Name: …….. Index No……

Signature: …….. School: ……..

553/1
Biology
Paper 1
July/August 2019
2½ hours

BUGANDA EXAMINATIONS COUNCIL MOCKS

Uganda Certificate of Education

BIOLOGY

PAPER 1

2HOURS 30 MINUTES

INSTRUCTIONS TO CANDIDATES

- Answer all questions in section **A** and **B** and choose any **two** questions in section **C**.
- Answer all questions in sections **A** and **B**, plus two questions from section **C**.
- Write the answers to section **A** in the box provided, answers to section B in the spaces provided and answers to section **C** in the answer booklets provided.

For Examiner's use only		
Section	**Marks**	**Examiner's signature & No.**
A:		
B: No. 31		
No. 32		
C: No. 33		
No.		
No.		
Total		

SECTION A (30 MARKS)

1. A student observed an onion epidermis under the microscope with eye piece x 10 and objective lens x4. Which of the statements below is wrong?
   A. the eye piece magnified the specimen ten times
   B. the eyepiece magnified the image of the specimen ten times
   C. the objective lens magnified the specimen four times
   D. the microscope magnified the specimen forty times

2. In white races, individuals either have blue eyes or pigmented eyes. Which of the following statements is correct about inheritance of eye color in white races?
   A. eye color is under control of a small number of genes
   B. a person can alter their eye color by changing their diet
   C. eye color is likely to be influenced by the environment
   D. eye color is under control of several genes

3. The overgrowth of aquatic plants resulting from an excess of nitrogenous salts reaching rivers is called
   A. nitrification B. pollution
   C. leaching D. eutrophication

4. The various enzyme controlled chemical changes which take place in organisms are collectively referred to as
   A. anabolism B. catabolism
   C. metabolism D. digestion

5. The part of a cell which is truly alive is called
   A. nucleus B. nucleoplasm
   C. protoplasm D. cytoplasm

6. The development of a fruit from an ovary without fertilization is term
   A. protogyny B. parthenocarpy
   C. parthenogenesis D. cauliflory

7. When a plant loses water faster than it absorbs, the cells become……..and the plant structure made of such cells……..
   A. flaccid, flabby B. flabby, flaccid
   C. inflated, turgid D. limp, turgid

8. Which of the statements below is NOT right about identical twins?
   A. they result from a zygote separating into two parts
   B. they inherit identical genotypes
   C. they have similar phenotypes even when raised in different environments
   D. they have different phenotypes when raised in different environments

9. A more complete and accurate picture of a transition of plants from one part of a habitat to another is provided by;
   A. quadrat
   B. line transect
   C. belt transect
   D. direct count

10. The force thought to be responsible for the exudation of drops of water from the tips of the leaves is
   A. capillarity
   B. transpiration pull
   C. root pressure
   D. cohesion and adhesion

11. The removal of bacteria from an object using high temperatures such as steam is called;
   A. sterilization
   B. steaming
   C. incubation
   D. inoculation

12. The gradual change of neglected agricultural land back into bush over a period of ten years is an example of;
   A. succession
   B. primary succession
   C. secondary succession
   D. bush furrowing

13. The following blood vessels transport oxygenated blood except;
   A. artery in umbilical cord
   B. pulmonary vein
   C. vein in umbilical cord
   D. coronary artery

14. Amino acid not required for building protein is
   A. deaminated
   B. excreted
   C. assimilated
   D. secreted

15. In the absorption of water by roots, water moves from
   A. a cell with lower water potential
   B. a cell with higher water potential
   C. a cell with a higher solute concentration
   D. a cell with similar solute concentration

16. The hyphae of the parasitic fungus, phytoph thora infestans, grow in and out of the potato leaf through the

A. cuticle of leaf
B. stoma of leaf
C. lenticels
D. epidermis of stem

17. The action of bile salts on fat forms a suspension of tiny droplets called

A. chyme
B. emulsion
C. chyle
D. glycerol and fatty acids

18. In baking, yeast is added to uncooked dough to make it 'rise' as a result of

A. CO_2 bubbles given off before baking
B. CO_2 given off during baking
C. ethanol given off before baking
D. CO bubbles given off before baking

