

AGA KHAN UNIVERSITY EXAMINATION BOARD

HIGHER SECONDARY SCHOOL CERTIFICATE

CLASS XI

ANNUAL EXAMINATIONS (THEORY) 2023

Biology Paper II

Time: 1 hour 30 minutes Marks: 35

INSTRUCTIONS

Please read the following instructions carefully.

1. Check your name and school information. Sign if it is accurate.

**I agree that this is my name and school.
Candidate's Signature**

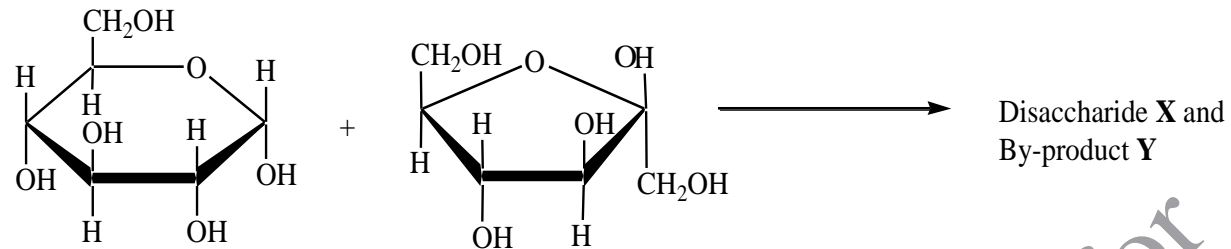
RUBRIC

2. There are ELEVEN questions. Answer ALL questions. Questions 10 and 11 offer TWO choices. Attempt any ONE choice from each.
3. When answering the questions:

Read each question carefully.
Use a black pointer to write your answers. DO NOT write your answers in pencil.
Use a black pencil for diagrams. DO NOT use coloured pencils.
DO NOT use staples, paper clips, glue, correcting fluid or ink erasers.
Complete your answer in the allocated space only. DO NOT write outside the answer box.
4. The marks for the questions are shown in brackets ().

Q.1. (Total 4 Marks)

Consider the given reaction.



a. Identify the type of reaction. (1 Mark)

b. Draw the structure of disaccharide X and by-product Y in the given space. (2 Marks)

Space for diagram

c. Name the type of bond formed in the disaccharide. (1 Mark)

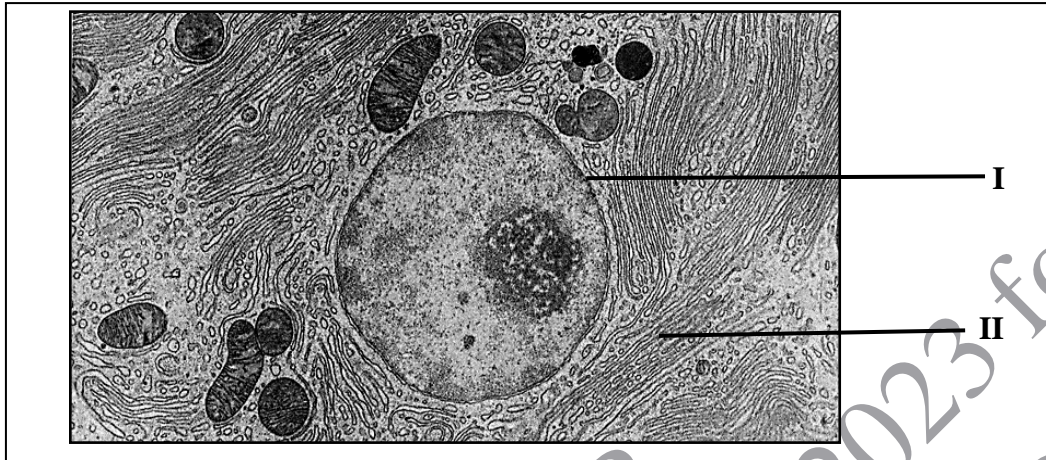
Q.2. (Total 2 Marks)

How does feedback inhibition regulate the rate of product formation in a metabolic pathway?

Q.3.

(Total 2 Marks)

The given electron micrograph shows a section of an animal cell.



Complete the given table with reference to the given micrograph.

Label	Organelle/ Structure	Any ONE Function
I	Nuclear envelope	
II		Its function is to produce, fold, modify and transport proteins and lipids.

Q.4.

(Total 2 Marks)

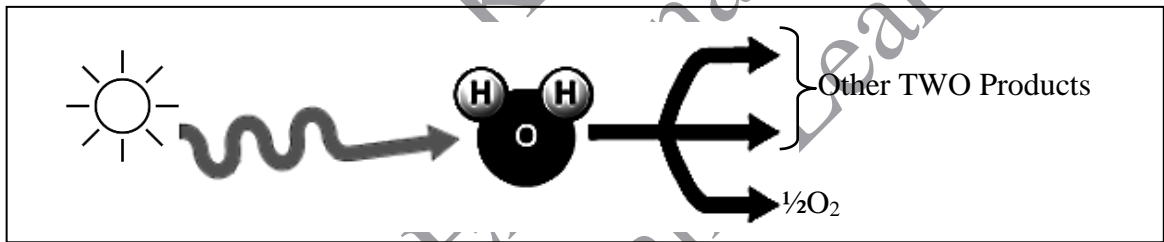
Write any TWO reasons for placing echinoderms closest to phylum chordata in the classification of kingdom animalia.

