

231/2
BIOLOGY
PAPER 2
THEORY
Time: 2 Hours

**ALLIANCE HIGH SCHOOL
MOCK EXAM**

Instructions to candidates

1. This paper consists of two sections A and B.
2. Answer **all** the questions in section A in the spaces provided after each question.
3. In Section B, answer question 6 (**Compulsory**) and either question 7 or 8 in the spaces provided after questions 8.
4. Candidates will be penalized for incorrect spellings especially for biological terms.
5. All working must be clearly shown where necessary.

For Examiner's use only

Section	Questions	Maximum Score	Candidate's Score
A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
B	6	20	
	7	20	
	8	20	
TOTAL	SCORE	80	

This paper consists of 8 printed pages.

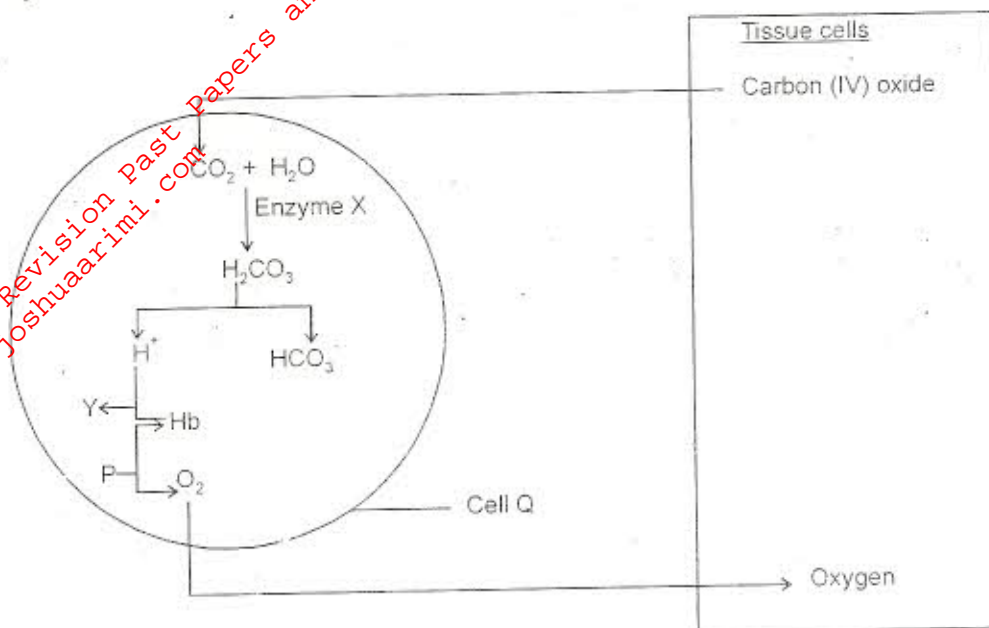
Candidates should check the question paper to ensure that all the pages are printed as indicated and that no questions are missing.

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SECTION A

1. (a) State the functions of the following parts of the mammalian ear.
- (i) Tympanic membrane (3mks)
 - (ii) Eustachian tube (1mk)
 - (iii) Ear ossicles (2mks)
- (b) State two adaptations of the cochlea to its functions. (2mks)
2. (a) What is meant by the term sex linkage. (2mks)
- (b) Name two sex linked traits in humans. (2mks)
- (c) In *Drosophila melanogaster* the inheritance of red colour is sex linked. The gene for red eye is dominant. A cross was made between a homozygous red-eyed female and a white-eyed male. Work out the phenotypic ratio of f_1 generation. (Use R to represent the gene for red eyes). (4mks)

3. Study the illustration below and use it to answer the questions that follow.



(a) Identify

(i) Enzyme X. (3mks)

(ii) Compound Y

(iii) Compound P

(b) (i) Identify cell Q. (1mk)

(ii) State two adaptations that enable cell Q carry out its functions efficiently. (2mks)

(i)

(ii)

(c) Name the compound formed when carbon (IV) oxide combines with amino groups in haemoglobin molecule. (1mk)

(d) Most carbon(IV)oxide is transported from tissues to lungs within Red blood cells and not within plasma. Give one advantage of this mode of transportation. (1mk)

4. Several portions of pond weeds, each being 7.5cm long were placed in troughs containing water. Their lengths were measured every week for a period of 8 weeks. Results obtained were as follows:

Trough conditions	Increase in length	
	4 weeks after	8 weeks after
1. Pond H ₂ O, 20°C Normal day light	4.8cm	5.3 cm
2. Pond H ₂ O, 20°C, continuously kept in the dark	3.2	dead at 6 th week
3. Pond H ₂ O, 10°C, continuously kept in the dark.	0.4	0.5cm
4. Distilled water at 20°C, normal day length light	2.1	2.6
5. Distilled water 20°C continuously kept in the dark	1.2cm	dead at 5 th week

(a) Which factor limited growth in trough 2? (1mk)

Which 2 factors limited growth in trough 5. (2mks)

(b) (i) In which trough was maximum growth recorded? (1mk)

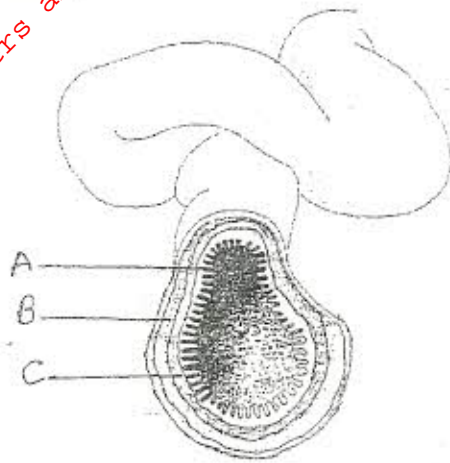
(ii) Which factors promoted growth in the trough named in

(i) above.

(c) How can growth in trough 4 be improved? (1mks)

(d) Name the region where growth takes place in the shoot of a water plant. (1mk)

5. The diagram below represents a section through the ileum.



(a) Name the parts labeled

(3mks)

A

B

C

(b) State the functions of the following cells.

(2mks)

(i) Chief cells

(ii) Oxyntic cells

(c) Complete the following table on deficiency diseases.

Food substances lacking in the diet	Deficiency disease
Calcium	
	Pellagra
Vitamin E	

(3mks)

SECTION B

6. An ecological study in a grassland area was carried out. The number of organisms and the amount of rainfall were estimated over one year. The results are shown in the table below.

Months	J	F	M	A	M	J	J	A	S	O	N	D
Population of Animal A	60	20	10	25	200	650	120	15	10	35	190	450
Population of Animal B	10	5	2	4	8	20	8	5	2	5	10	15
Amount of rainfall(mm)	20	10	55	350	520	250	12	10	25	190	256	350

- (a) Using the same axis, plot the curves of population of organism A and organism B against time in months. (8mks)
- (b) What is the relationship between
- (i) Organism A and organism B. (2mks)
- (ii) Amount of rainfall and organism A population. (2mks)
- (c) Draw a food chain to illustrate the feeding relationships in this area. (1mk)
- (d) A natural predator D for specimen B was introduced into the ecosystem. With reasons, explain the effect this would have in this grassland ecosystem. (3mks)
- (e) Why is it not possible to have two species occupying the same ecological niche. (2mks)
- (f) Distinguish between pyramid of biomass and pyramid of numbers. (2mks)

7. Describe how a Bony fish such as tilapia is adapted to locomotion in water. (20mks)

8. Discuss the various evidences which show that evolution has taken place. (20mks)

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