

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

Adm. No ..... Class..... Date: .....

**BIOLOGY PAPER 2**

231/2

Time: 2 HRS

**GOLDEN ELITE EXAMINATIONS**

**INSTRUCTIONS TO CANDIDATES:**

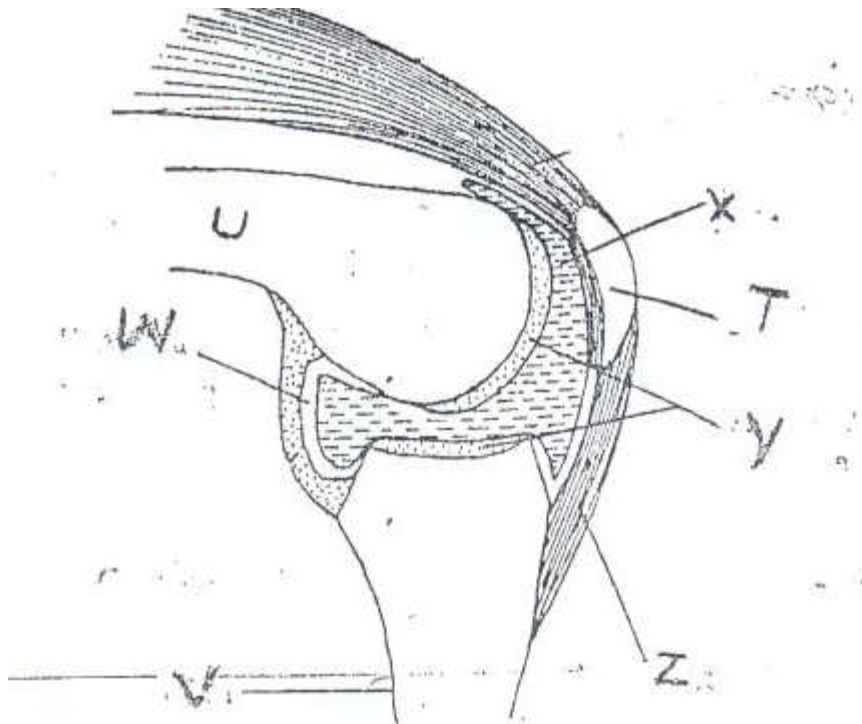
- Write your *name* and *index number* in the spaces provided.
- Sign and write date of examination in the spaces provided above

**For Examiner's Use only:**

QUESTIONS	MAXIMUM SCORE	CANDIDATE'S SCORE
1	8	
2	8	
3	8	
4	8	
5	8	
6	20	
7or8	20	
<b>Total score</b>	<b>80</b>	

**This paper consists of 9 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing**

1. Below is a diagram showing internal structures of a joint.



a) Name the bones labeled: (2mks)

U .....

V .....

b) State the functions of the following structures: (2mks)

W.....

X.....

C i) Name structure Y. (1mk)

.....

ii) What effect would wearing off of the structure Y have on the joint? (1mk)

.....

.....

d) Name a vestigial structure in man that is made of caudal vertebrae. (1mk)

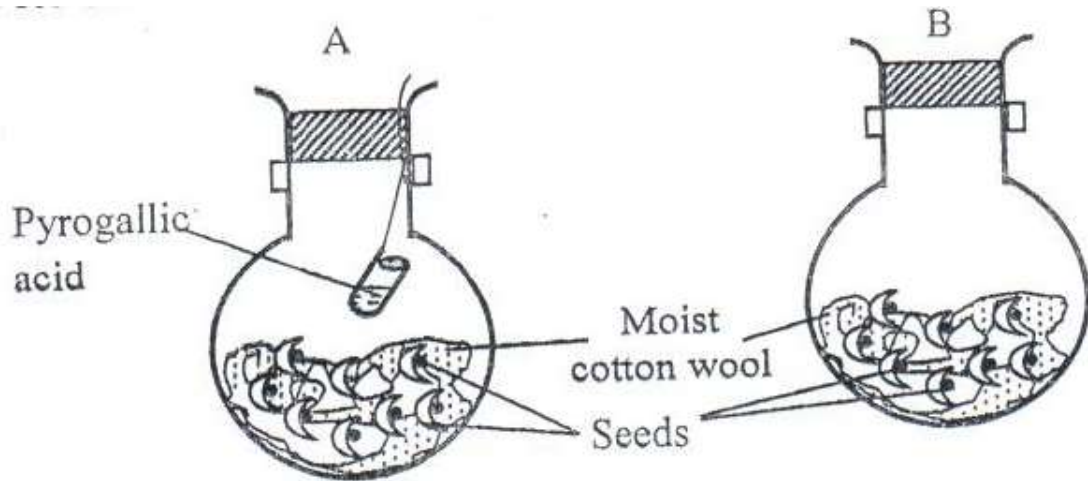
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e) Name the compound responsible for making the bone hard? (1mk)

.....

