

GATTU SECONDARY SCHOOL P.O. BOX 1030-327 ATUNDU

FORM 4 BIOLOGY MID TERM EXAM TERM II 2015

Time 2 hours

INSTRUCTIONS TO CANDIDATES:-

- Write your name, and admission number, in the spaces provided above.
- This paper consists two sections A and B
- Answer all the questions in sections A in the spaces provided.
- In section B, answer question 6 (compulsory) and either question 7 or 8 in the spaces provided after question 8.

FOR EXAMINER'S USE ONLY

Section	Questions	Maximum score	Candidates score
A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
B	6	20	
	7	20	
	8	20	
	TOTAL	80	

SECTION A (40 MARKS)

Answer all questions in this section in the spaces provided.

1.a) Define the term mutation.

(1mk)

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b) A couple, George and Grace had a son who was suffering from haemophilia even though none of them showed signs of haemophilia.

i) State the genotype of George and Grace.

(2mks)

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ii) Using a genetic cross work out the genotype of the couple's son.

(4mk)

c) What are linked genes?

(1mk)

2. An experiment was set up to investigate the effect of unilateral light on the growth of oat coleoptile. The diagrams in the table below represent the experimental set ups at the start, and at the end of the experiment.

Set up	Start of experiment	Results
A		
B	Aluminium foil cap 	
C		
D	Blade of mica 	
E		

Key: Rays of light

a) Account for the results in the experimental setup A. (3mks)

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b) Explain the purpose of experimental set ups B and C. (3mks)

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c) Explain the results in experimental set ups D and E. (2mks)

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3. Three pieces of potato cylinders of equal length were placed in three solutions of different concentrations. The set ups were left to stand for 45 minutes. The results were recorded in the table below.

Solution	Initial length of cylinder (mm)	Final length of cylinder (mm)
A	40	40
B	40	38.5
C	40	41

a) Describe the nature of solution A in relation to the concentration of the potato cells. (1mk)

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b) Explain the observation that was made on the potato cylinder which was put in solution B. (3mks)

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c)i) State what would happen to red blood cells if they were placed in solution C. (1mk)

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ii) Explain your answer in (c)(i) above. (2mks)

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d) Name the process involved in uptake of mineral salts by plants from the soil. (1mk)

4) a) Explain the term double fertilization as applied in plants. (3mks)

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b) State the role of each of the following hormones in male humans.

i) Follicle stimulating hormone. (1mk)

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ii) Testosterone (1mk)

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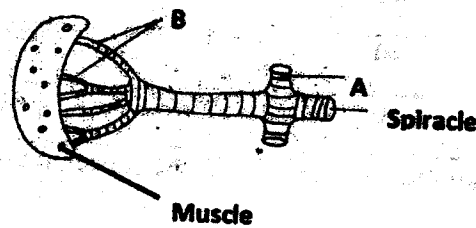
c) What is in vitro fertilization? (2mks)

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d) Name the causative agent of gonorrhoea. (1mk)

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5. The diagram below shows part of gaseous exchange system in an insect. Study it and answer the questions that follow.



a) What are the structural adaptations of the parts labelled A and B to their functions? (2mks)

i) A:

ii) B:

b) Name the parts of the following animals that carry out the same function as part B above. (2mks)

i) Man.....

ii) Tilapia fish.....

c) Name the structures used for gaseous exchange in plants growing in water logged soils. (1mk)

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d)i) Give two reasons why accumulation of lactic acid during vigorous exercise leads to an increase in heartbeat. (2mks)

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ii) In what form is oxygen transported from lungs to the tissues? (1mk)

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SECTION B (40 MARKS)

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

6. During germination and growth of a cereal, the dry weight of the endosperm, the embryo and total dry weight were determined at two day intervals. The results are shown in the table below.

Time after planting (Days)	Dry weight of endosperm (mg)	Dry weight of embryo (mg)	Total dry weight (mg)
0	43	2	45
2	40	2	42
4	33	7	40
6	20	17	37
8	10	25	35
10	6	33	39

a) On the same axes, draw graphs of dry weight of endosperm, embryo and the total dry weight against time. Use the graph paper provided. (7mks)

b) What was the total dry weight on day 5? (1mk)

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c) Account for:

i) Decrease in dry weight of endosperm from day 0 to day 10. (2mks)

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ii) Increase in dry weight of embryo from day 0 to day 10.

(2mks)

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iii) Decrease in total dry weight from day 0 to day 8.

(1mk)

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iv) Increase in dry weight after day 8.

(1mk)

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d) State two factors within the seed and two outside the seed that cause dormancy.

i) Factors within the seed.

(2mks)

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ii) Factors outside the seed.

(2mks)

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e) Give two characteristics of meristematic cells.

(2mks)

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7. Describe how a mammalian heart is adapted for its function.

(20mks)

8. a) Describe how xerophytes are adapted to living in their habitat.

(10mks)

b) Explain how an upright position is maintained in herbaceous plants.

(10mks)

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