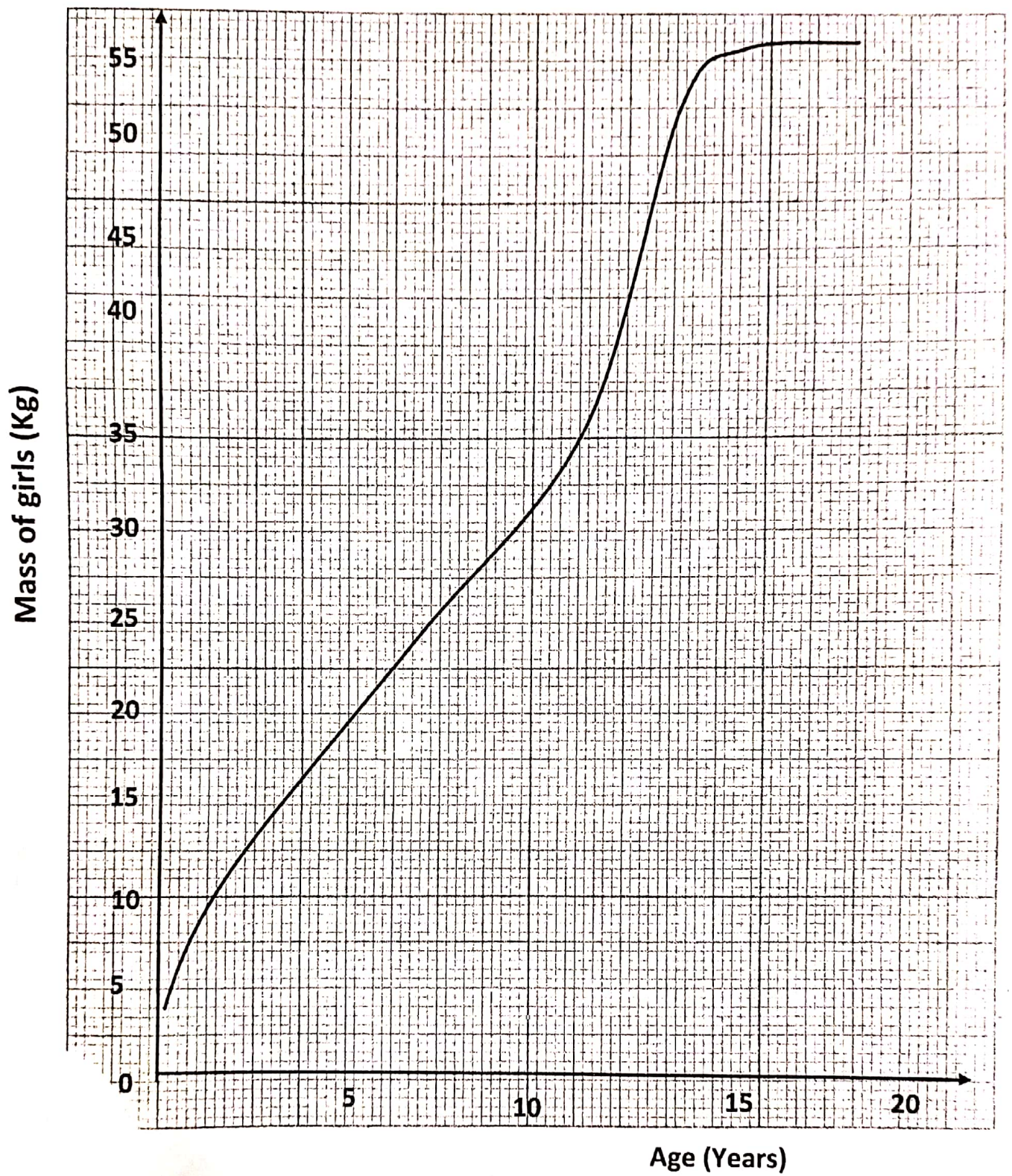
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The graph below shows the relationship between the average increase in mass with the age for girls for the first twenty years of growth. Study it and use it to answer the questions that follow:

Graph showing changes in Mass of girls with age



(c) Explain the shape of the curve in the graph.

(5 marks)

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(d) State the;

(i) age at which a girl is 42.5 Kg

(1 mark)

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(ii) mass of a girl who is 6 years old

(1 mark)

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(iii) reason why the mass between 18 and 20 years remains constant (1 mark)

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(iv) Give any five body changes which take place in a girl between 10 to 18 years
(5 marks)

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(e) Name four features (parameters) that can be used to measure the growth of an organism.

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(2 marks)

32. The data below was collected in an experiment to relate different aspects of flight in different insects.

Insect	Mass (mg)	Wing area (mm ²)	Wing beat (S ⁻¹)
Housefly	12	24	200
Lucetwig	25	125	52
Caddisfly	16	68	90
Green fly	2	8	100
Nocturnal moth	160	240	225

(a) Calculate the ratio of the wing area to mass for each insect

Housefly =

Lucetwig =

Caddisfly =

Green fly =

Nocturnal moth =

(2 ½ mark)

(b) Briefly explain the relationship between the wing area to mass with the number of wing beats per second. (2 marks)

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(c) How is the wing area and mass related

(1 mark)

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(d) Describe briefly how the wing area of an insect can be determined

(2 marks)

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(e) State three adaptations of insects that have contributed to their success as flying animals (2 ½ marks)

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33. *Eichhornia crassipes* (water hyacinth) is a water weed that has invaded Ugandan water bodies like Lake Victoria.

(a) State three ways this weed can be useful to man (3 marks)

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(b) Mention any three effects of water hyacinth on water bodies (3 marks)

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(c) State four possible methods of controlling the water hyacinth (4 marks)

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SECTION C

34. (a) State four ways by which the mammalian body loses

- (i) Heat (2 marks)
- (ii) Water (2 marks)

(b) How does the mammalian body maintain a constant temperature? (11 marks)

35. (a) Give the characteristics that are similar in the respiratory surface of fish and mammal (6 marks)

(b) Explain how the action of muscles bring about gaseous exchange in man (9 marks)

36. (a) What is meant by the terms;

- (i) Osmosis
 - (ii) Diffusion
 - (iii) Active transport
- (6 marks)

(b) State four significances of active transport to living organisms (4 marks)

(c) How are the plant root hairs adapted to the function of water absorption?

37. (a) Distinguish between continuous and discontinuous variation giving an example in each case (4 marks)

(b) Give the difference between complete and incomplete dominance in heredity (4 marks)

(d) A man of blood group A married a woman of blood group B and they produced a child of blood group O among others. What were the genotypes of the parents? Show your working. (7 marks)

END