AGA KHAN UNIVERSITY EXAMINATION BOARD

HIGHER SECONDARY SCHOOL CERTIFICATE

CLASS XI

MODEL EXAMINATION PAPER 2018

Biology Paper II

Time: 2 hours 10 minutes Marks: 50

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 5 Marks)

a. Illustrate the formation of a sucrose molecule with the help of ring diagram only. (3 Marks)

Space for the illustration

b. Following are types of functions performed by proteins in the human body. (2 Marks)

Storage	Support	Regulation	Defence

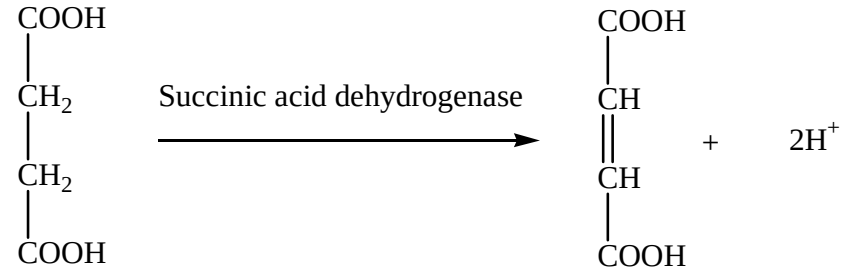
Select the appropriate type of function of proteins for each of the given descriptions.

Description	**Type of Function**
Recognition of foreign molecules	
Receptors for extracellular signals	

Q.2. (Total 2 Marks)

Consider the given reactions **I** and **II**.

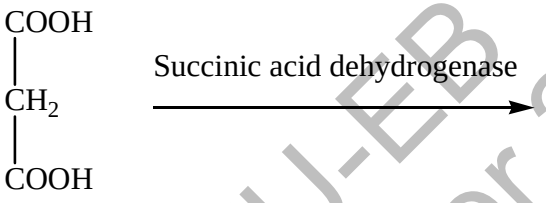
Reaction I



Succinic acid

Fumaric acid

Reaction II



Malonic acid

No product formed

If succinic acid is added to malonic acid in reaction **II** and its quantity is 10 times that of malonic acid, will a product be formed? Give reason to support your answer.

Q.3. (Total 3 Marks)

a. Which organelle of the eukaryotic cell is called the cell's recycling centre? Why? (2 Marks)

b. How do annelids benefit from their metameric segmentation for locomotion? (1 Mark)

Q.4. (Total 4 Marks)

a. On the basis of five-kingdom classification system proposed by Robert Whittaker, name the kingdom which includes organisms with

i. absorptive mode of nutrition. (1 Mark)

ii. ingestive mode of nutrition. (1 Mark)

b. A mineral water company takes water from hot springs, boils it to 100°C and distributes it in the market for consumption.

Name and define the type of bacteria that could still be present in the mineral water. (2 Marks)

Q.5. (Total 4 Marks)

a. State any TWO features of plant-like protists. (2 Marks)

_____

_____

b. The given diagram shows a key reproductive feature of a phylum of fungi. (2 Marks)

Identify the phylum of fungi to which the given reproductive feature belongs. Give ONE reason for identification.

Identification: _____

Reason for identification: _____

_____

Q.6. (Total 5 Marks)

a. Describe any THREE features important for the seed to adapt to dry land. (3 Marks)

_____

_____

_____

_____

_____

_____

b. State any TWO outcomes of shuffling of genes in meiotic division during alternation of generation of bryophytes. (2 Marks)

