BIOLOGY 2
0710

CAMEROON GENERAL CERTIFICATE OF EDUCATION BOARD

General Certificate of Education Examination

JUNE 2019 **ADVANCED LEVEL**

Subject Title	**BIOLOGY**
Paper No./Title	**2 – Theory**
Subject Code No	**0710**

THREE HOURS

Candidates are required to answer FOUR questions, choosing at least ONE from each of the sections. All the questions carry equal marks.

You are reminded of the necessity for good English and orderly presentation in your answers.

1. (a) What do you understand by:
   (i) photoautotrophic nutrition.
   (ii) Chemoautotrophic nutrition.
   (b) How is the dicot leaf adapted to its function in a plant?
   (c) Name the main photosynthesis pigments giving their colour and distribution in the plant kingdom.

(4, 6, 10 marks)
(Total = 20 marks)

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2. (a) what THREE characteristics are common to most circulatory systems?
   (b) How are open circulatory systems different from close circulatory systems?
   (c) Describe the series of event that occur during blood clotting.
   (b) Explain how oxygen is transported by blood.

(3, 7, 6, 4 marks)
(Total = 20 marks)

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3. (a) What is Protein?
   (b) How is the structure of protein adapted to its many functions?
   (c) Outline SEVEN roles of carbohydrates in a plant.
   (d) What are the structural differences between cellulose and starch?

(3, 4, 7, 6 marks)
(Total = 20 marks)

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4. (a) Draw a large labelled diagram of the longitudinal section of the carpel of a flowering plant.
   (b) Describe:
   (i) Pollen grain development.
   (ii) Embryo sac or ovule development in a flowering plant.
   (c) Describe the roles of hormones in the control of the sexual cycle in a female mammal.

(6, 3, 3, 8 marks)
(Total = 20 marks)

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5. (a) Using specific examples define the following terms.
   (i) genes
   (ii) alleles.
   (iii) sex linkage
   (iv) hybrid.
   (b) In cats, black fur colour is determined by a gene B and the allele responsible for yellow fur is L. These genes show co-dominance and the hybrid BL produces an albino. These genes are also sex-linked. Show the gametes and possible genotypes in the parents of the F1 and F2 generations of a cross between a black furred female with a yellow furred male cat.
   (c) To what extend are the male and female offspring produced distinguishable by their fur colour?

(8, 10, 2 marks)
(Total = 20 marks)

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6. (a) What is a nerve impulse?
   (b) Describe how a nerve impulse is initiated along a neuron.
   (c) How can this impulse be transmitted across a synapse?
   (d) Differentiate between nervous and hormonal coordination.

(2, 5, 7, 6 marks)
(Total = 20 marks)

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7. (a) What is pollution?
   (b) What are:
      (i) the main sources and
      (ii) the Effects of oil pollution?
   (c) Describe the techniques for treating and preventing oil pollution.

(3, 9, 8 marks)
(Total = 20 marks)

8. (a) Explain how a useful gene can be transferred from a human pancreatic cell into a bacterium.
   (b) How can a transgenic bacterium be cultured in an industrial fermenter to produce a useful product.
   (c) Outline SEVEN reasons for using micro-organisms in bio-technological process.

(6, 7, 7 marks)
(Total = 20 marks)