Name…………………………………………………………………… Index No……………..

School…………………………………………………………………….. Date…………………

Candidate's signature……………………………………..

231/2
BIOLOGY
Paper 2
July / August 2012
Time 2Hours

# MANGA DISTRICT JOINT EVALUATION EXAM– 2012
*Kenya Certificate of Secondary School (K.C.S.E)*

231/2
BIOLOGY
Paper2
July / August 2012
Time 2Hours

## INSTRUCTIONS T O CANDIDATES
1. Write your name and index number in the spaces provided above.
2.. Sign and write the date of the examination in the spaces provided .
3. Answer all the question in the spaces provided above.
4. T his paper consist of two sections A and B.
5. In section B,answer question 6 (compulsory) and either question 7 or 8 in the spaces provided after question 8.
6. This paper consist of 12 printed pages.
7. Candidates should check the question paper to ascertain that all pages are printed as indicated and that no questions are missing.

## FOR EXAMINER USE ONLY.

| SECTION | QUESTIONS | MAXIMUM SCORE | CANDIDATE'S SCORE |
|---|---|---|---|
| A | 1 | 08 | |
| | 2 | 08 | |
| | 3 | 08 | |
| | 4 | 08 | |
| | 5 | 08 | |
| B | 6 | 20 | |
| | 7 | 20 | |
| | 8 | 20 | |
| TOTAL SCORE | | 80 | |

*This paper consists of 12 printed pages.*
*Candidates should check the question paper to ensure that allpages are printed as indicated*
*and no questions are missing*

1.  Two herbivorous mammalian species were introduced into an ecosystem at the same time and iin equal numbers. The graph below represents their populations during the first seven years. Study the graph and answer the questions that follow.
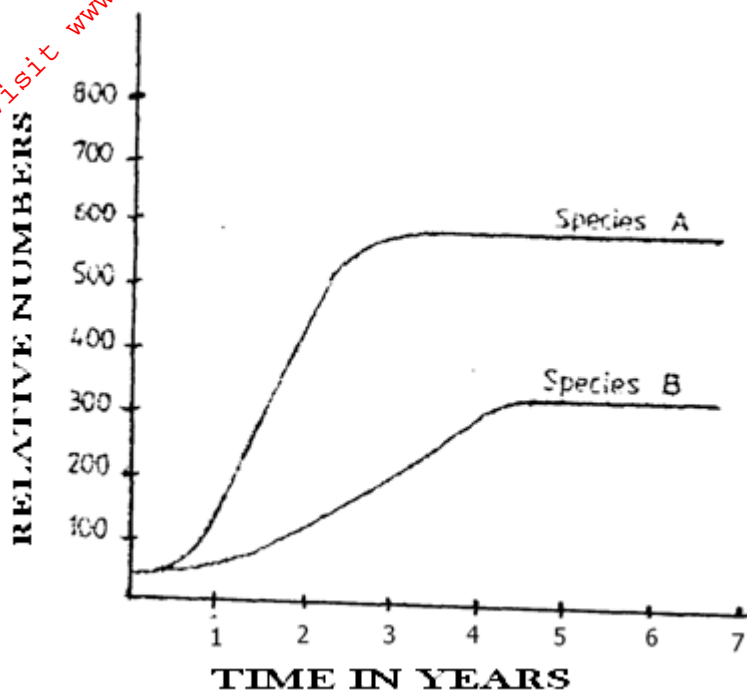


a)  i)   Which species has a better competitive ability?                    (1 mark)

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    ii)  Give reason for your answer                    (1 mark)

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b)  Account for the shape of the curve of species A between

    i)   One year and three years                    (2 marks)

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    ii)  Three years and seven year                    (2 marks)

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c) A natural predator for species A was introduced into the ecosystem.

With a reason state how the population of each species will be affected (2 marks)

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2 The chart below represents the result of successive crosses, staring with red flowered plants and white flowered plants in which both plants are pure breeding

