NAME\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INDEX NO.\_\_\_\_\_\_\_\_\_

**CANDIDATE’SSIGNATURE\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**DATE:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**231/2**

**BIOLOGYPAPER 2**

**THEORY**

**TIME: 2 HOURS**

**MOI HIGH SCHOOL - KABARAK**

**Kenya Certificate of Secondary Education (K.C.S.E.)**

**231/2**

**BIOLOGY PAPER 2**

**INSTRUCTIONS TO CANDIDATES**

**-** Write your name and index number in the spaces provided above.

- Sign and write the date of examination in the spaces provided.

- In Section B answer questions 6 (Compulsory) and either question 7 or 8 in the spaces provided after question 8.

- Answer all the questions in the spaces provided.

- Candidates should answer all the questions in English.

**For Examiners’ use ONLY**

|  |  |  |  |
| --- | --- | --- | --- |
| **SECTION** | **QUESTION** | **MAXIMUM SCORE** | **CANDIDATE’S SCORE** |
| **A** | **1** | **8** |  |
|  | **2** | **8** |  |
|  | **3** | **8** |  |
|  | **4** | **8** |  |
|  | **5** | **8** |  |
|  | **6** | **20** |  |
|  | **7** | **20** |  |
|  | **8** | **20** |  |
| **TOTAL** |  | **80** |  |

**SECTION A (40 MARKS)**

***INSTRUCTIONS – Answer ALL the questions in this section in the spaces provided.***

1. (a) State the roles of the following organelles. (3 marks)

(i) Ribosome

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

(ii) Lysosome

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(iii) Centriole

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(b) Give three differences between a plan and animal cells. (3 marks )

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(c) Suggest two ways the sperm cell is specialized. (2 marks)

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2. (a) State three features of the gaseous exchange surface for an aquatic organism. (3 marks)

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(b) Name the form in which the following compounds are transported in blood. (3 marks)

(i) Oxygen

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(ii) Carbon (II) oxide

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(c) Explain oxygen debt. (2 marks)

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(d) Suggest the advantage of transporting most carbon (IV) in red blood cells. (1 mark)

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3. (a) Give three hormones that influences the female reproduction in humans. (3 marks)

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(b) State the roles of the following structure in the human male.

(i) Prostate gland (2 marks)

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(ii) Cowper’s gland (1 mark)

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

(iii) Epididymis (1 mark)

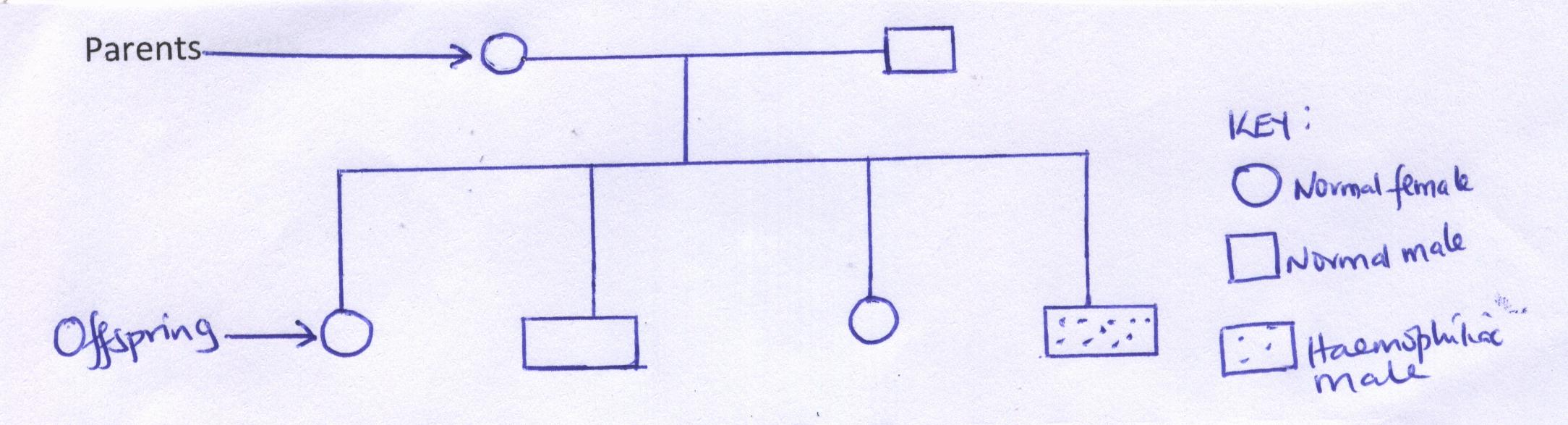
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(c) What is gestation period? (1 mark)

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

4. Hemophilia is due to a recessive gene. The gene is sex-linked and located on the

X-chromosome. The figure below shows some offspring from phenotypically normal parents.



(a) (i) What are the parental genotypes?

Father\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Mother\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (2 marks)

(ii) Work out the genotypes of the offspring. (4 marks)

(b) State **two** other disorders in humans that result from gene mutation. (2 marks)

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5. (a) Define the phototropism. (1 mark)

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(b) Name the hormone involve in phototropism. (1 mark)

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(c) Explain how the hormone named in 5 (b) above causes phototropism in a shoot of a young seedling. (3 marks)

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(d) (i) State the function of a klinostat. (1 mark)

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(ii) Explain how the klinostat works to achieve its function. (2 marks)

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**SECTION B (40 MARKS)**

Answer question 6 (Compulsory) and either question 7 or 8 in the spaces provided

6. The data provided below represent populations of a predator and its prey over a fifty years period.

|  |  |  |
| --- | --- | --- |
| TIME IN  YEARS | POPULATION IN RELATIVE NUMBERS | |
| POPULATION OF  P | POPULATION OF  Q |
| 5 | 24500 | 17000 |
| 10 | 30000 | 20500 |
| 15 | 33500 | 26000 |
| 20 | 33500 | 30000 |
| 25 | 31000 | 33000 |
| 30 | 27000 | 32000 |
| 35 | 25000 | 30000 |
| 40 | 29000 | 27500 |
| 45 | 32500 | 28000 |
| 50 | 34000 | 28500 |

1. (i) Using the same axes, draw graphs of the relative populations of **P** and **Q**against time. (7 marks)



(ii) With a reason, identify the curve that represents the prey. (2 marks)

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(iii) Account for the two populations between 25 and 32 years. (2 marks)

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(iv) Which years were the two populations equal? (2 marks)

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(v) Apart from predation, state **three** biotic factors that may have led to the

decline of the prey population. (3 marks)

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(b) Describe the hazards of air pollution by Sulphur(IV)Oxide. (4 marks)

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7. (a) Explain how water move up the plant from the xylem in roots to the leaves. (8 marks)

(b) Describe the process of digestion of a meal consisting of lean meat and rice. (12 marks)

OR

8. Describe the process of urine formation in man. (20 marks)

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