

THE BARINGO- KOIBATEK DISTRICTS

EDUCATIONAL IMPROVEMENT EXAMINATIONS-2009

231/2

BIOLOGY (THEORY)

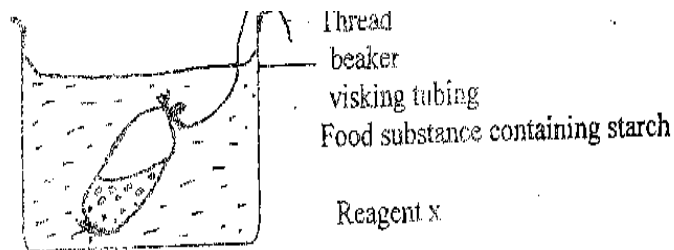
PAPER 2

JULY/AUGUST-2009

TIME: 2 HOURS.

SECTION A

- 1 (a) Define the term cell physiology (1 mark)
(b) A group of students carried out an experiment to investigate a certain physiological process as shown in the diagram below.



After leaving the set up for 20 minutes, they observed that the food substance had changed to blue-black colour.

- (i) Identify the reagent X (1mark)
(ii) What physiological process was being investigated? (1 mark)
(iii) Account for the observation made after twenty minutes. (3 marks)
(iv) State the parts in the human alimentary canal in which starch is digested (2 marks)

2. The table below shows results of test to determine blood groups of persons Y and z. a tick (√) represents agglutination while across(x) represents no agglutination.

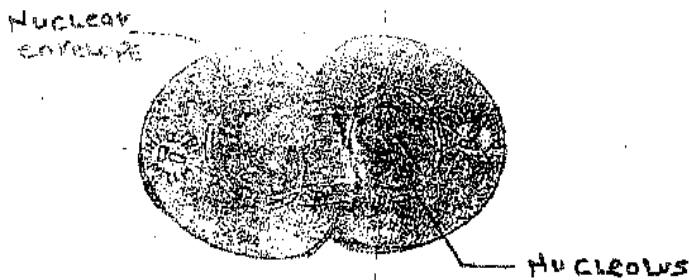
3.

Person	Test with antibody(a)	Test with antibody (b)	Test with rhesus antibody	Blood group
Y-(male)	√	x	√	
	x	√	x	

- (a) fill the blank space in the table to show the blood group of the person Y and Z
(2 marks)

Y
Z

- (b) In order to investigate the inheritance of Rhesus factor work out a cross between a male with Rh and female with Rh . Let D represent the presence of Rhesus factor and d to represent the absence of the Rhesus factor. Let the gene locus be rh. (6 marks)
- (c) Determine the phenotype of the cross in (b) above (1 mark)
- (d) Which of the children can donate blood to their Mother? (1 mark)
3. The diagram below shows a stage in a cell obtained from a tissue of an organism.



- (a)(i) Identify the stage of mitosis (1 mark)
- (ii) Give one reason for your answer in (a) (i) above (1 mark)
- (b)(i) Identify the kingdom of the organism from which the cell was obtained. (1 mark)

- (ii) Give two reasons for your answer in b(i) above (2 marks)
 (c) Tabulate two of the differences between mitosis and meiosis. (2 marks)

Mitosis	Meiosis

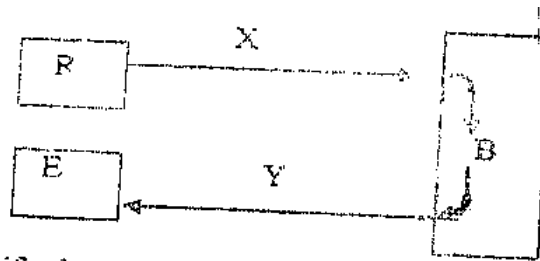
- (d) What is the significance of crossing over. (1 mark)

4. Study the table below and then answer the questions that follow.

Name of disease	Causative agent	Age when vaccine is Administered	Method of vaccination
Tuberculosis	Bacterium	At birth	Injection
Poliomyelitis	Virus	At birth, after 6 weeks, after 10 weeks, after 14 weeks	Oral inoculation
Whooping cough	Bacterium	6 th , and 14 th week.	Injection
Measles	Virus	9 th month	Injection

- (a) What parts of the human body is affected by the virus that causes poliomyelitis (1 mark)
- (b) Explain why some doses of vaccine are given more than once. (1 mark)
- (c) Suggest a reason for delay in vaccinating against measles until the 9th month. (1 mark)
- (d) Describe immune responses (2 marks)
- (e) What is a vaccine? (1 mark)
- (f) State a role of vaccination if providing immunity (1 mark)
- (g) What cause allergies? (1 mark)

5. The diagram represents simplified vertebrate nervous system. Study it carefully and then answer the question that follows.



(a) Identify the parts marked B, E and R

- (a) Identify the parts marked B, E and R (3 marks)
- B
E
R
- (b) What functions are carried out by structure B? (1 mark)
- (c) Both X and Y have a collective name. State it. (1 mark)
- (d) Give one example of each of E and R (2 marks)
- (e) Give an example of X (1 mark)

6. As part of a study of population growth an investigator put 16 grams and 64 grams of maize flour (food) in two equal boxes K and L respectively. She then introduced equal numbers of flour beetles, *Tribolium confusum* into the boxes. Both boxes were kept under similar environmental conditions. The beetle were counted at certain intervals and the results tabulated as below.

Number of days after introduction of beetles	Approximate numbers of individual beetles seen in:	
	K	L
0	20	20
5	20	20
40	200	300
60	550	800
80	560	1300
100	650	1750
120	640	1600
135	650	1900
15	645	1500

- (a) Using the sets of results draw two graphs on the same axis. Plot the approximate numbers of individuals on the y-axis. (10 marks)

- (b) what were the approximate numbers of individual present in the two boxes on the 90th day
- (i) Number in K (1 marks)
 - (ii) Number in L (1 mark)
- (c) On which day was the population difference greatest (1 mark)
- (d) Account for the shapes of the two graph between:
1st and 60th
60th and 100th day (3 marks)
- 7 (a) What is digestion? (2 marks)
- (b) Explain how lean meat is digested along the mammalian digestive system until it is absorbed. (18 marks)
8. (a) What is meant by natural selection (3 marks)
- (b) Describe how natural selection brings about adaptation of a species to its environment. (17 marks)