2. A student set up an experiment as shown in the diagram below. The set up was kept at room temperature for one week.



a) State the Experiment (1mk)

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b) State expected observations in flask A and B at the end of the experiment. (2mks)

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c) Account for the observation made in set up A. (1mk)

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d) Explain the expected results in flask B if dry cotton wool was used instead of moist one. (2mks)

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e) Name two factors that would affect availability of the factor being investigated. (2mks)

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3. The table below shows a description of size of glomeruli and renal tubules of two fish which are adapted to living in two different aquatic environments:-

Structure	Animal A	Animal B
Bowman	Large and many	Small and few
Renal tubules	Short	Long

a) With a reason, name the likely environment in which animal A and B Lives. (4mks)  
A

.....  
.....  
.....

B .....

.....  
.....

Bi) Suggest the main nitrogenous waste produced by animal **B** (1mk)

.....

ii) Give a reason for your answer. (1mk)

.....

.....

c) Name two components of blood that are not present on the glomerular filtrate. (2mks)

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4. Two thirds of any human population can roll their tongues into a U- shape. One third cannot do it no matter how hard they try. This characteristics is controlled by a single pa\*\*\* of alleles represented by R and r

a) If R is dominant, write down the possible genotypes of:

i) Roller.....

.....

ii) Non- rollers .....

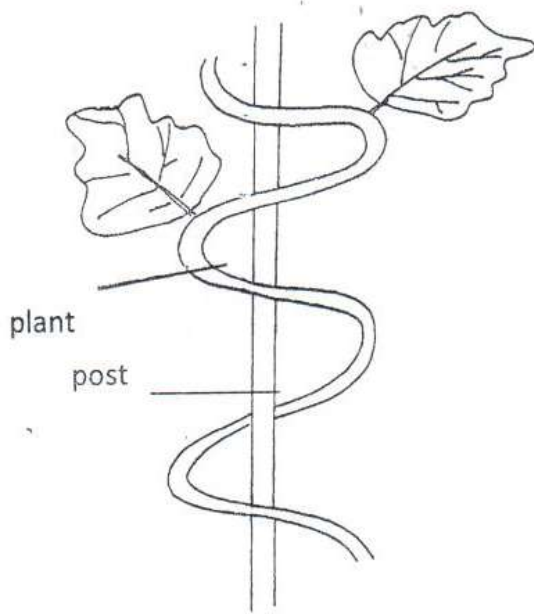
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b) A man and a woman both of whom can roll their tongues marry and produce some children who cannot roll their tongues. Explain how this can occur by means of punnet square diagram. (4mks)

c) Name the type of variation that explain this occurrence of tongue rollers and non- rollers in human population. (1mk)

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5. The diagram below shows a stem of a passion fruit twinning around a post.



a) What is the name given to the type of growth movement shown above? (1mk)

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b) What is the biology importance of this growth? (1mk)

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c) (i) Account for the twinning growth responses exhibited by plants. (3mks)

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(ii) Name three other types of growth response exhibited by plants. (3mks)



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6. Cells of tradescantia plant were found to have an average diameter of 2.5  $\mu\text{m}$ . The cells in each solution were determined and results obtained were shown below.

Percentage sugar concentration	Diameter of cells ( $\mu\text{m}$ )
1	5.0
5	4.0
10	3.0
15	2.0
20	1.5
25	1.0

a) Draw a graph of diameter of cells against percentage sugar concentrate. (6mks)

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(a) From the graph determine the concentration of cell sap. (1mk)

.....

(b) Give an explanation for the average diameter of cells placed in 2.5% sugar. (4mks)

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(c) Describe the difference in appearance between cytoplasm before and after cells being placed in 25% sugar solution. (2mks)

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(d) From the graph determine the concentrate of cell sap. (1mk)

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(e) Give an explanation for the average diameter of cells placed in 2.5% sugar solution. (4mks)

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(f) Describe the difference in appearance between cytoplasm before and after cells being placed in 25% sugar solution. (2mks)

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7. How are flowers adapted to wind and insect pollination? (20mks)

8. (a) using a relevant example describe how an allergic reaction occurs in a human being. (10mks)

(b) Describe how environment factors increase the rate of transpiration in terrestrial plants. (10mks)