

Name: School:.....

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Biology
Theory
Paper 231/ 1
July/ august 2014

MIMS JOINT EXAMINATION - 2014
(Kenya Certificate of Secondary Education (K.C.S.E))

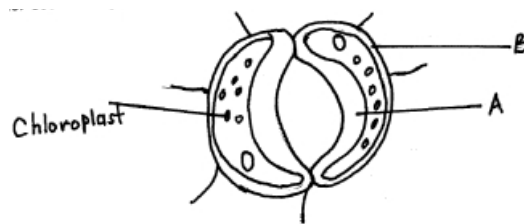
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INSTRUCTIONS TO CANDIDATES:

- Answer all questions in this paper in the spaces provided .
- Additive pages must not be inserted
- Candidates may be penalized for false information

*This paper consists of 12 printed pages.
Candidates should check the question paper to ensure that all the
Pages are printed as indicated and no questions are missing.*

1. Why are lysosomes many in phagocytic cells? (2mks)
2. How does evaporation of water from animal bodies cause a cooling effect? (1mk)
3. State one function of the following hormones.
 - a) Juvenile hormone. (1mk)
 - b) Abscic acid. (1mk)
4. Name **two** products of anaerobic respiration in animals. (2mks)
5. State **one** function of a synapse. (1mk)
6. State **two** distinguishing characteristics of members of division Bryophyta. (2mks)
7. What is the effect of eating a meal with too much salt to urine production in man. (2mks)
8. State **two** functions of smooth muscle along alimentary canal in mammals. (2mks)
9. Below is a simple food chain in a grassland ecosystem.
 Grass → grasshopper → black bird
 State the short term effects of reducing grasshopper. (2mks)
10. Use the diagram of the stoma below to answer the questions that follow.



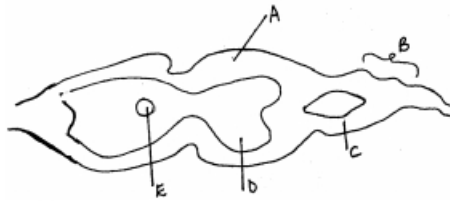
- a) Identify parts labeled A and B. (2mks)

A.....

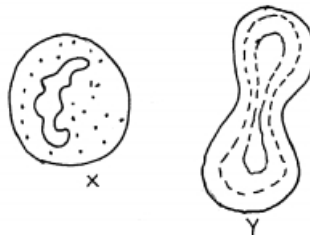
B.....
- b) State the functions of the structure drawn above. (2mks)
11. Explain the role of the following factors in breaking seed dormancy. (2mks)
 - a) Light.
 - b) Soaking in water.
12. Distinguish between the following terms. (2mks)
 Autotrophs and heterotrophs.
13. Below is a diagram, a structure for gaseous exchange in class Pisces.



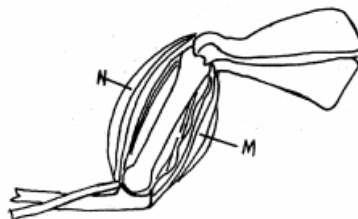
- a) Identify the structure: (1 mk)
- b) State the function of part labeled c. (1 mk)
- 14.a) Distinguish between meiosis and mitosis. (2mks)
- b) State one significance of meiosis in organisms. (1mk)
15. State the form in which nitrogenous wastes are excreted in desert insects and birds. (1 mk)
16. State **two** ways by which gibberellic acid is absorbed by plants. (2 mks).
17. a) What are vestigial structures? (1 mk)
- b) Give **two** examples of the structures above in man. (2 mks)
18. Identify **three** structural adaptations of xerophytes to their habitat. (3 mks)
19. The diagram below shows part of transverse section of the spinal cord of a mammal.



- a) Name the parts labeled A and D. (2 mks)
- b) Identify the fluid contained in part E. (1 mk)**
20. The structures below represent specialized cells in man.



- a) Identify the structures X and y. (2 mks)
- b) Give reasons for your answer for X in (a) above. (1 mk)
21. State **three** ways by which plasmodium species is adapted to its way of life. (3 mks)
22. State two advantages of internal fertilization in animals. (2 mks)
- 23.a) What is test cross? (1 mk)
- b) What are homologous chromosomes? (1 mk)
24. The structure below shows joints of the forelimb.



- a) Name the structures labeled M and N. (2mks)
- b) What happens to structure M and N when the arm is straightened at the elbow joint? (2mks)
25. Name the hormone responsible for flowering. (1 mk)
- 26.
- a) State the role of enzyme catalase in living cells. (2 mks)
- b) Which factor inactivates enzyme action? (1 mk)
27. Briefly explain how the following factors affect the rate of water loss in plants,
- a) Cuticle (1mk)
- b) Number of stomata (2 mks)
28. a) What is eye accommodation? (1 mk)
- b) Explain how the iris muscle controls the size of pupil when exposed to bright light. 3mks)
29. A DNA strand was found to have the base sequence shown below;
A-T-T-C-G-A
- a) What was the base sequence on the complementary strand? (1 mk)
- b) What was the base sequence of mRNA formed from the strand? (1 mk)
30. A cross between a black bull and a white cow produces a calf which has black and white spots.
- a) State the type of dominance shown. (1 mk)
- b) Suggest the possible genotypes of the calf if the genes for white and black trait are B and b respectively. (1 mk)
31. Name the process by which translocation occurs in plants. (2 mks)
32. a) A student used a microscope with X40 objective lens and X5 eyepiece lens. He observed 5 cells in the field of view which had 2 mm radius. Calculate the area of field of view in micrometers. (2 mks)
- b) What is the average size of the cell in micrometers? (2 mks)
33. State three ways by which the mammalian skin responds to low temperature in the environment. (3mks)