19. Substances which stimulate production of antibodies are called

A. antigens
B. serum
C. fibrinogen
D. plasma

20. The glucose from a starchy mean that may not be needed by the body of man for a very long time is converted to;

A. glycogen
B. fat
C. starch
D. fatty acids and glycerol

21. Which of the following is not a function of the spleen?

A. makes white blood cells
B. destroys foreign from blood
C. destroys worn out cells
D. produces yellow bone marrow

22. Which one of the following organisms has the largest surface area to volume ratio?

A. dog
B. frog
C. cockroach
D. amoeba

23. The following describe yeast, a fungus, except

A. glycogen
B. chitin
C. unicellular
D. conjugation

24. Which of the following lists places the organisms correctly in descending order of size?

A. amoeba ——— bacterium ——— virus
B. bacterium ——— virus ——— amoeba
C. amoeba ——— virus ——— bacterium
D. bacterium ——— amoeba ——— virus

25. A plant which lives on another plant but does not obtain food from it is called

A. halophyte
B. epiphyte
C. xerophytes
D. parasitic plant

26. Water-logged soils may lack nitrates because;

A. water-logged soils lack nitrifying bacteria
B. water-logged soils lack ammonium salts
C. water-logged soils are short of oxygen
D. nitrates dissolve in water and evaporate

27. Which of the statements below is correct?

A. the outer ear is liquid filled
B. the outer, middle and inner ear is fluid filled
C. the inner ear is air-filled
D. the sensory cells are located in the middle ear

28. Which of the following is produced in the lymph nodes?

A. fibrinogen
B. red blood cells
C. some leucocytes
D. platelets

29. Older people are often seen to hold books at arm's length when reading. This is because;

A. refractive power of lens has decreased with age
B. ciliary muscles have stretched with age
C. eye ball has become larger with age
D. refractive power of lens has increased with age

30. Which of the following statements is NOT correct regarding a neuron?

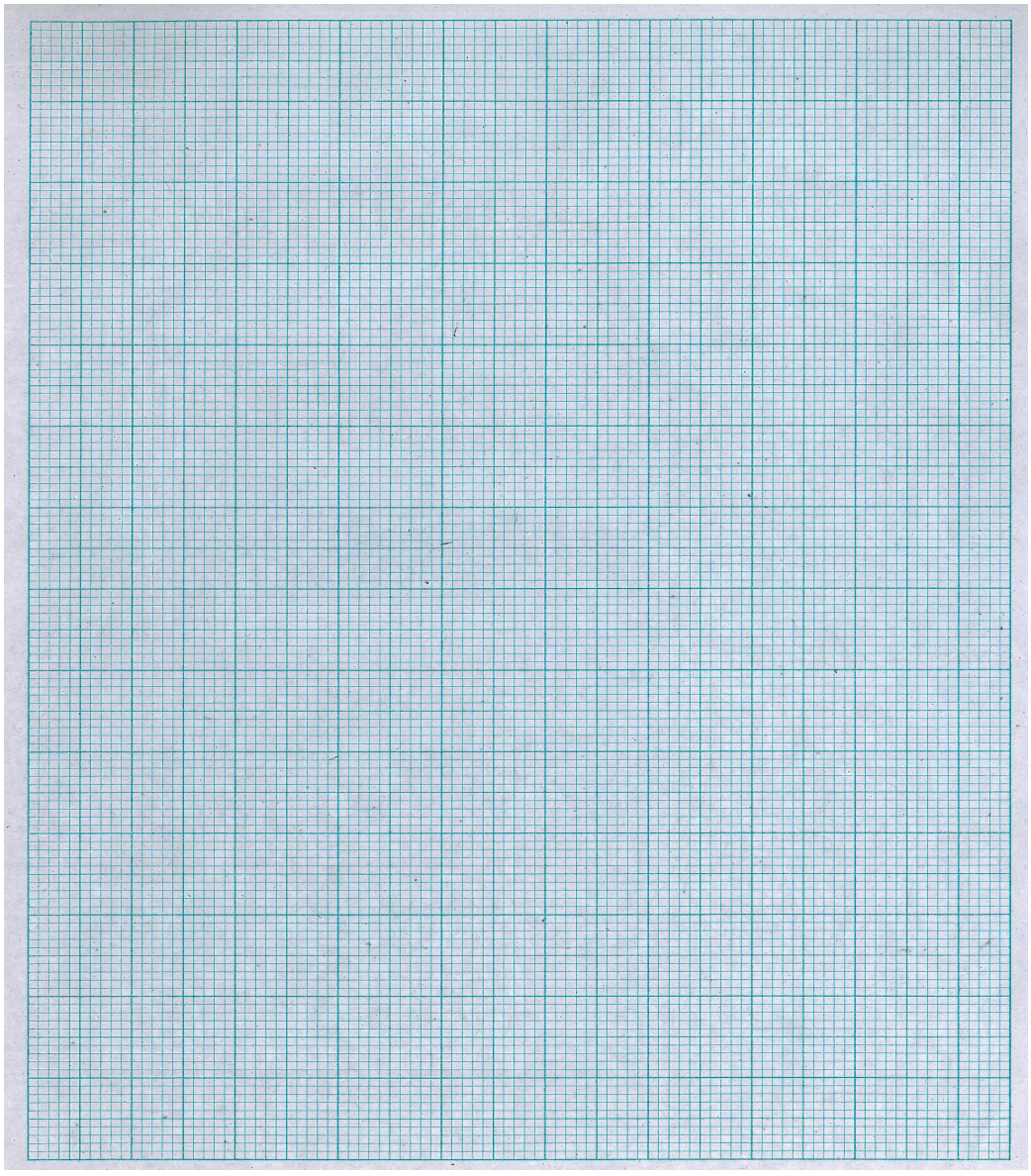
A. the myelin sheath contains fat
B. impulses are conducted electrically
C. the axon and sheath from the nerve
D. it can synapse with other neurons

