**Name: …………………………………………………...............…… Adm no ……..….......... Class.................**

**231/2**

**BIOLOGY FORM FOUR**

**END OF TERM ONE**

**TIME: 2 HOURS**

**INSTRUCTIONS TO CANDIDATES:**

* *Answer* ***ALL*** *the questions*
* *Answers should be written in the spaces provided*

1. The flow diagram below represents passage of a meal through the human digestive system. Study the diagram and answer the questions that follow.

Digestive juice A

Ugali and Meat stew

Mouth cavity

Stomach

Digestive juice B

Ileum

Digestive juice C

1. Name the physical process that will occur in mouth cavity (1mk)

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1. Name the digestive juices **B** and **C** (2mks)

**B**……………………………………...............................................................……………….

**C**…………………………………………………...............................................................….

1. Explain **two** ways in which the digestive system is protected from corrosive effects of digestive juices. (2mks)

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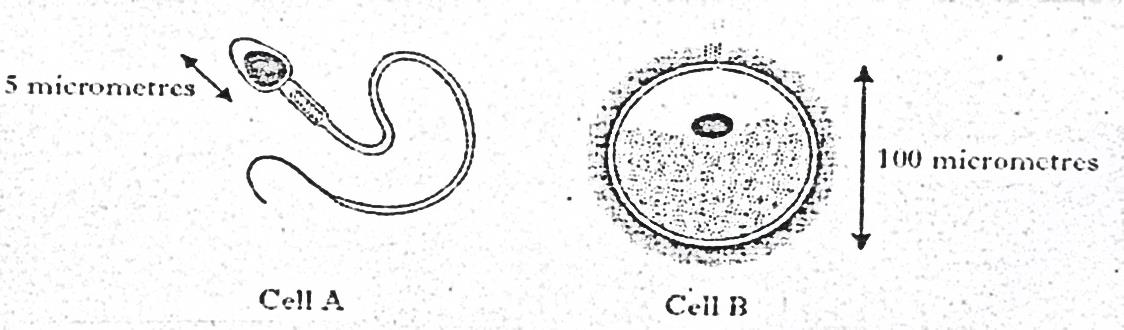
1. Name the hormone that stimulate secretion of juice **B**. (1mk)

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1. Identify **two** contents of digestive juice **A**  (2mks)

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1. a) The following diagrams represent human sex cells.



**5 micrometres**

**100 micrometres**

**Cell B**

**Cell A**

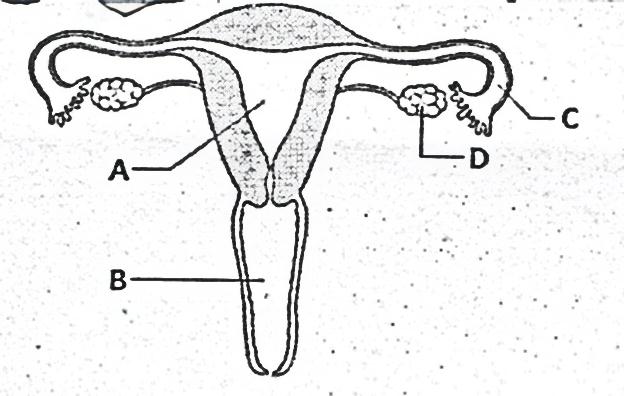
1. Name the cell B (1mk)

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1. Give **one** feature of cell A which makes it different from cell B. (1mk)

…………………....……………………………………………………………………………...

b) The diagram below represents the female reproductive system



1. Name the part marked A..................................................................................................(1mk)

1. State the role of the part marked D. ................................................................................(1mk)

c) State **two** functions of amniotic fluid. (2mks)

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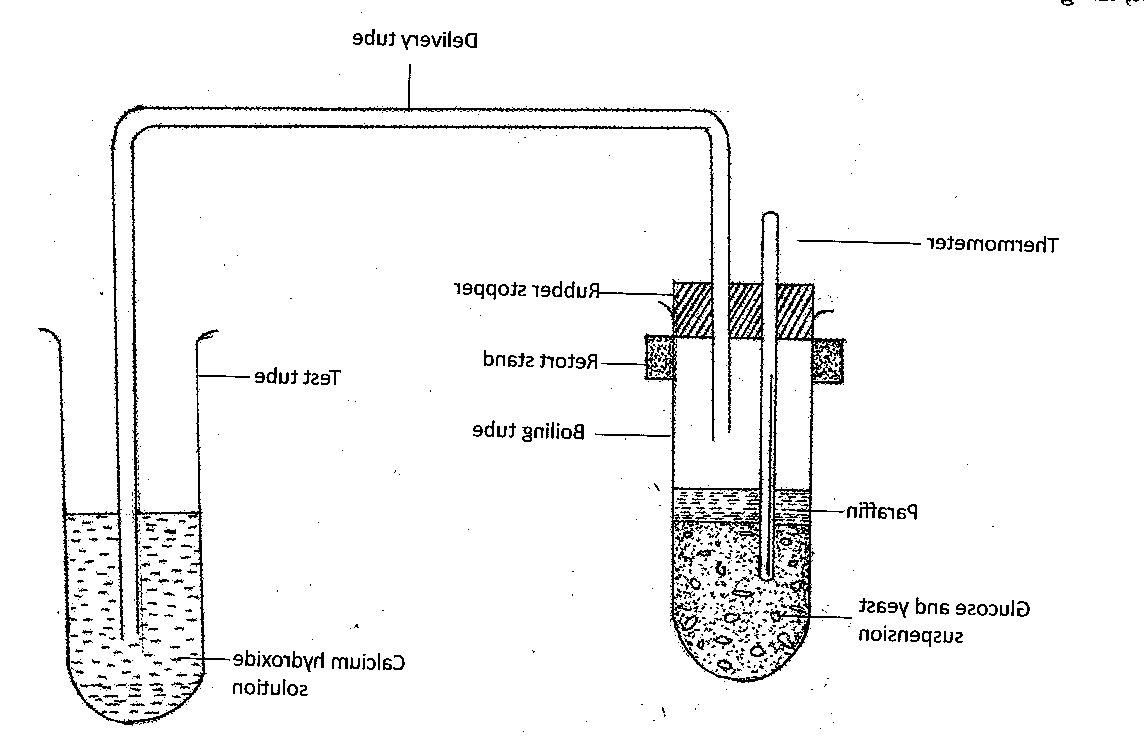
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d) i) Name the organism that causes syphilis....................................................................(1mk)