Parental genotypes: Red flowers x white flowers

↓

First final generation

↓

SelfedSecond final generation

↓

3 red floers: 1 white flower

3:1
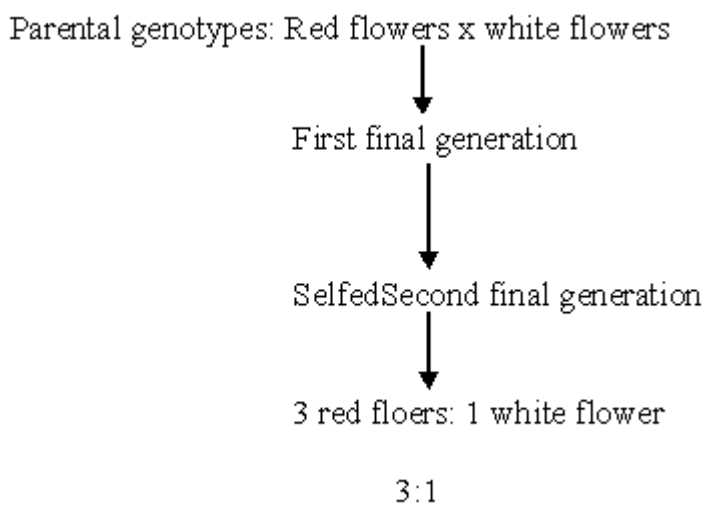
a) What were parental genotype ? Use letter R to represent the gene for red colour and r for white colour ( 1 mark)

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b) i) What was the colour of the flowers in the first filial generation? ( 1 mark)

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ii) Give a reason for your answer in b (i) above (1 mark)

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c) lf 480 red flowered plants were obtained in the second filial generation, how many F2 plants had white flowers? Show your working                               (5 marks)

3.      A form 1 student placed a red blood cell in a solution and made an observation as follows.
        Start of experiment/ end of experiment

        a)      i)      In what solution was the red blood cell paced?                 (l mark)
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                ii)     Explain the observation above                                (2 marks).
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b)    If the red blood cell was replaced by a plant cell what would be the observation

(2 marks)

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c)    Why don't the red blood cell undergo the same changes as above while in the body.

(3 marks)

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4.    The figure shows changes that take place during menstrual cycle in human
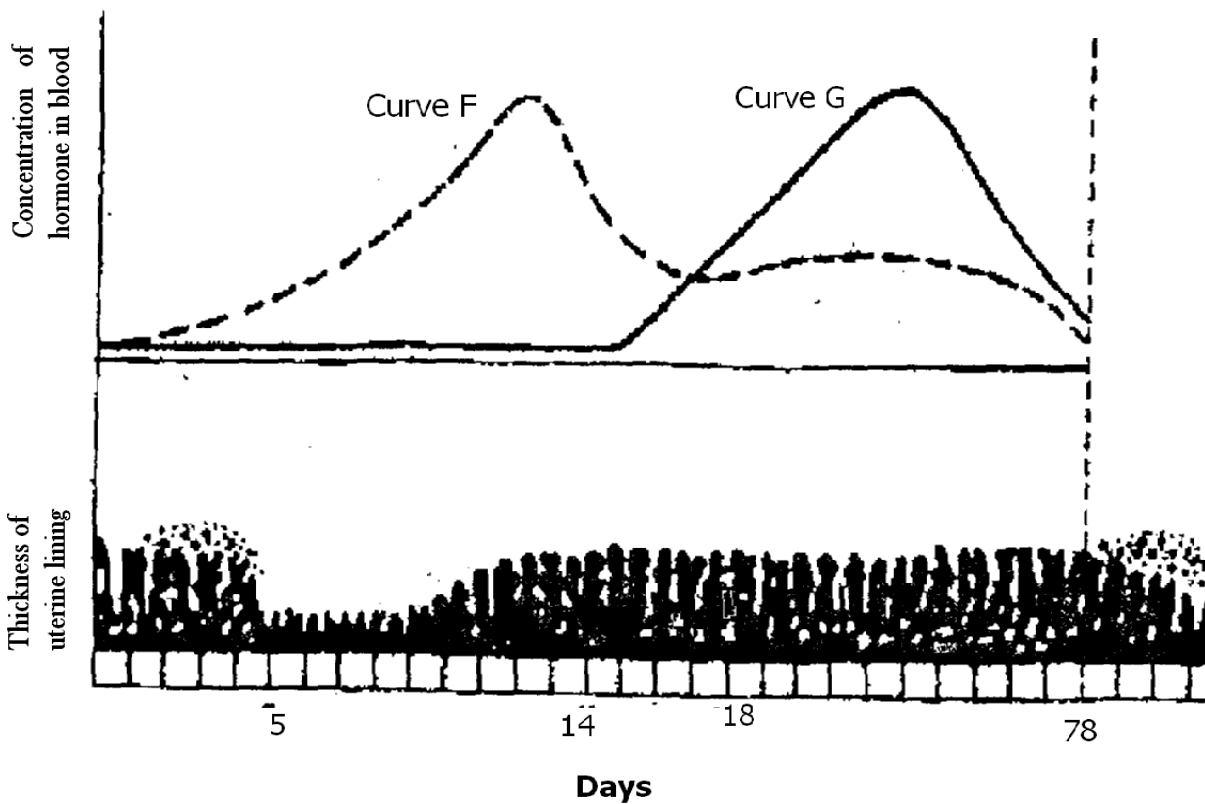


a)    Name the hormone whose concentrations are represented by curves F and G    (2 marks)

