GATUNDU SUBCOUNTY JOINT EXAMS

BIOLOGY PAPER 2 231/2

TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES

a) The paper has 2 sections A and B

b)Answer all questions in section A in the spaces provided

c) In section B answer question 6 (compulsory) and either question 7 or 8 in the spaces provided after question 8

FOR EXAMINERS USE ONLY

SECTION	QUESTION	MAXIMUM SCORE	CANDIDATE'S SCORE
A	1	8	
A	2	8	
A	3	8	
A	4	8	
A	5	8	
B	6	20	
B	7	20	
B	8	20	
	TOTAL SCORE	80	

SECTION A(40 MARKS)

1. In human beings, the phenotypes and genotypes with respect to the condition of sickle cell anaemia are as follows.

	GENOTYPE
Unaffected	HbSHbS
Sickle cell trait	HbSHbs
Sickle cell anaemia	HbsHbs

a) Using a punnet square, predict the outcome of a cross between a man and a woman with sickle cell trait. (4 marks).

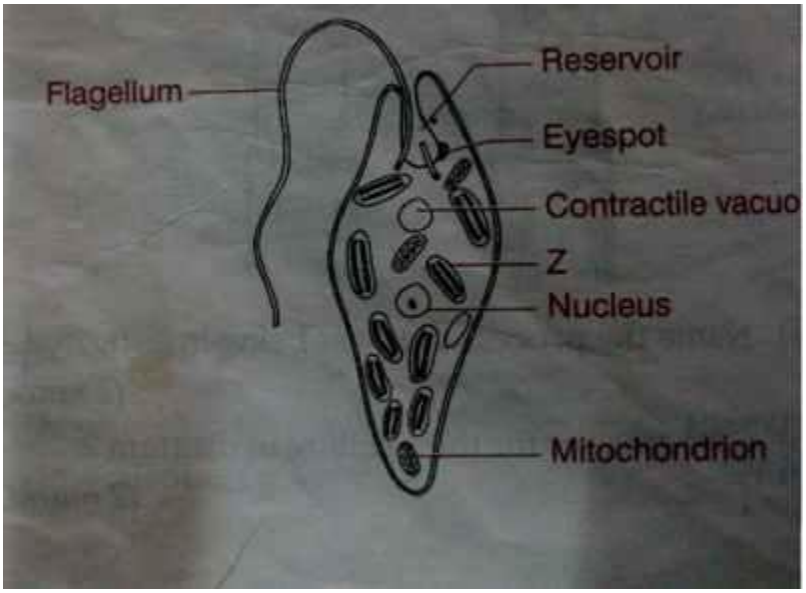
b) What are the phenotypic and genotypic ratios? (2 mks)

……
……
……
……
……
……
……

c) Name possible sets of chromosomes that can be found in a normal cell. (2 mks)

……
……
……
……

2. The following is a diagram of an organism



a).With a reason identify the Kingdom to which the organism belongs (2 mks)

i. Kingdom

……
……

ii. Reason

……
……

b) Identify the part labelled Z and give its function (2 mks)

……
……
……
……

c) How does the organism reproduce?(1mk)

……
……

d) State **two** advantages of sexual reproduction.(2 mks)

……
……

……
……
……

e) Define the term prokaryote (1mk).

……
……
……
……
……...

3. The cells of a certain herbaceous plant were found to have a diameter of 25µm. The cells were placed in varying concentrations of sugar solution. The average diameter of the cells in each solution was determined and the results obtained were as shown in the table below.

Concentration of sugar solution	**Diameter of cells (µm)**
1%	50
5%	40
10%	30
15%	20

a.) From these results, determine the concentration of the cell sap. (1 mk)

……
……

b).What term is used to describe the sugar solution whose concentration is equal to that of the cell sap?
(1mk)……
…….

c) Give an explanation for the average diameter of the cells placed in 1 % sugar solution.(2mks)

……
……
……
……
……
……
……

d) Explain why a plant cell when placed in distilled water will not burst while an animal cell will burst. (2 mks)

……
……
……
……
……
……
……...

e).Distinguish between diffusion and osmosis (2 mks).

……
……
……
……
……
……
……
……
……
……

4.a) Name **two** digestive enzymes secreted in inactive forms.(2mk)

……
……
……
……

b). State **five** adaptations of ileum to its functions. (5 mks)

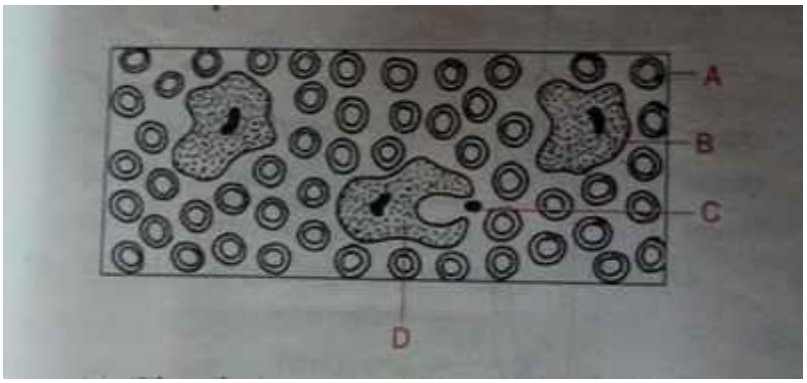
……
……
……
……
……
……
……
……
……
……

……
……
……
……
……
……

c).Describe the meaning of conjugated proteins. (1 mk)

……
……
……
……

5. The diagram below shows a smear of blood on a microscope slide



a).Identify the structures labelled A, B and C. (3mk)

A……
……

B……
……

C……
……

b). State the importance of the large numbers of structure A in the blood smear.(1 mk)

……
……
……
……

c).Name the process by which structure D would engulf C and state its importance (2 mks)

……
……
……
……
……

d). State **two** adaptations of the structure labelled A to its functions. (2 mk).

……
……
……
……
……
……
……..

SECTION B (40 MARKS)

Answer question 6 (**compulsory)** and either question **7** or **8** in the spaces provided after question **8.**

6. The table below shows how the quantities of urine and sweat vary with external temperature

External temperature(^oC)	**Urine (cm^3/hr)**	**Sweat (cm^3/hr)**
0	100	5
5	90	6
10	80	10
15	70	20
20	60	30
25	50	60
30	40	120
35	30	200

a). On the grid provided, plot the quantities of urine and sweat produced against external temperature (7marks)

b) At what temperature are the amount of sweat and urine produced equal? (1 mk)

……
……

c) What happens to the amount of sweat produced as the temperature rises?Explain your observation
(3mks)……
……)……
……
……
……
……
……
……
……
……
……
……
……

d). Explain the observation made on the amount of urine produced (3mks).

……
……
……
……
……
……
……
……
……
……

e) How is the skin adapted for temperature regulation? (6 mks).

……
……
……
……
……
……
……
……
……
……
……
……
……
……
……
……
……
……
……
……
……..

7.Using a relevant example in each case. describe simple and conditioned reflex actions (20 marks)

8.Describe the various causes and effects of air pollution (20 marks)

……
……
……
……
……
……
……
……
……
……
……
……
……
……
……
……
……
……
……