

**AGA KHAN UNIVERSITY EXAMINATION BOARD**

**SECONDARY SCHOOL CERTIFICATE**

**CLASS X**

**ANNUAL EXAMINATIONS (THEORY) 2023**

**Biology Paper II**

**Time: 1 hour 50 minutes    Marks: 25**

**INSTRUCTIONS**

**Please read the following instructions carefully.**

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

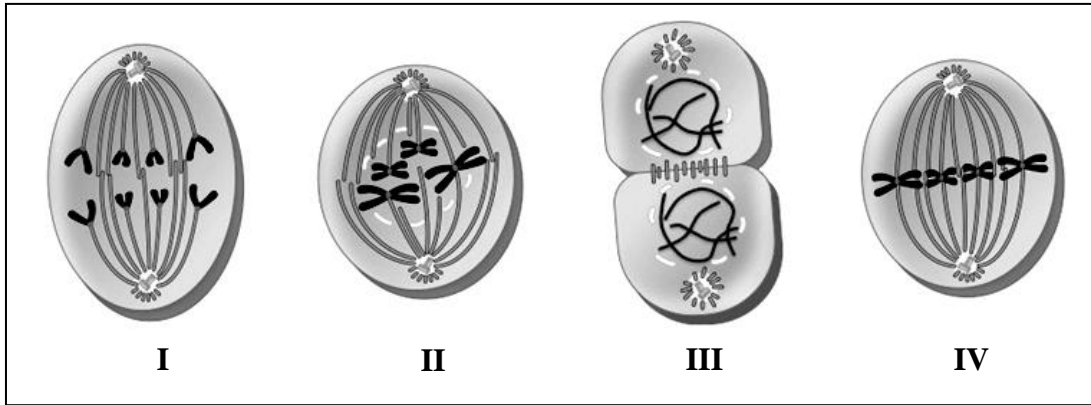
**I agree that this is my name and school.  
Candidate's Signature**

**RUBRIC**

2. There are SIX questions. Answer ALL questions. Questions 5 and 6 each 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 ( ).
5. You may use a simple calculator if you wish.

Q.1. (Total 3 Marks)

The given diagrams, I - IV, show four phases of mitosis in random order.



a. Describe the phase labelled as I. (2 Marks)

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b. Rearrange the phases of mitosis (I-IV) in sequence of their occurrence. (1 Mark)

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Q.2. (Total 4 Marks)

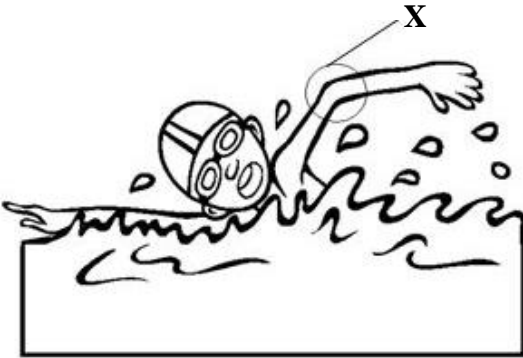
Describe the distribution of stomata and its advantages in hydrophytes and xerophytes.

	Hydrophytes	Xerophytes
Distribution of Stomata		
Advantage		

Q.3.

(Total 3 Marks)

Observe the given diagram.



a. Identify joint X and describe its structure.

(2 Marks)

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b. Describe the working of joint X while swimming.

(1 Mark)

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Q.4.

(Total 3 Marks)

Mr and Mrs Asad have brown eyes. They have five children, four of their children have brown eyes while one, Akram, has blue eyes. At the age of 30, Akram marries a woman who has brown (heterozygous) eyes.

With reference to Akram and his wife, determine the possible genotypes and phenotypic ratio of Akram and his wife's offspring through a genetic cross.

(Note: Represent the allele for brown and blue eye colour as (B) and (b) respectively.)

Genotype of parents:

Genotype of offspring:

Phenotypic ratio of offspring:

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Q.5.

(Total 6 Marks)

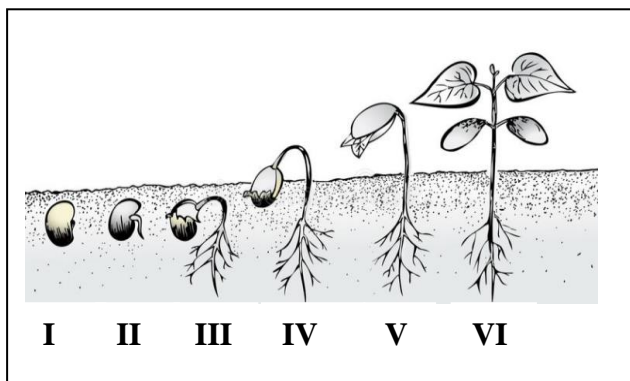
**EITHER**

a. Describe any TWO functions of each of the following parts of the human brain.

- i. Thalamus (2 Marks)
- ii. Hypothalamus (2 Marks)
- iii. Cerebrum (2 Marks)

**OR**

b. The given diagram shows different stages (I-VI) of seed germination.



- i. Identify the given type of germination. (1 Mark)
- ii. Name any ONE seed that shows such type of germination. (1 Mark)
- iii. Describe any FOUR progressive changes from stages II to VI. (4 Marks)

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