

GUCHA SOUTH EVALUATION TEST (GSET)

Kenya Certificate of Secondary Education

231/2

BIOLOGY

Paper 2

(Theory)

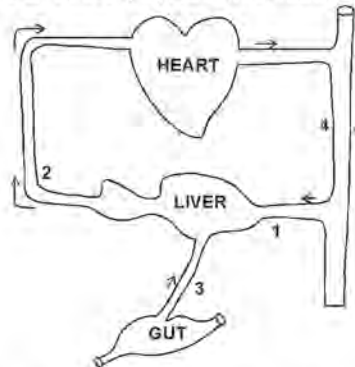
July/August 2016

Time: 2 Hours

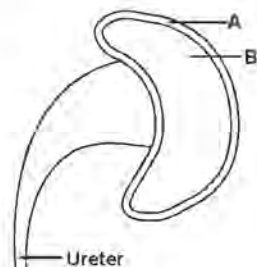
SECTION A : (40 MARKS)

Answer all question in this section in the spaces provided.

1. Study the diagram of part of the circulatory system in a mammal below and use it to answer questions that follow.

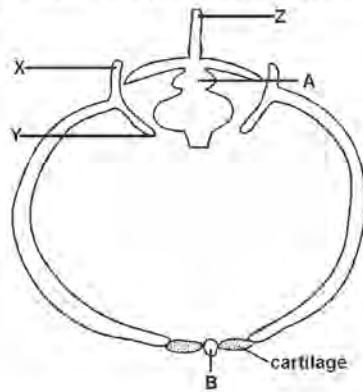


- a) Explain why the level of blood sugar in vessel 2 will be higher than vessel 3 during fasting. (3 marks)
- b) i) Identify vessel 1 (1 mark)
- ii) Name the vessel with highest concentration of urea. (1 mark)
- c) i) Outline two primary functions of roots. (2 marks)
- ii) Name a tissue responsible for translocation of manufactured food in higher plants. (1 mark)
2. a) What is the meant by accommodation of the eye ? (1 mark)
- b) Explain how light rays are focussed on the retina from a near object. (4 marks)
- c) State one functional difference between rods and cones in the human eye. (1 mark)
- d) Explain why images that form on the blind spot are not perceived. (2 marks)
3. In a certain variety of plants a true breeding white flowered plant was crossed with a true breeding red flowered plant. All the floral petals in the F1 plants had white and red patches.
- a) Define the term true breeding. (1 mark)
- b) Name the biological phenomenon responsible for the presence of the red and white patches in the F1 plants. (1 mark)
- c) The F1 plants were selfed. Using letter R to represent the gene for red flowers and W for the white flower, work out the F2 generation. Show your workings. (4 marks)
- d) Study the analogies below of some distorted information and identify the type of mutation they represent. (2 marks)
4. Study the diagram below representing section of a mammalian excretory organ and use it to answer questions that follow



- a) i) Name the organ. (1 mark)
- ii) Identify the parts labelled A and B (2 marks)
- iii) Name the endocrine gland found immediately above the organ named in a(i) above. (1 mark)
- b) i) Plants do not require elaborate excretory organs as animals do. Explain. (2 marks)
- ii) Name two processes through which plants excrete their waste products. (2 marks)

5. The diagram below shows a section of a ribcage of man. Study it and use it to answer questions that follow.



- Identify the vertebrae A (1 mark)
- Name the two parts (X and Y) of the rib which provide a surface for articulation with vertebrae A. (2 marks)
- Describe one adaptation of the part labelled Z on vertebrae A (2 marks)
- Name the bone B that articulates with the rib. (1 mark)
 - What is the role of the bone named in (i) above in the process of blood synthesis. (1 mark)
- Outline the necessity of support in plants. (1 mark)

SECTION B : (40 MARKS)

Answer question 6 (compulsory) and either question 7 or 8.

6. An experiment was carried out to investigate transpiration and absorption of water in a certain plant species. The plants were potted and supplied with adequate amounts of water. The amount of water lost and absorbed was determined. The results were as shown in the table below.

Time of day (in hours)	Amount of water in cm^3	
	Transpiration	Absorption
0700 - 0900	30	15
0900 - 1100	40	25
1100 - 1300	48	34
1300 - 1500	56	45
1500 - 1700	40	50
1700 - 1900	25	40
1900 - 2100	15	28
2100 - 2300	10	21

- Name the :
 - organs responsible for transpiration (1 mark)
 - cell responsible for absorption of water from the soil. (1 mark)
 - Using the same axes, plot graphs of transpiration and absorption of water in cm^3 against time of the day in hours.
 - Account for the shape of the graphs of :
 - Transpiration (4 marks)
 - Absorption (3 marks)
 - At what time of the day was the amount of water the same for transpiration and absorption ? (1 mark)
 - Suggest what would happen to transpiration and absorption of water if the experiment was continued for another 2 hours. Give a reason for your answer. (2 marks)
 - Name one environmental factor which affects the rate of transpiration. (1 mark)
7. a) Explain the factors that affect energy requirement in man. (10 marks)
- b) Explain the role of auxins and Gibberellins in growth and development in plants. (10 marks)
8. a) Outline the changes that occur in a flower after fertilisation. (8 marks)
- b) Describe the role of the placenta in the development of the embryo from the time of implantation to the time of birth. (12 marks)