

BLG1502

May/June 2018

Animal and Plant Diversity

Duration 2 Hours

100 Marks

EXAMINERS

FIRST

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SECOND

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Closed book examination

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This paper consists of Five (5) pages.

ANSWER ALL THE QUESTIONS IN THE EXAMINATION ANSWER BOOK PROVIDED.

[TURN OVER]

QUESTION 1**[10x1 = 10]**

Choose the correct answer for each of the following descriptions. Each question has **ONLY ONE** correct answer. Choose the correct answer and write down the letter next to the question number (1.1 - 1.10).

- 1 1 Arrange the following taxonomic categories in their hierarchical order from highest to lowest (left to right) Genus, Family, Class, Order, Phylum
- A Phylum, Order, Class, Genus, Family
 - B Class, Phylum, Order, Family, Genus
 - C Order, Phylum, Class, Family, Genus
 - D Phylum, Class, Order, Family, Genus
- 1 2 All members of which of the following groups have the greatest number of characteristics in common?
- A Class
 - B Order
 - C Family
 - D Genus
- 1 3 The characteristics of the plant kingdom include
- A photosynthetic, no alternation of generations, unicellular
 - B heterotrophic, alternation of generations, chitin cell walls, multicellular
 - C photosynthetic, multicellular, alternation of generations, cellulose cell walls
 - D photosynthetic, no alternation of generations, cellulose cell walls, unicellular
- 1 4 Which class of animal has skin with fur or hair, feeds their young milk and maintains a constant body temperature?
- A Fish
 - B Birds
 - C Reptiles
 - D Mammals

[TURN OVER]

- 1 5 The body is capable of catabolizing many substances as source of energy
Which of the following would be used as an energy source only after the depletion of other sources?
- A Calcium phosphate in bone
 - B Glycogen in muscle cells
 - C Glucose in the blood
 - D Protein in muscle cells
- 1 6 Which sequence of blood flow can be observed in either a reptile or a mammal?
- A Pulmonary vein → left atrium → ventricle → pulmonary circuit
 - B Left atrium → aorta → lungs → systemic circulation
 - C Right atrium → pulmonary artery → left atrium → ventricle
 - D Vena cava → right atrium → ventricle → pulmonary circuit
- 1 7 When air temperature exceeds their body temperature, jackrabbits living in hot, arid lands will
- A bask in a sunny, exposed area
 - B dilate the blood vessels in their large ears
 - C constrict the blood vessels in their large ears
 - D increase movements to find a sunny area
- 1 8 An example of a connective tissue is the
- A nerves
 - B cuboidal epithelium
 - C skin
 - D blood
- 1 9 Which of the following characteristics of plants is absent in the closest relatives, the charophytes?
- A Chlorophyll b
 - B Cellulose in cell walls
 - C Formation of cell plate during cytokinesis
 - D Alternation of generations

[TURN OVER]

1 10 To leave the digestive tract, a substance must cross a cell membrane. During which stage of food processing does this take place?

- A Digestion
- B Elimination
- C Hydrolysis
- D Absorption

QUESTION 2**[12]**

- 2 1 Explain what is meant by phylogeny (3)
- 2 2 Distinguish between monophyletic and paraphyletic groups (4)
- 2 3 Describe homology and homoplasy (2)
- 2 4 Differentiate between orthologous and paralogous genes (4)
- 2 5 What are the three major branches in the Tree of Life? (3)

QUESTION 3**[9]**

Write explanatory notes on the structure and functions of the following

- 3 1 Stomata (3)
- 3 2 Guard cells (3)
- 3 3 Petiole (3)

QUESTION 4**[10]**

Environmental adaptations may result in roots being modified for a variety of functions. Name at least 5 different types of modified roots and their functions.

(10)

QUESTION 5**[14]**

- 5 1 Describe how the carbon dioxide is picked up at the tissues and deposited in the lungs (8)
- 5 2 Discuss the process of homeostasis (6)

[TURN OVER]

QUESTION 6**[14]**

Name the hormones secreted by the following glands

- 6 1 anterior pituitary gland (6)
6 2 gonads (3)
6 3 adrenal glands (4)
6 4 pineal gland (1)

QUESTION 7**[16]**

- 7 1 List five differences between monocotyledonous and dicotyledonous plants (6)
7 2 Discuss two groups of defence mechanisms against harmful agents in the body (4)
7 3 Distinguish between cytokines and interferons (4)
7 4 Give two major functions of the complement system (2)

QUESTION 8**[15]**

- 8 1 Distinguish between chondrichthyes and osteichthyes (9)
8 2 Differentiate between closed and open circulatory systems, also give one example of an animal each (6)

TOTAL: 100 MARKS