SECTION B (40 MARKS)

31. In a study to compare the rate of population growth of two plant species, water hyacinth and Salvinia. They were introduced into a pond and the number of plants of each kind counted and recorded as shown in the table below;

Time (days)	30	60	90	120	150	180	210	240	270	
Number of plants	50	100	400	800	1000	1100	1150	1140	1100	Hyacinth
	100	200	700	1400	1500	1650	1500	1450	1400	Salvinia

(a) Plot a graph of number of plants against time on the same grid. (7marks)



(b) Calculate the growth rate of water hyacinth between the following days and explain each. (9marks)

(i) 30^{th} to 60^{th} day

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……

……

(ii) 60^{th} to 120^{th} day

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……

……

(iii) 240^{th} to 270^{th} day

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(c) Explain the change in population of salvinia between 210 and 270 days. (2marks)

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(d) State two human activities that may lead to rapid population growth of the two plants. (2marks)

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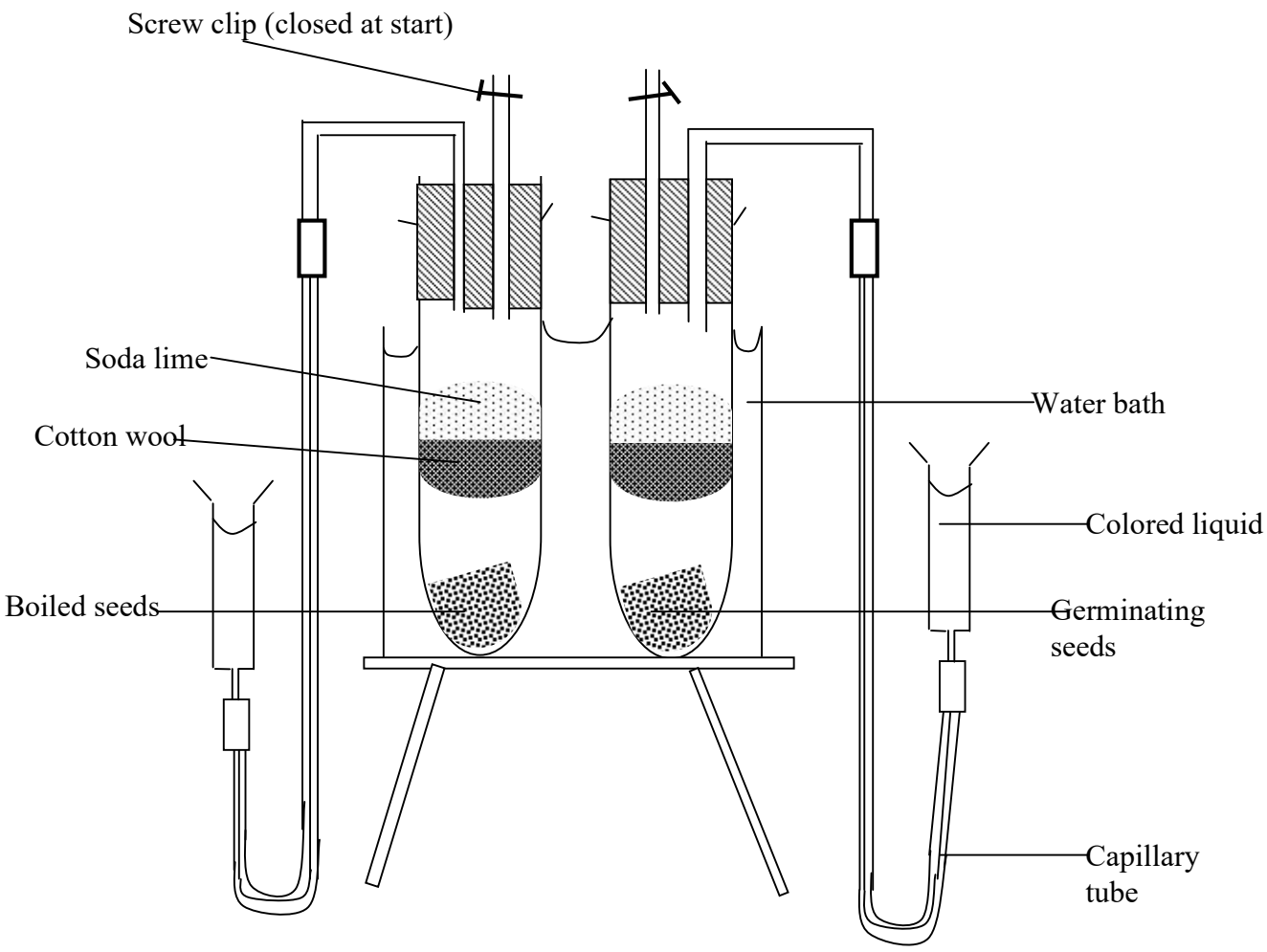
32. Study the figure below and answer the questions that follow



(a) Suggest an aim for the experiment shown by the set up above. (1mark)

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(b) State the role of the following in the procedure

(i) Soda lime (1mark)

……

……

(ii) Water bath (2marks)

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……

(iii) Closing screw clip when experiment is started. (1mark)

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(c)(i) What will be observed if the experiment is left to stand for 30 minutes? (1mark)

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(ii) Suggest an explanation for the observation stated in (c)(i) above. (4marks)