Q.5. (Total 3 Marks)

Identify any THREE characteristics of Pteropsida that make them more advanced terrestrial plants than Bryopsida.

Q.6. (Total 2 Marks)

The given diagram outlines the process of photolysis that occurs during the light-dependent reaction of photosynthesis.



Name the other TWO products.

Q.7. (Total 2 Marks)

Describe TWO functions of bicarbonate ions present in pancreatic juice which helps in digestion.

Q.8.

(Total 2 Marks)

Describe why more red blood cells are produced in the body of people who live at higher altitudes.

Q.9.

(Total 2 Marks)

Give a reason for each of the following statements.

a. Sino-atrial (SA) node is referred to as the pacemaker of the heart. (1 Mark)

b. There is a delay of approximately 0.15 second in conductance of impulses from the sino-atrial node to atrio-ventricular node. (1 Mark)

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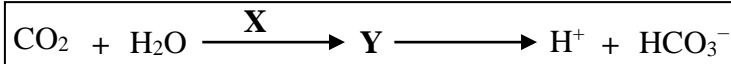
Q.11.

(Total 7 Marks)

EITHER

a.

- i. The following chemical pathway shows how carbon dioxide gas is converted into bicarbonate ions in a red blood cell.



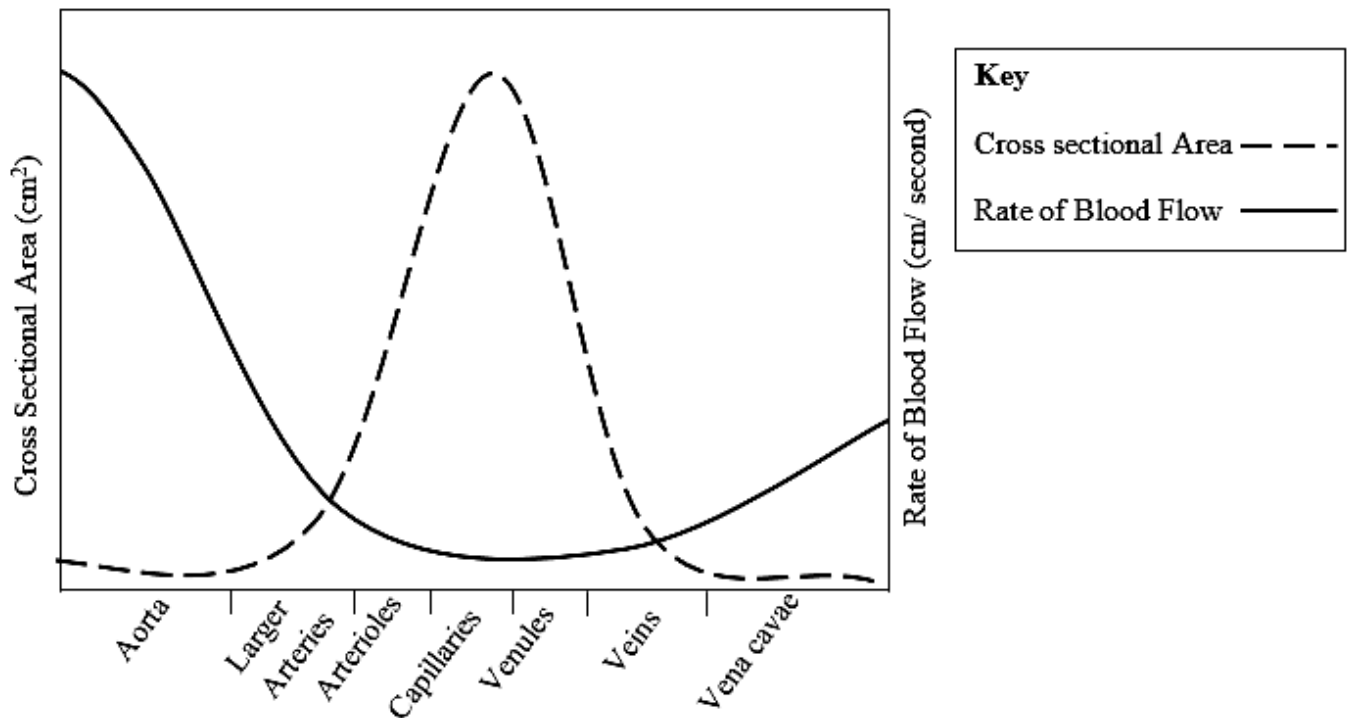
I. Identify enzyme **X** and intermediate product **Y**. (2 Marks)

II. Name any ONE form, other than HCO_3^- , in which CO_2 is carried in the blood. (1 Mark)

- ii. Describe any FOUR factors that cause dissociation of oxyhaemoglobin to provide oxygen to the actively respiring tissues of the human body. (4 Marks)

OR

- b. The given graph shows the relationship between the cross-sectional area and the rate of blood flow in different blood vessels of human body.



i. Why does the rate of blood flow gradually decrease from aorta to capillaries? (1 Mark)

ii. Describe any FOUR factors that cause the gradual increase of blood flow from the veins to vena cava. (4 Marks)

iii. Identify the blood vessel which has the highest cross-sectional area. Support your answer by giving a reason. (2 Marks)

PLEASE TURN OVER THE PAGE

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