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Name ..... Index Number ...../.....

231/1

Candidate's Signature .....

BIOLOGY

Paper 1

Date .....

(THEORY)

Oct./Nov. 2012

2 hours



## THE KENYA NATIONAL EXAMINATIONS COUNCIL

Kenya Certificate of Secondary Education

BIOLOGY

Paper 1

(THEORY)

2 hours

**231/1 Biology P1**

Thursday 8.00 am - 10.00 am

15/11/2012 (1<sup>st</sup> Session)

## Instructions to candidates

- (a) Write your name and index number in the spaces provided above.
- (b) Sign and write the date of examination in the spaces provided above.
- (c) Answer **ALL** the questions in the spaces provided.
- (d) **This paper consists of 11 printed pages.**
- (e) **Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.**

## For Examiner's use only

| Question | Maximum Score | Candidate's Score |
|----------|---------------|-------------------|
| 1 - 30   | 80            |                   |



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Kenya Certificate of Secondary Education, 2012

BIOLOGY

Paper 1

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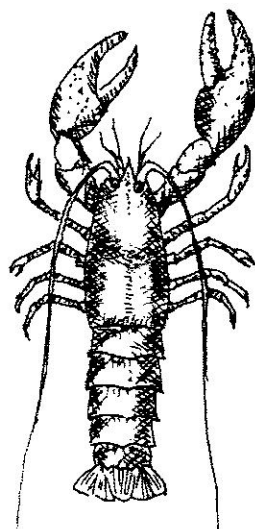
Turn over

- 1 How does nutrition as a characteristic of living organisms differ in plants and animals? (2 marks)

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- 2 The diagram below represents a certain organism collected by a student at the sea shore.



- (a) Name the class to which the organism belongs. (1 mark)

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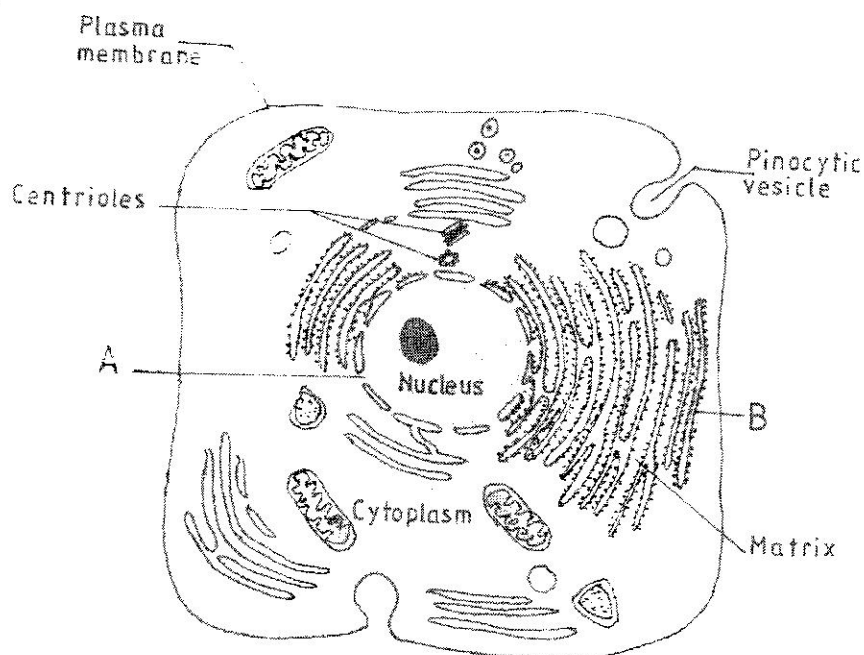
- (b) Give **three** reasons for your answer in (a) above. (3 marks)

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- 3 The figure below is a fine structure of a generalised animal cell as seen under an electron microscope.



- (a) Name the parts labelled **A** and **B**. (2 marks)

**A** .....

**B** .....

- (b) How is the structure labelled **B** adapted to its function? (2 marks)

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- 4 In an investigation, a student extracted three pieces of paw paw cylinders using a cork borer. The cylinders were cut back to 50 mm length and placed in a beaker containing a solution. The results after 40 minutes were as shown in the table below.

| Feature                          | Result |
|----------------------------------|--------|
| Average length of cylinders (mm) | 56 mm  |
| Stiffness of cylinders           | stiff  |

- (a) Account for the results in the table above. (3 marks)

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- (b) What would be a suitable control set-up for the investigation? (2 marks)

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- 5 The table below shows results of a study of three plants C, D and E growing in different habitats.