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b) State the effects of the hormones named in (a) above on the lining of the uterus (2 marks)

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c) i) Name the hormone which is released by the pituitary gland in high concentration on the 14th day of the menstrual cycle (1 mark)

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ii) State two functions of the hormone named in (c) (i) above (2 marks)

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d) State the fertile period during the menstrual cycle ( 1 mark)

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5. The diagram below represents a bone obtained from a mammal
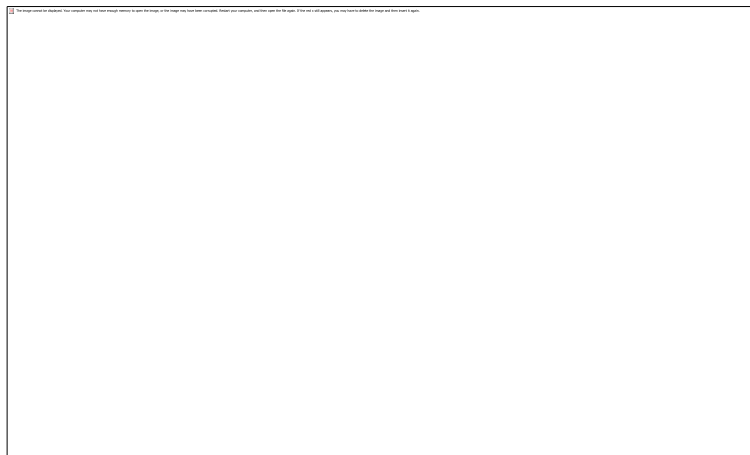


a) Name the bone ( 1 mark)

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b) Name the:

i) Bone which articulate with the bone named in (a) above at the cavity labeled K; ( 1 mark)

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ii) Joint formed by the two bones (1 mark)

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c) State the function of the part labeled J

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d) Explain how the pelvic girdle is adopted to its function (4 marks)

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**Answer question six in the spaces provided and either question 7 or 8 in the spaces provided after question8**

6. An experiment was carried out to investigate the nutritional value of two dry powder animals feeds X and Y over a period of six months. Twenty 5 month's old castrated goats were use. The goats were divided into two equal groups A and B.

The animal's in group A were fed on feed X throughout the experiment while those of group B were fed on feed Y.

The feeds were supplemented with dry hay and water. The average body weight of each group of goats and the weight of the dry powder feeds were determined and recorded each month. The faeces produced by each group was dried and weighed and the average dry faecal output per month was also recorded. The results are as shown below.

| | GROUP | A | | GROUP | B | |
|---|---|---|---|---|---|---|
| Months since commencement of the experiment | Average total weight of goats(Kg) | Average weight of total feed(Kg) | Average monthly dry faecal output(Kg) | Average total weight of goats(Kg) | Average weight of total feed(Kg) | Average monthly dry faecal output(Kg) |
| 0 | 20.4 | 26.7 | 10.5 | 20.5 | 35.4 | 16.5 |
| 1 | 22.5 | 27.5 | 10.7 | 19.5 | 34.3 | 17.7 |
| 2 | 24.5 | 25.8 | 10.3 | 19.0 | 35.2 | 17.2 |
| 3 | 26.3 | 18.5 | 8.8 | 18.5 | 36.1 | 17.5 |
| 4 | 28.0 | 16.6 | 7.2 | 17.1 | 36.0 | 16.9 |
| 5 | 29.4 | 16.3 | 6.0 | 16.3 | 35.8 | 16.8 |
| 6 | 29.5 | 16.1 | 5.6 | 15.6 | 35.5 | 16.6 |

a) i) What is the relationship between the amount of feed and the faecal output(2 marks)

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ii) Work out the average increase in weight for the animal's in group A during:

The first four months

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The last two months

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(4 marks)

iii) Account for the average increase weight in goats in group A during:

The first four months

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The last two months

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(4 marks)

iv) Which of the two feeds is more nutritious? Give reason for your answer

(2 marks)

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b) Explain the digestion of lipids in humans (8 marks)

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7    a)    Describe how semicircular canals perform their functions          (8 marks)

     b)    Describe how the cervical, lumbar and sacral vertebrae are suited to their functions

                                                                              (l2 marks)

8    a)    State four characteristics of gaseous exchange surfaces.           (4 marks)

     b)    Explain the theories for opening and closing of the stomata        (16 marks)

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