ii) State **one** symptom of primary syphilis (1mk)

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3. The set up below illustrates an experiment to demonstrate a certain biological process, before the addition of the yeast suspension the glucose solution was first boiled and then cooled at 40oC.

a) What was the aim of the experiment? (1mk)

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b) What observations would you make in the tubes a few minutes after the experiment begun (2mks)

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c) Explain the observations made in (b) above (2mks)

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d) Why was glucose solution boiled before cooling at 40oC (1mk)

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e) How can you set up a control experiment for the above (1mk)

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4. a) What is meant by the term linked genes? (1mk)

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b). Haemophilia is a genetic condition transmitted through a recessive gene linked to **X**

chromosome. The normal gene may be represented by **XH.**

1. What is the genotype of a haemophilic female?................................................(1mk)
2. A woman who is a carrier for the haemophilia gene marries a normal man. Work out the phenotypic ratio for their offspring. (4mks)
3. Haemophilia is more common in males than in females. Explain this phenomenon. (2mks)

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5**.** a) What is meant by the following terms. Give an example in each case.

1. Homologous structures (1mk)

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Example.............................................................................................................................................

1. Analogous structures (1mk)

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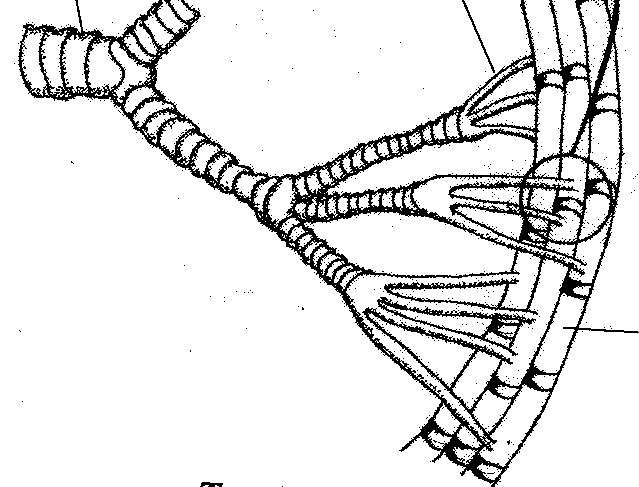
Example.............................................................................................................................................

1. Vestigial structures (1mk)

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Example.............................................................................................................................................

1. The diagram below represents part of a gaseous system in a grasshopper.

 P Q

a) Name the structures labeled P and Q

P……………………………………………………………………………….......……..(1mk)

Q ………………………………………………………………………………….......….(1mk)

b) State the function of the structure labeled P (1mk)

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c) Describe the path taken by carbon (IV) oxide from the tissues of the insect the atmosphere (3mks)

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d) How is the structure labeled Q adapted to its functions (2mks)

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**SECTION B**

***Answer question 6(compulsory) in the spaces provided and either question 7 or 8 in the spaces provided after 8.***

1. During germination and growth of a cereal, the dry weight of endosperm, the embryo and the total dry weight were determined at two day intervals. The results are shown in the table below:

|  |  |  |  |
| --- | --- | --- | --- |
| **Time after planting (days)** | **Dry weight of endosperm (mg)** | **Dry weight of embryo (mg)** | **Total dry weight (mg)** |
| 0 | 43 | 2 | 45 |
| 2 | 40 | 2 | 42 |
| 4 | 33 | 7 | 40 |
| 6 | 20 | 17 | 37 |
| 8 | 10 | 25 | 35 |
| 10 | 6 | 33 | 39 |

1. Using the same axes, draw graphs of dry weight of endosperm, embryo and the total dry weight against time. (7mks)
2. What was the total dry weight on day 5 (1mk)

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1. Account for
2. Decrease in dry weight of endosperm from 0 to 10 (2mks)

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1. Increase in dry weight of embryo from day 0 to day 10 (2mks)

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1. Decrease in total dry weight from day 0 to day 8 (1mk)

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1. Increase in total dry weight after day 8 (1mk)

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1. State **two** factors within the seed and two outside the seed that cause dormancy
2. Within the seed. (2mks)

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1. Outside the seed (2mks)

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1. Give **two** characteristics of meristematic cells (2mks)

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7. (a) Define:

1. Transpiration (2mks)
2. Translocation (2mks)

b) Identify and explain **five** structural factors that affects the rate of transpiration in plants. (16mks)

8. Discuss evidences that support organic evolution. (20mks)

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