Name ……Index No…….
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553/1
BIOLOGY
Paper 1
2 ½ hours

RWENZORI REGION ACADEMIC BOARD

Uganda Certificate of Education

MOCK EXAMINATION

BIOLOGY

Theory

Paper 1

2 hours 30 minutes

INSTRUCTIONS TO CANDIDATES:

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

*Answer **all** questions in section **A** and **B**, plus two questions from section **C**.*

*Write answers to section **A** in the boxes provided on the right hand side of each question, answers to section **B** in the spaces provided and answers to section **C** in the answer sheet provided.*

For Examiner's use only		
Section	Marks	Examiners Initials
A: 1 - 30		
B: No. 31		
No. 32		
No. 33		
C:		
TOTAL		

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SECTION A: (30 MARKS)

1. One of the following blood vessels transports digested food from mother to embryo.
   A. Venacava
   B. Umbilical vein
   C. Umbilical artery
   D. Pulmonary vein

2. The stationary air that remains in the lungs of an adult man after a deep breath is called?
   A. Tidal volume
   B. Residual volume
   C. Vital capacity volume
   D. Reserve volume

3. Which one of the following is an example of phylum Platyhelminthes?
   A. Earth worm
   B. Liver fluke
   C. Snail
   D. Ring worm

4. Which one of the following human blood groups is recessive?
   A. Group AB
   B. Group O
   C. Group A
   D. Group B

5. In an ecosystem, herbivores are more than the carnivores due to the fact that
   A. Herbivores reproduce at a high rate.
   B. Herbivores support the life of carnivores
   C. Carnivores reproduce at a low rate
   D. Carnivores die at a high rate

6. One of the following is not a function of bacteria
   A. Decomposition of organic matter
   B. Ripening of fruits
   C. Fermentation
   D. Denitrification

7. Which one of the following serves as an organ for excretion in insects?
   A. Malphigian tubules
   B. Contractile vacuole
   C. Kidneys
   D. Cuticle

8. The following are factors affecting population growth of living organisms.
   (i) Rain fall
   (ii) Intraspecific competition
   (iii) Soil
   (iv) Reproductive rate

Of the above factors, which ones are biotic factors?

A. (i) and (iii)
B. (ii) and (iv)
C. (iii) and (iv)
D. (i) and (iv)

9. The Figure 1 below, shows a section of a root



Figure 1

Which one of the main activity taking place in region X?

A. Meiotic division
B. Differentiation
C. Mitotic division
D. Cell elongation

10. Which one of the following hormones brings about ovulation in human females?

A. Progesterone
B. Oestrogen
C. Luteinizing hormone
D. Follicle stimulating hormone

11. What advantage do people living on top of a mountain have over people living at the bottom of the mountain?

A. Have more leucocytes
B. Have more erythrocytes
C. Have more thembocytes
D. Take in fresh oxygen

12. A student carried out an experiment on soil and discovered that the soil was acidic (low PH). Which one of the following compounds should he apply to the soil in order to raise PH of the soil?

A. Ammonium sulphate
B. Lime
C. Calcium sulphate
D. Potassium nitrate

13. The following are feathers on a bird. Which one of them is responsible for sensitivity?
    A. Contour feathers
    B. Quill feathers
    C. Filoplume feathers
    D. Down feathers

14. One of the following waste products is non nitrogenous.
    A. Urea
    B. Carbondioxide
    C. Ammonia
    D. Uric acid

15. In an experiment to show that a mammal gives out carbondioxide as it expires, the role of soda lime in the experiment is to?

    A. Prove the presence of carbondioxide the incoming air.
    B. Prove the presence of oxygen in the incoming air
    C. Remove oxygen from the incoming air
    D. Remove carbondioxide from the incoming air.

16. Where does the churning of food take place along the alimentary canal?
    A. Duodenum
    B. Ileum
    C. Stomach
    D. Large intestine

17. Which one of the following blood groups lacks antigens?
    A. Blood group A
    B. Blood group AB
    C. Blood group B
    D. Blood group O

18. The difference between a male and a female cockroach is that the male cockroach;
    A. Has a broad abdomen
    B. Has a pair of cerci only
    C. Has a pair of styles only
    D. Has a pair of both cerci and styles

19. Deflation of a swim bladder in a tilapia fish leads to
    A. Sinking
    B. Pitching
    C. Rolling
    D. Floating

20. In an experiment to show that carbon dioxide is necessary for photosynthesis to take place, the role of sodium hydrogen carbonate is to?
    A. Eliminate carbondioxide from the atmosphere
    B. Add extra oxygen in the atmosphere
    C. Add extra carbondioxide in the atmosphere
    D. Absorb carbondioxide from the atmosphere

21. Where does fertilization take place in a flowering plant?
    A. Style
    B. Ovule
    C. Ovary
    D. Embryo sac

22. Which one of the following is an example of agene mutation?
    A. Deletion
    B. Translocation
    C. Insertion
    D. Inversion

23. Which one of the following bone of skeleton holds the shoulders in position?
    A. Scapula
    B. Coracoid
    C. Humenus
    D. Clavicle

24. Which one of the following neurons is fully located in the grey matter?
    A. Sensory neurone
    B. Motor neurone
    C. Effector neurone
    D. Relay neurone

25. Along the nephron, where does reabsorption of glucose and amino acids mainly take place?
    A. Distal convoluted tubule
    B. Proximal convoluted tubule
    C. Ascending limb
    D. Descending limb

26. Which one of the following hormones accelerates the conversion of glycogen to glucose?
    A. Insulin
    B. Adrenaline
    C. Glucagon
    D. Thyroxine

27. Arteries and veins join at?
    A. Tissue bed
    B. Venule bed
    C. Arterial bed
    D. Muscle bed

28. The main product of tissue respiration is
    A. Alcohol
    B. Energy
    C. Lactic acid
    D. Carbondioxide

29. During arm movement, which one of the following muscles opens the arm?
    A. Triceps
    B. Biceps
    C. Ligament
    D. Tendon
30. Which one of the following structures of a human eye contains blood vessels?
    A. Sclera
    B. Fovea
    C. Choroid
    D. Retina

SECTION B (40 MARKS)

31. Seven pieces of a young stem of wondering jew4mm long each were placed in different salt solutions of concentrations of 0.0M, 0.1M, 0.2M, 0.3M, 0.4M, 0.5M and 0.6M for 40 minutes. Later the pieces were removed and results recorded as in the table below.

