

231/2

BIOLOGY

PAPER 2

THEORY

JULY / AUGUST 2009

2 HOURS

JOINT INTERSCHOOLS EVALUATION TESTS

JISET 2009

SECTION A (40 MARKS)

1. In a family with four children, the father had blood group A while the mother had blood group B. One of the children had blood group O.

(a) (i) **What** were the genotypes of the parents? (1mk)

Mother

Father

(ii) What was the genotype of the child with blood group O? (1mk)

(b) **Work out** the genotypes of the other children.

(c) **Which** child can receive blood from any member of the family? (1mk)

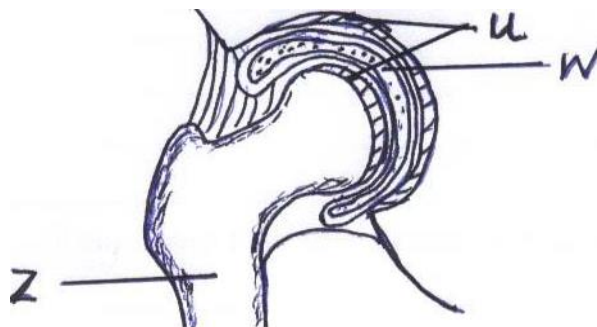
(d) **State** the percentage of children who can donate blood at all blood groups. (1mk)

2. (a) **What** is active transport? (1mk)

(b) **State three** factors that increase the rate of active transport. (3mks)

(c) **Give four** roles of active transport in living organisms. (4mks)

3. The diagram below represents one of the joints in the mammalian skeleton.



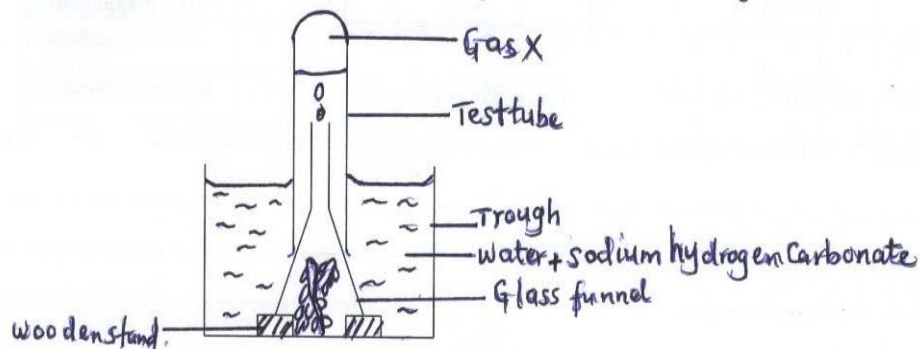
(a) **Name** the type of joint shown in the diagram.

(b) **Name** the parts labeled Z and U.

Z:

U:

- (c) **Name two** parts of the body where this type of joint is found. (2mks)
- (d) **State** the functions of the fluid found in W. (2mks)
- (e) **Name** the type of muscles found in the gut. (1mk)
4. (a) **What** is accommodation? (1mk)
- (b) **Describe** the sequence of events that occur in the eye for one to be able to see clearly
- (i) a distant object (4mks)
- (ii) if one moved from a dim lit room to bright light. (3mks)
5. An experiment was set up to investigate a certain process as shown in the diagram below.



The set up was left in bright sunlight for 4 hours.

- (a) **State** the aim of the experiment. (1mk)
- (b) Name X and Y. (2mks)
- X:
- Y:
- (c) Other than sunlight, **name three** factors that would affect the experiment. (3mks)
- (d) **State** how the identity of X could be confirmed. (1mk)
- (e) **Explain** why only submerged water plants are used in this experiment. (1mk)
6. In an ecological study, a grass hopper population and that of crows was estimated in a certain grassland area over a period of one year. The results are as shown in the table below.

Month	J	F	M	A	M	J	J	A	S	O	N	D
Number of adult grasshoppers $\times 10^2$	90	20	11	25	2500	1652	120	15	10	35	192	456
Number of crows	4	2	0	1	8	22	7	2	1	1	5	15
Amount of rainfall	20	0	55	350	520	350	12	10	25	190	256	350

- (i) **What** is the relationship between the rainfall and grasshopper population? (1mk)
- (ii) (a) **Account** for the relationship stated in a (i) above. (3mks)

(b) **Explain** the relationship between the grasshopper population and that of the crows.

(3mks)

(c) If the data was used in the construction of pyramid of numbers, **what** would be the trophic level of;

(3mks)

- i. Grasshopper
- ii. Crows
- iii. The grass in the study area

(d) If the area studied was one square kilometer, **state**;

(i) One method that could have been used to estimate the crow population. (1mk)

(ii) One method that could have been used to estimate the grasshopper population.

(1mk)

(e) **Suggest** what would happen if a predator for grasshoppers entered the study area.

(2mks)

(f) **What** is meant by the term carrying capacity? (1mk)

(g) Why would the carrying capacity of wild animals in woodland grassland be higher than that of cattle? (2mks)

(h) What is an ecosystem? (3mks)

7. **Describe** the role of the liver in homeostasis. (20mks)

8. (a) **State three** reasons why transport is necessary in animals. (3mks)

(b) **Describe** how the mammalian heart is adapted to its function. (17mks)