AGA KHAN UNIVERSITY EXAMINATION BOARD

HIGHER SECONDARY SCHOOL CERTIFICATE

CLASS XII EXAMINATION

MAY 2012

Biology Paper II

Time allowed: 2 hours 20 minutes   Marks 55

INSTRUCTIONS

Please read the following instructions carefully.

1.   Check your name and school information. Sign that it is correct.

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

2.   RUBRIC. There are ELEVEN questions. Answer ALL ELEVEN questions. Questions 9, 10 and 11 offer TWO choices. Attempt any ONE choice from each.

3.   When answering the questions:

Read each question carefully.
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)

Name any TWO common excretory products in plants and outline the ways in which they are utilized or removed.

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Q.2. (Total 4 Marks)

Complete the given table by filling in the description of types of sclerenchymatous cells.

Type of Sclerenchymatous Cells	Structure	Location
Sclereids		
Tracheids		

Q.3.   (Total 6 Marks)

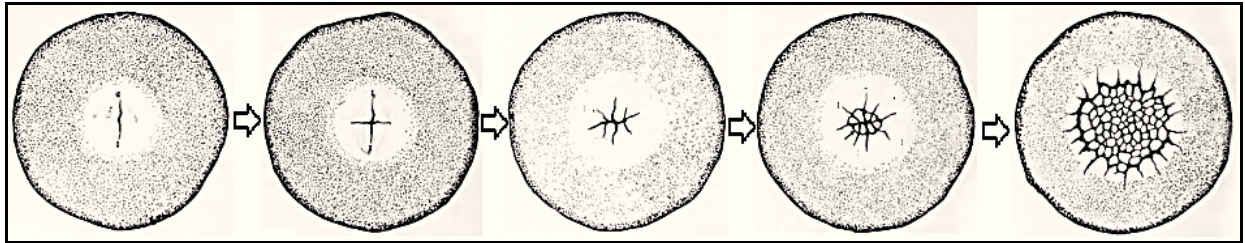a.   What attributes of asexual reproduction make it less fruitful than sexual reproduction? State any
       THREE.   (3 Marks)

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b.   Briefly describe the process of producing test tube babies.   (3 Marks)

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Q.4.   (Total 6 Marks)

a.   The diagram shows one of the stages of development in a chick.

Identify the stage and describe the changes that take place during this stage.   (4 Marks)

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b.   Name any TWO factors which lead to abnormal development in men.   (2 Marks)

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Q.5.   (Total 4 Marks)

a.   Why do chromosomes appear double at the beginning of cell division?   (2 Marks)

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b.   Give an example of incomplete dominance in plants.   (2 Marks)

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Q.6. (Total 8 Marks)

a. In order to produce recombinant DNA a gene of interest, which is to be cloned, is required. What are THREE possible ways through which a gene of interest is obtained? (3 Marks)

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b. Scientists analyze the entire genome of an individual using DNA fingerprinting. Write THREE ways in which the information gained through this technique can be useful. (3 Marks)

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c. Name any TWO diseases that are being cured through gene therapy. (2 Marks)

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Q.7. (Total 4 Marks)

a. Give an example of vestigial organs in humans. (1 Mark)

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b. '*The reducing atmosphere slowly became an oxidizing atmosphere.*'

What does the above statement mean? Describe with reference to the evolution of eukaryotes from prokaryotes starting from the use of hydrogen sulphide to the role of ozone. (3 Marks)

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Q.8. (Total 4 Marks)

a. Describe the role of micro-organisms in a nitrogen cycle. (2 Marks)

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b. Mention any TWO ways in which urbanization may cause an increase in the number of endangered species. (2 Marks)

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Q.9. (Total 5 Marks)

EITHER

a. Liver is considered as an incredible organ of the human body. Besides its other important functions, explain the role it plays as a homeostatic organ.

OR

b. Certain endocrine hormones when produced in abnormal amount cause infertility in men and women. Discuss the role of any THREE such hormones and their effects on the reproductive cycle.

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Q.10. (Total 5 Marks)

EITHER

a.   Explain why replication of DNA is considered as a semi-conservation process.

OR

b.   What is diabetes mellitus? Discuss the occurrence of different types of diabetes mellitus in human population.

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Q.11. (Total 5 Marks)

EITHER

a. Explain the ecosystem of a grassland with reference to the following:

   i. Rainfall ii. Soil conditions

OR

b. Discuss the ways through which we can bring awareness about need of recycling among people of our country.

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END OF PAPER