

AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS X

MODEL EXAMINATION PAPER 2020

Biology Paper II

Time: 2 hours 15 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

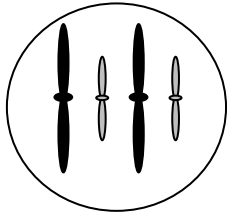
2. There are EIGHT questions. Answer ALL questions. Questions 7 and 8 each offer TWO choices. Attempt any ONE choice from each.
3. When answering the questions:

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 ().

Q.1.

(Total 3 Marks)

The given diagram shows a cell with four chromosomes.



If this cell undergoes meiosis, then draw the chromosomes in the cell during **prophase I**, **metaphase I** and **metaphase II**?

Prophase I	Metaphase I	Metaphase II

Q.2.

(Total 4 Marks)

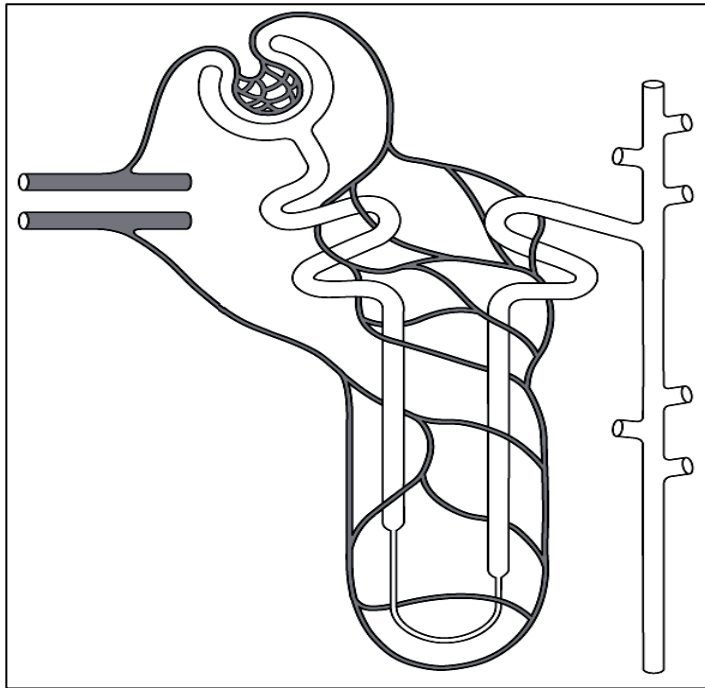
a. Mention any TWO ways through which heat is lost from the human body.

(2 Marks)

- b. The given diagram shows the structure of a human nephron.

Trace the pathway of blood with the help of arrows (→) in the given diagram. (2 Marks)

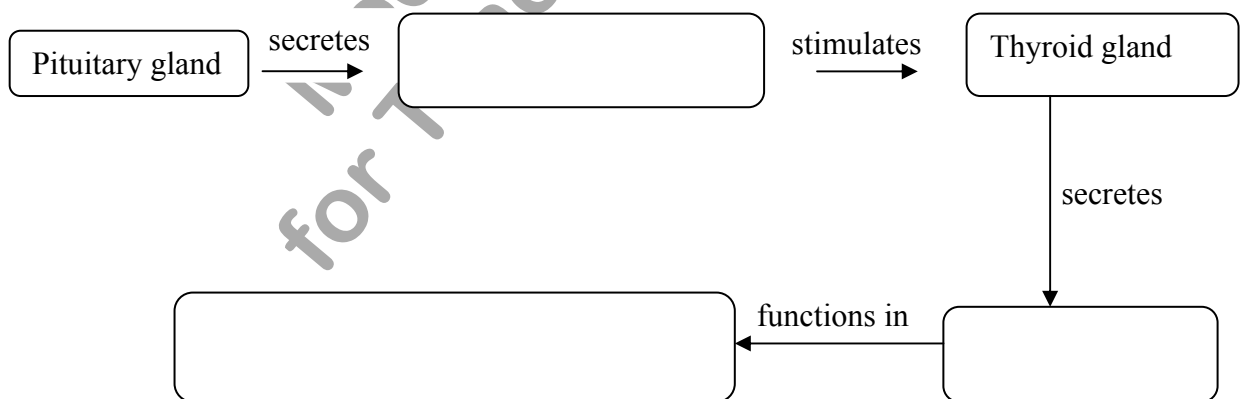
(Note: Do NOT show the pathway of the filtrate.)



Q.3.

(Total 3 Marks)

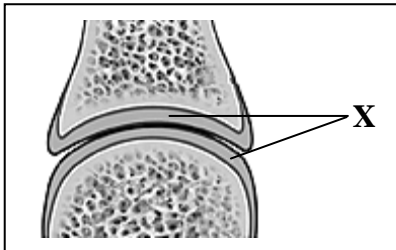
Complete the given flow chart with reference to the secretion and function of a gland.



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Q.4. (Total 3 Marks)

The given diagram represents a human hinge joint.



a. Identify the structure labelled as **X**. (1 Mark)

b. Name the cells that make structure **X**. (1 Mark)

c. Mention the role of structure **X** in the joint. (1 Mark)

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Q.5.

(Total 3 Marks)

The given table demonstrates a genetic cross between two flowers.

Parents	Red	×	White
F1 Generation	Pink (50%)		
F1 x F1	Pink	×	Pink
F2 Generation	Red (25%)	Pink (50%)	White (25%)

- a. Determine the genotype of the pink flowers produced in F1 generation. (1 Mark)

- b. Determine the phenotype and genotype of offspring flowers if two red flowers from F2 generation are crossed. (2 Marks)

Phenotype: _____

Genotype: _____

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Q.6. (Total 4 Marks)

a. How has genetic engineering improved the quality and quantity of agricultural yield? (2 Marks)

b. State the primary usage of the following drugs.

i. Tetracycline (1 Mark)

ii. Small pox vaccine (1 Mark)

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Q.7.

(Total 7 Marks)

EITHER

a.

- i. Mention any FOUR physiological changes that would take place in the human body as a result of increased adrenaline level. (4 Marks)
- ii. Describe the importance of any THREE physiological changes mentioned in part (i) for exercise or emergency situation. (3 Marks)

OR

b.

- Mention any ONE adaptation of stigma for pollination in an insect pollinated flower.(1 Mark)
- Describe the process of sexual reproduction in plants from pollination to fruit formation.
(6 Marks)

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process of sexual reproduction in plants from pollination to

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Q.8. (Total 8 Marks)

EITHER

a.

- i. State any TWO sources of variations in sexually reproducing organisms. (2 Marks)
- ii. Describe continuous and discontinuous variations. Give an example of human beings in each case to support your answer. (6 Marks)

OR

b.

- i. Which event of nitrogen cycle sends nitrogen back into the atmosphere and how does this process take place? (2 Marks)
- ii. Describe THREE ways through which atmospheric nitrogen is converted into nitrates in the nitrogen cycle. (6 Marks)

END OF PAPER

Please use this page for rough work

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