

231/1
BIOLOGY
PAPER 1
THEORY
Time: 2 Hours

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**MANG'U HIGH SCHOOL
MOCK EXAM**

Instructions to candidate

1. Answer **all** the questions in the spaces provided after each question paper.
2. Additional papers must not be inserted. All working must be clearly shown where necessary.
3. Candidates will be penalized for recording irrelevant information and incorrect spelling especially of technical terms.
4. All working must be clearly shown where necessary.

For Examiner's use only

Questions	Maximum Score	Candidate's Score
1 - 18	80	
TOTAL SCORE	80	

This paper consists of 6 printed pages.

Candidates should check the question paper to ensure that all the pages are printed as indicated and that no questions are missing.

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1. How is the xylem distribution in stem suited for support? (2 marks)
 2. Describe the difference between the cuticle of an aquatic and a terrestrial plant. (1 mark)
 3. (a) Name the disease symptoms of deficiency of vitamin A? (1 mark)
(b)(i) Name the cells affected due to the deficiency. (1 mark)
(ii) How is the deficiency overcome? (1 mark)
 4. What is the major weakness of the photosynthetic theory in explaining opening and closing of stomata? (2 marks)
 5. A student peeled a potato, chopped it into small pieces and dried them with blotting paper. She then sprinkled salt on them. After a few minutes a colourless liquid collected around the chips. Explain. (3 marks)
 6. (a) What physiological adaptation do red blood cells have for transportation of carbon (IV) oxide? (2 marks)
(b) State the structural features that made red blood cells ideal for transportation of oxygen. (2 marks)
 7. Why are most algae unable to live on land? (2 marks)
 8. Explain the importance of bacteria in nature? (2 marks)
 9. (a) What is the principal action of anti-diuretic hormone? (1 mark)
(b) State two symptoms of amoebic dysentery whose effect may lead to production of ADH. (2 marks)
 10. State the functional similarity between adrenaline and sympathetic nervous system. (1 mark)
 11. Alleles determine the characteristics of organisms when paired. What is the state of the organism if (2 marks)
(i) the alleles are similar?
(ii) three alleles are present?

12. Name the defects of lens that interfere with vision. (2 marks)

13. (a) Define pistillate flower (1 mark)

(b) "Closed flowers" of Commelina are formed underground. What does this type of flower achieve? (2 marks)

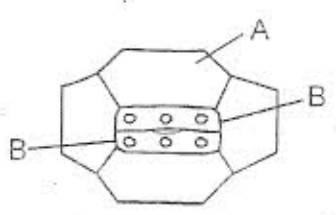
14. (a) Explain why high moisture and temperature can cause loss of viability of stored seeds. (2 marks)

(b) Groundnuts may germinate on pods still attached to parent plant as opposed to seeds of papaw. Comment. (2 marks)

15. State the distinguishing features of thoracic vertebra. (2 marks)

16. What is the effect of the difference in gestation period of the elephant and the kangaroo. (1 marks)

17. Below is a drawing of some cells from the lower surface of a leaf seen in surface view.



(a) State two conditions necessary for the opening of the pore between cells B. (2 marks)

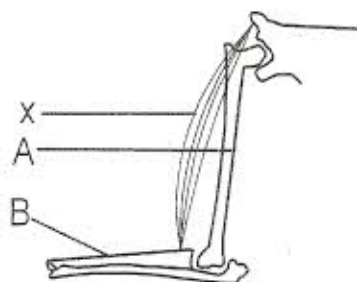
(b) State two differences between cells of type A and B. (2 marks)

18. Termites, macrotermites build earth mounds where they live. Why is it necessary for them to live in the mound? (2 marks)

19. Rats can synthesize ascorbic acid while humans cannot.
(a) How do humans acquire ascorbic acid? (1 mark)

(b) How could genetic engineering ensure humans synthesize the ascorbic acid? (3 marks)

20. Study the diagram below and answer the questions that follow.



Contraction of X causes B to be raised towards A.

(a) Name muscle X (1 mark)

(b) On the diagram, draw and name the muscle antagonistic to muscle X. (2 marks)

21. State the major role of each of the following features of some vertebrae. (3 marks)

(a) Odontoid process

(b) Neural canal

(c) Neural arch

22. The figure below represents cactus.



- (a) Comment on the physical state of the cactus. (1 mark)
- (b) How is the cactus adapted to the habitat where it grows? (2 marks)
- (c) Note the newly grown part of the plant. How does it compare to an older part of the plant? (1 mark)
23. The effect of light on plants influences responses.
Name two such responses. (2 marks)
24. Flowers close during the night and open during the day. How does this response benefit the plant? (2 marks)
25. State the two most significant factors that favour exponential growth of a population in any given habitat. (2 marks)
26. (a) State two demands that an increasing population makes on the environment. (2 marks)
- (b) How do the demands stated in (a) above lead to environmental degradation? (2 marks)
27. An embryo is surrounded with fluid and its lungs are also fluid filled, yet it doesn't suffocate. Explain. (2 marks)
28. After completing a vigorous exercise, the breathing rate and heart rate remain high for some time. Explain. (3 marks)
29. Explain two key roles of parenchyma cells in seedlings. (2 marks)

30. Explain the significance of intercellular spaces located between stomata and spongy mesophyll cells in a leaf. (2 marks)

31. A person was subjected to various conditions and rate of sweating investigated.

Condition	Rate of sweating ml/hr
Walking naked in the sun	1150
Walking clothed in sun	850
Walking clothed in the sun carrying 20kg	1100

(a) Other than sweating, state two ways in which a person might lose water. (2 marks)

(b) Explain the effect of clothing on sweating. (1 mark)

(c) Explain the effect of carrying 20kg on the rate of sweating. (2 marks)