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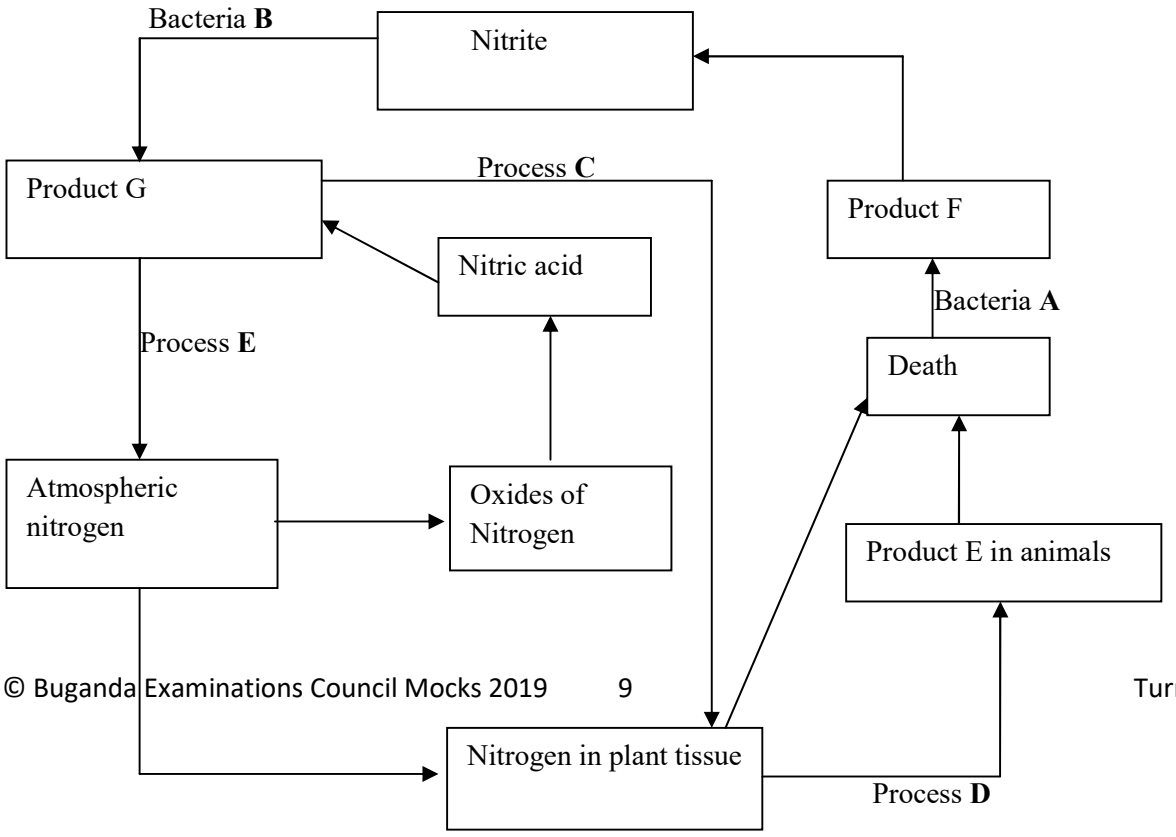
33. The figure below represents the cyclic events involved in the recycling of a certain element in nature. Study it and use it to answer questions that follow.



(a) Which element is being recycled in the figure? (1mark)

……

(b) Identify; (8marks)

(i) Bacteria A: ……

(ii) Bacteria B: ……

(iii) Process C: …….

(iv) Process D: …….

(v) Process E: ……..

(vi) Product E: ……..

Product F: ……..

Product G: …….

(c) State one way in which free nitrogen in the air is made available for plant use. (1mark)

……..

SECTION C (30 MARKS)

Attempt only <u>two</u> questions from this section.

34(a) What do you understand by the following terms? Give an example in each case.(6marks)

(i) Photo-autotroph
(ii) Chemo-autotrophs
(iii) Holozoic nutrition
(iv) Saprophytic nutrition

(b) Explain the ecological effects of industrialization on Uganda today. (9marks)

35(a) Define the term osmosis. (2marks)

(b) Explain the following;

(i) Wilting in plants (6marks)
(ii) Plasmolysis of a plant cell (4marks)

(c) Explain the importance of wilting to a plant. (3marks)

36(a) Outline 6 components of soil. (3marks)

(b) Explain why clay soil is heavy to cultivate, has poor aeration and retains a high proportion of water. (6marks)

(c) Explain any 3 ways of conserving and renewing soil fertility. (6marks)

37(a) How does the carbon in the air become part of the tissue of a cow? (12marks)

(b) Which biological processes add carbondioxide to the atmosphere? (12marks)

(c) In which form is carbohydrate stored in plant and animal cells? (1mark)

END