_____

_____

_____

_____

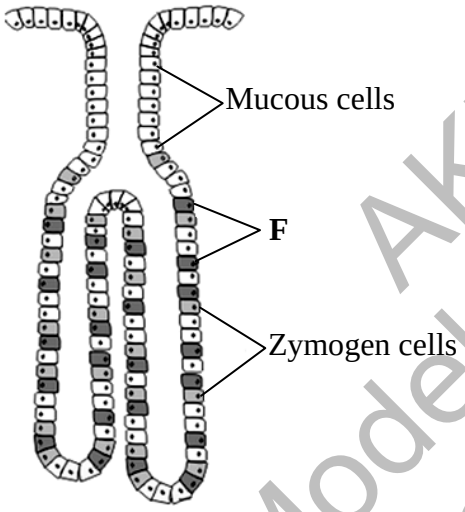
Q.7. (Total 5 Marks)

a. The given reaction shows photolysis.

$$2H_2O \longrightarrow 4H^+ + 4e^- + O_2$$

What is the fate of hydrogen ions (H^+) and electrons (e^-) produced in light dependent reactions of photosynthesis? (2 Marks)

b. The given diagram shows gastric glands in the stomach wall of a human being.



Identify the cells labelled as **F**. How do these cells help in the process of digestion? (3 Marks)

Q.8. (Total 4 Marks)

a. Name any TWO products of glycolysis. (2 Marks)

b. Sodium bicarbonate is an important component of the pancreatic juice.

If sodium bicarbonate is removed from the pancreatic juice, then

i. what would be the impact on duodenal wall? (1 Mark)

ii. how will the process of digestion in duodenum be affected? (1 Mark)

Q.9. (Total 3 Marks)

Two animal cells, A and B, are adjacently placed. The pressure potential of cell A is 600 kPa and its solute potential is 1000 kPa. The water potential of cell B is 2000 kPa and its pressure potential is 500 kPa.

a. Calculate the water potential of cell A. (1 Mark)

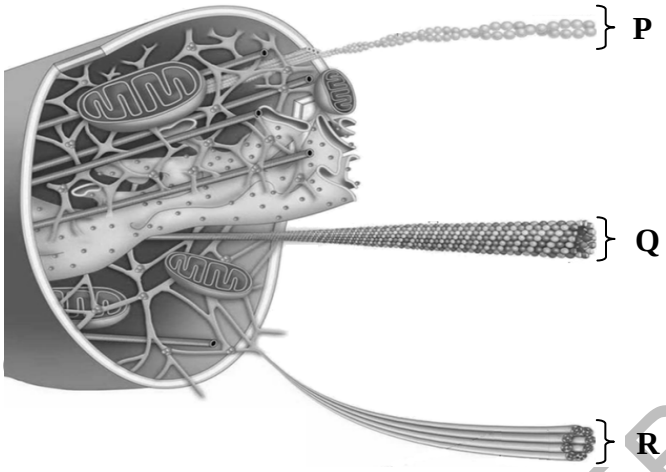
b. Calculate the solute potential of cell B. (1 Mark)

c. What will be the direction of movement of water molecules between the cells, A and B? (1 Mark)

Q.10. (Total 7 Marks)

EITHER

a. The given diagram depicts three components of cytoskeleton which provide mechanical support to the cell.



i. Describe the structure and function of the labelled components, **P**, **Q** and **R**, in the given diagram of cytoskeleton. (6 Marks)

ii. Name the protein subunits present in the labelled component **Q**. (1 Mark)

OR

b. Describe the following.

i. Evolutionary origin of class Mammalia particularly exhibited by sub-class Prototheria. (1Mark)

ii. Characteristics of sub-classes of Mammalia to which spiny ant-eater, kangaroo and whale belong. (6 Marks)

Q.11. (Total 8 Marks)

EITHER

a.

i. Describe the following respiratory tract infections. (6 Marks)

- Emphysema
- Pneumonia
- Otitis media

ii. Identify the TWO respiratory tract infections from part **i** that can be treated through antibiotics. (2 Marks)

OR

b.

i. Mention TWO evidences which support the Pressure Flow Hypothesis. (2 Marks)

ii. Explain the mechanism of Pressure Flow Hypothesis involved in the movement of sucrose molecules from the leaf to the root. (6 Marks)

END OF PAPER

Please use this page for rough work