| Feature                                                    | Plant C | Plant D | Plant E |
|------------------------------------------------------------|---------|---------|---------|
| Number of stomata on upper surface of leaf per square area | 4       | 20      | 6       |
| Number of stomata on lower surface of leaf per square area | 6       | 0       | 8       |
| Thickness of leaf cuticle (mm)                             | 0.4     | 0.1     | 0.2     |
| Surface area of roots (cm <sup>2</sup> )                   | 2000    | 1000    | 1200    |

- (a) Which one of the plants C, D and E grows in an area of relatively low water availability? (1 mark)

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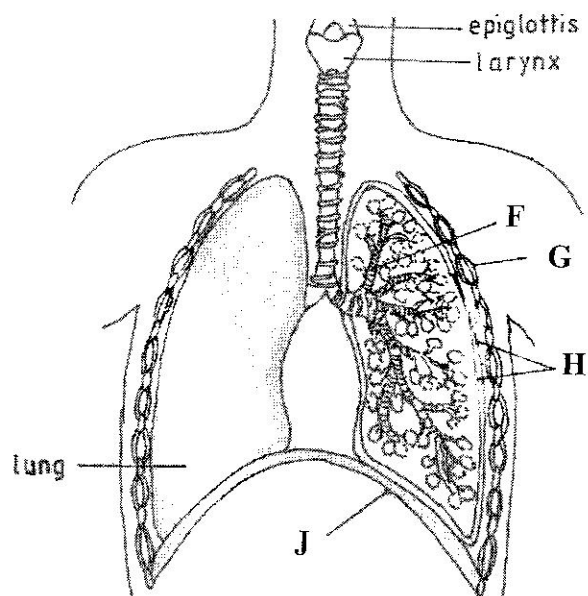
- (b) Explain your answer in (i) above. (3 marks)

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- 6 The diagram below represents part of the gaseous exchange system in human.



- (a) Name the parts labelled **F** and **G**. (2 marks)

**F** .....

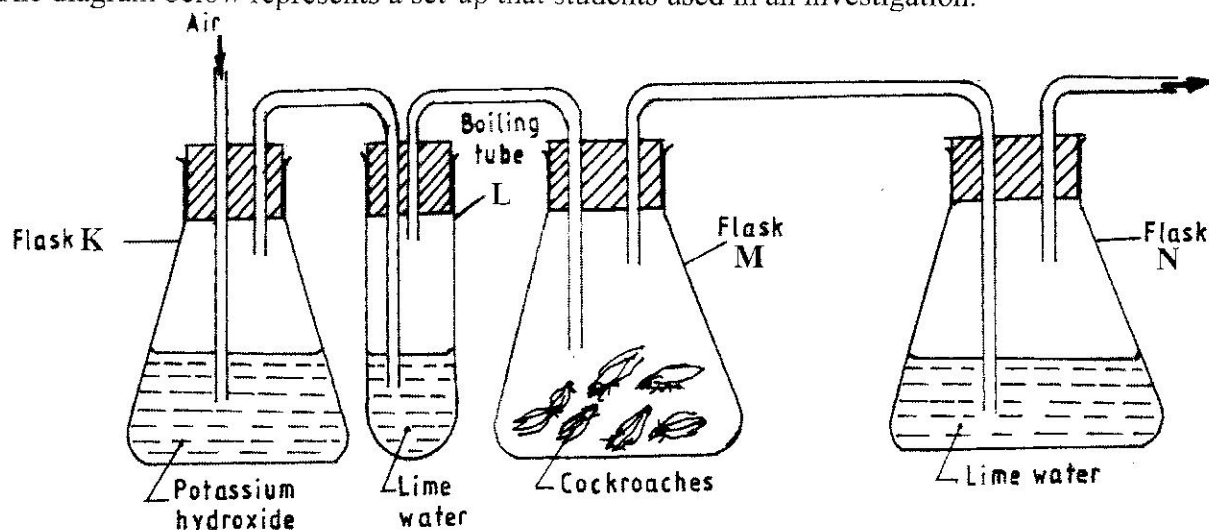
**G** .....

- (b) State **one** function of each of the parts labelled **H** and **J**. (2 marks)

**H** .....

**J** .....

- 7 The diagram below represents a set-up that students used in an investigation.



- (a) Name the physiological process that was being investigated. (1 mark)
- .....
- (b) State the role of potassium hydroxide in flask K. (1 mark)
- .....
- (c) Account for the observation in boiling tube L and flask N. (2 marks)

L .....

.....

N .....

.....

- 8 What is the probability of a couple with blood group AB getting a child with blood group AB? Show your working. (4 marks)

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- 9 State the importance of negative phototaxis to termites. (1 mark)

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- 10 What is meant by the term irritability? (1 mark)

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- 11 (a) State **two** ways in which heart muscles are special. (2 marks)

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- (b) Name the muscles found in the following organs: (2 marks)

stomach: .....

bone: .....