Salt solution concentration (M)	Final length (mm)	Change in length (mm)
0.0	4.3	
0.1	4.2	
0.2	4.1	
0.3	4.0	
0.4	3.9	
0.5	3.8	
0.6	3.7	

(a) Calculate change in length of each piece of stem. (3½ marks)

(b) Plot a graph of salt concentration (moles) and change in length. (6½ marks)

(c) Suggest the nature of the solutions at

(i) 0.0M

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(ii) 0.3M

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(iii) 0.6M

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(03 marks)

(d) Explain the changes in length at

(i) 0.0M (04 marks)

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(ii) 0.6M (04 marks)

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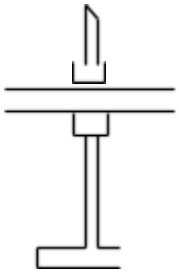
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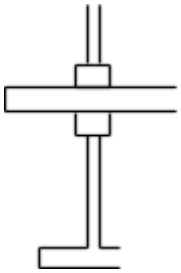
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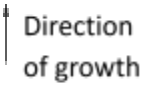
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32. Figure 2 below shows two plant parts A and B fixed horizontally on the retort stands for 24 hours.

A.







B.

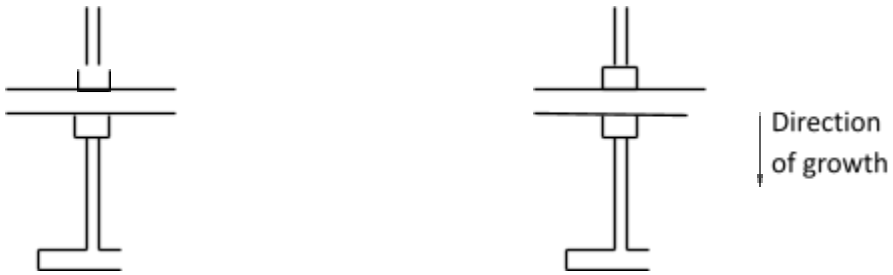


Figure 2

(a) (i) Identify plant parts A and B. (01 mark)

A

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B

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(ii) Explain the growth responses in Fig 2 above. (09 marks)

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33. Fig 3 below shows nitrogen cycle. Use it to answer questions that follow.

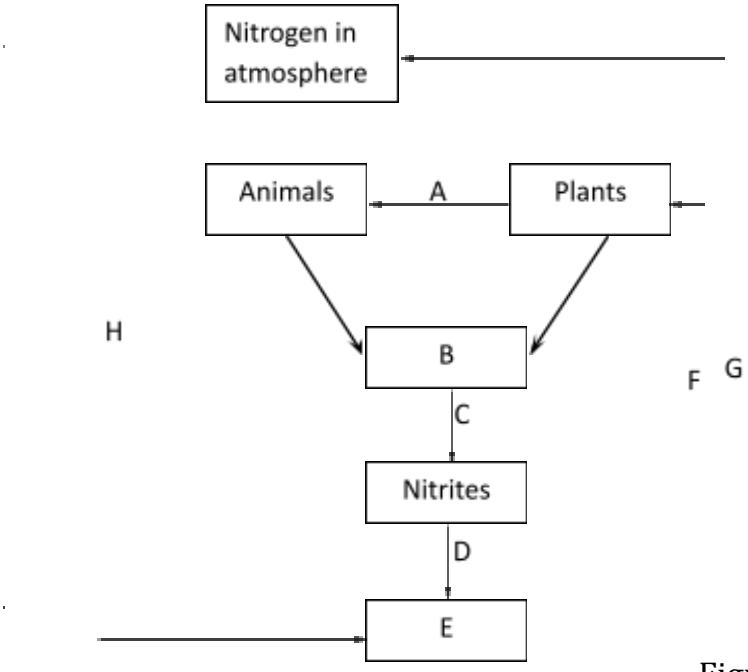


Figure 3

(a) (i) Name the products at B and E. (02 marks)

B

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E

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(ii) Give names of bacteria at C, D and G. (03 marks)

C

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D

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G

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(b) (i) Name the processes at A, D, F and G. (04 marks)

A

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D

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F

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G

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(ii) What is the importance of nitrogen in plants?

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SECTION C

34. (a) Outline the events that take place when air moves from the alveolus to the tissues. (06 marks)

(b) What are the adaptations of lungs to their functions? (06 marks)

(c) Explain why larger mammals need respiratory system. (03 marks)

35. What events take place during hypogeal germination? (15 marks)

36. Haemophilia is a sex linked disease caused by a recessive gene. In this situation a normal man gets married to a carrier woman.

(i) What kind of children are they likely to have? Show your working? (12 marks)

(ii) Give three applications of genetics. (03 marks)

37. Explain how each of the following forces are involved in the movement of water along a very tall tree. (03 marks @)

(i) Root pressure
(ii) Adhesion force
(iii) Cohesion force
(iv) Capillarity
(v) Transpiration pull.

END