

2404/304  
BIOCHEMISTRY, ANATOMY AND  
PHYSIOLOGY  
Oct./Nov. 2017  
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL  
DIPLOMA IN APPLIED BIOLOGY  
BIOCHEMISTRY, ANATOMY AND PHYSIOLOGY

3 hours

**INSTRUCTIONS TO CANDIDATES**

*You should have an answer booklet for this examination.*

*This paper consists of TWO sections: A and B.*

*Answer ALL the questions in section A and any THREE questions from section B.*

*Each question in Section A carries 4 marks while each question in Section B carries 20 marks.*

*Maximum marks for each part of a question are indicated.*

*Candidates should answer the questions in English.*

**This paper consists of 3 printed pages.**

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



SECTION A (40 marks)

Answer ALL the questions in this section.

1. State the characteristics of the fibrous protein. *Primary structure of a protein* (4 marks)
2. Denaturing an enzyme affects its efficiency as a catalyst. Explain. *denaturation* (4 marks)
3. Outline the procedure for detection of ketone bodies in urine using Rothera's test. Indicate the expected results. *blue to violet* (4 marks)
4. (a) Explain the principle behind Bradshaw's test for Bence - Jones protein. (2 marks)  
(b) Describe the expected results for the test in (a) above. (2 marks)
5. Describe:
  - (a) Blood supply to the tongue. *sublingual* (2 marks)
  - (b) Nerve supply to the tongue in man. *glossopharyngeal nerve* (2 marks)
6. State any four function of synovial fluids in joints. *lubrication, shock absorber, reduce friction* (4 marks)
7. (a) Outline the organs of the alimentary canal in sequential order in human beings. (2 marks)  
(b) Name any two accessory organs of the digestion. (2 marks)
8. The onset of fever is often accompanied by shivering and a feeling of cold. Explain these symptoms in terms of the mechanism of control of body temperature. (4 marks)
9. Describe the structure of a nucleotide. *5-carbon sugar, phosphate group* (4 marks)
10. (a) Dioecious plants are not common, despite the advantages of cross pollination. Suggest two possible reasons for this. (2 marks)  
(b) Describe the changes that occur on zygote of an ovule after fertilization in plants. *ovule become fruit along with mother's tissue of seed within* (2 marks)



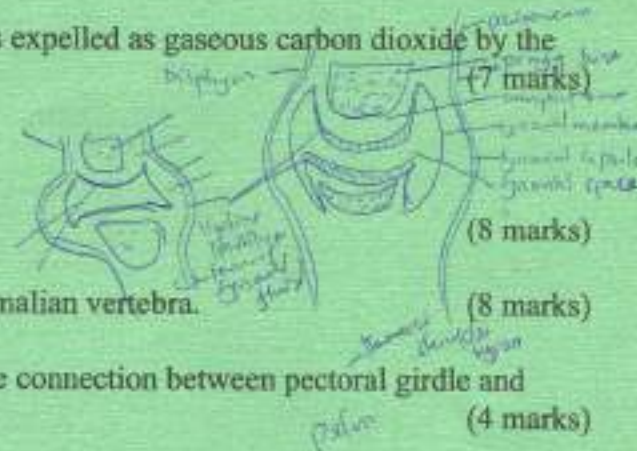


SECTION B (50 marks)

Valve after Capillary

Answer any THREE questions from this section.

11. (a) Describe the composition of gastric juice. (10 marks)  
(b) Explain the purpose for augmented histamine test performed on gastric juice. (4 marks)  
(c) List the apparatus and reagents required in augmented histamine test on gastric juice. (6 marks)
12. (a) Differentiate between the structure and function of an artery and capillary. (13 marks)  
(b) Outline how carbon dioxide in the blood is expelled as gaseous carbon dioxide by the lungs. (7 marks)
13. (a) Draw a labelled diagram of:  
(i) Mammalian synovial joint. (8 marks)  
(ii) the anterior view of a typical mammalian vertebra. (8 marks)  
(b) Explain the importance of having a flexible connection between pectoral girdle and vertebral column. (4 marks)
14. (a) Describe the endocrine function of human testis. (12 marks)  
(b) Draw a labelled diagram of a mature human spermatozoon. (8 marks)
15. (a) Explain the structural features of carbohydrates that accounts for the wide variety of polysaccharides. (12 marks)  
(b) Outline the hormonal conversion of glucose to glucogen. (8 marks)



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