- 12 (a) Name the part of a light microscope used to bring an image of a specimen into sharp focus. (1 mark)

.....

- (b) Why is it recommended to keep the stage of the microscope dry? (1 mark)

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- 13 State **three** factors that affect the rate of diffusion. (3 marks)

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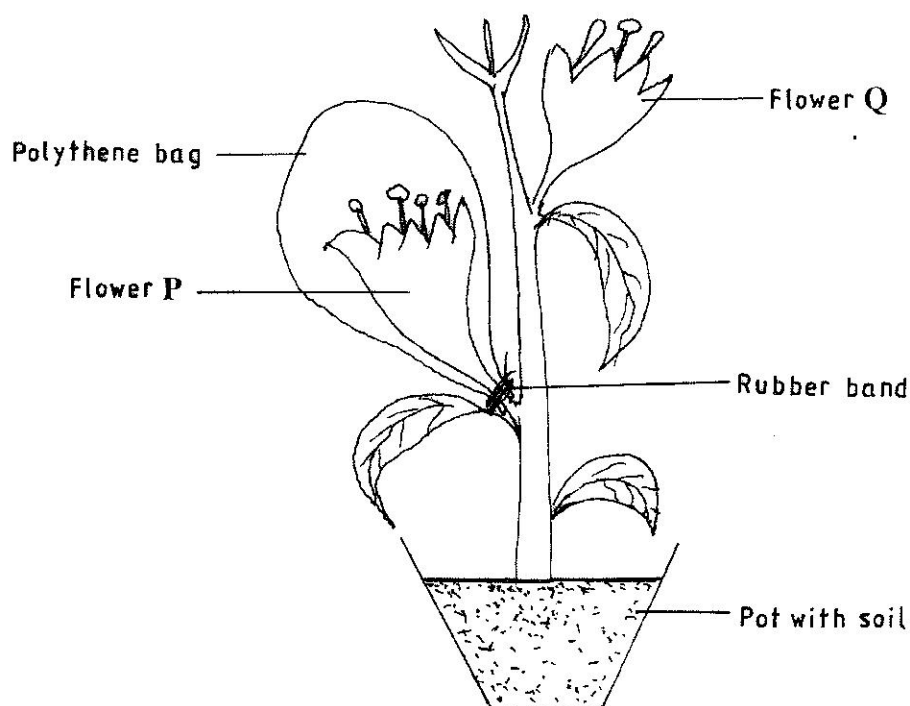
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- 14 (a) Name the type of respiration that is most efficient. (1 mark)

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

- 15 What name is given to a group of hormones that controls the development of secondary sexual characteristics in a human male? (1 mark)

- 16 The diagram below represents an experimental set-up used by students to investigate a certain process.



- Flower Q produced seeds while P did not. Account for the results. (3 marks)

- 17 Name **two** substances that leave the foetal blood through the placenta. (2 marks)
- .....
- .....
- 18 Why are plants able to accumulate most of their waste products for long? (1 mark)
- .....
- 19 List **four** symptoms of diabetes mellitus. (4 marks)
- .....
- .....
- .....
- .....
- 20 State **three** aspects that can be used to estimate growth in seedlings. (3 marks)
- .....
- .....
- .....
- 21 Name the process through which free atmospheric nitrogen is converted into nitrates. (1 mark)
- .....
- 22 State the importance of divergent evolution to organisms. (2 marks)
- .....
- .....
- 23 Name the strengthening materials found in the following support tissues: (2 marks)
- (a) collenchyma; .....
- (b) xylem. ....

- 24 State **four** characteristics of apical meristem cells. (4 marks)

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- 25 State the role of the following hormones in the life cycle of insects: (2 marks)

ecdysone hormone; .....

.....

juvenile hormone. ....

.....

- 26 (a) State the theories of evolution proposed by the following scientists. (2 marks)

Charles Darwin .....

.....

Jean-Baptiste de Lamarck .....

.....

- (b) State the evidence of evolution based on (2 marks)

(i) cell organelles .....

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(ii) fossils. ....

.....

- 27 What is the function of contractile vacuoles in amoeba? (1 mark)

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- 28 State **two** differences between open and closed circulatory systems. (2 marks)

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- 29 Name **two** nutrients that are absorbed without being digested by enzymes in humans. (2 marks)

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- 30 Name the organelle that is involved in each of the following: (2 marks)

(a) manufacture of lipids .....

(b) formation of lysosomes.....

**THIS IS THE LAST PRINTED PAGE.**