

BLG1502

May/June 2014

ANIMAL AND PLANT DIVERSITY

Duration 2 Hours

100 Marks

EXAMINERS

FIRST

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SECOND

PROF SR MAGANO

Closed book examination.

This examination question paper remains the property of the University of South Africa and may not be removed from the examination venue.

This paper consists of FIVE (5) pages.

ANSWER ALL THE QUESTIONS IN THE EXAMINATION ANSWER BOOK PROVIDED.

[TURN OVER]

QUESTION 1

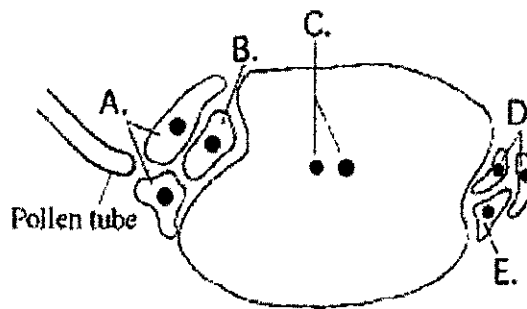
Choose the correct answer for each of the following:

- 1 1 The correct sequence from the most to the least comprehensive of the taxonomic levels listed here, is
- A family, phylum, class, kingdom, order, species, genus
 - B kingdom, phylum, class, order, family, genus, species
 - C. kingdom, phylum, order, class, species, family, genus.
 - D phylum, kingdom, order, class, species, family, genus.
 - E phylum, family, class, order, kingdom, genus, species
- 1 2 Land plant no longer required water as a medium for reproduction with the evolution of
- A fruits and roots.
 - B. flowers and leaves
 - C cell walls and rhizoids.
 - D lignified stems
 - E seeds and pollen
- 1 3 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
 - E fat in adipose tissue
- 1 4 Animals require certain amino acids in their diet. An amino acid that is referred to as non-essential would be best described as one that .
- A. is less important than an essential amino acid
 - B can be made by the animal's body from other substances
 - C is not used by the animal in biosynthesis.
 - D. must be ingested in the diet
 - E is not found in many proteins
- 1 5 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
 - E right ventricle → pulmonary vein → pulmocutaneous circulation

[TURN OVER]

- 1.6 In *Chlamydomonas* ..
- A the adult is haploid
 - B the zygospore survives times of stress
 - C sexual reproduction occurs.
 - D asexual reproduction occurs
 - E All of the above are correct.
- 1.7 A cloaca is an anatomical structure found in many non-mammalian vertebrates, which function as ..
- A. a source of nutrients for developing sperm in the testes
 - B a specialised sperm-transfer device produced by males.
 - C a gland that secretes mucus to lubricate the vaginal opening
 - D a common exit for the digestive, excretory and reproductive systems.
 - E a region bordered by the labia minora and clitoris in females.

The following questions (1.8 – 1.10) refer to the diagram below of an embryo sac of an angiosperm



- 1.8 Which cell, after fertilisation, gives rise to the embryo plant?
- A A
 - B B
 - C C
 - D D
 - E E
- 1.9 Which cell becomes the triploid endosperm?
- A A
 - B B
 - C C
 - D D
 - E E

1 10 Which cell guides the pollen tube to the egg cell?

- A A
- B B
- C C
- D D
- E E

[20]

QUESTION 2

Give the correct scientific term for each of the descriptions below. Write only the number with the correct term next to it. Each number and its term should be on a separate line in your answer book.

- 2 1 A type of cell with a membrane-enclosed nucleus and membrane-enclosed organelles
- 2 2 The fluid outside the thylakoids.
- 2.3 An organism that is capable of both heterotrophy and photosynthesis
- 2 4 The innermost layer of the cortex in plant roots, a cylinder one cell thick that forms the boundary between the cortex and the vascular cylinder
- 2 5 The use of living organisms to detoxify and restore polluted and degraded ecosystem
- 2.6 The ovule-producing reproductive organ of a flower, consisting of the stigma, style and ovary
- 2 7 A group of plant-like protists that is most closely related to plants.
- 2 8 A long cellular protuberance that delivers sperm to the female gametophyte
- 2.9 The transfer of pollen from an anther to a stigma.
- 2.10 The joint evolution of two interacting species, each in response to selection imposed by the other

[10]

[TURN OVER]

QUESTION 3**Name the hormones of:**

- 3.1 anterior pituitary gland (2)
 3.2 posterior pituitary gland (6)
 3.3 adrenal glands (4)
[12]

QUESTION 4

- 4.1 Compare parenchyma and collenchyma with regards to. (10)
 a) Structure and composition of the cell wall
 b) Functions
 c) Positions in plants
- 4.2 Name the four characteristics common to land plants and charophycean algae (4)
[14]

QUESTION 5

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 6

Give a schematic and labelled representation of the life cycle of a moss. Include blocks of information to explain each stage. **[12]**

QUESTION 7

- 7.1 Distinguish between regulators and conformers in terms of homeostasis (4)
 7.2 Describe the process of conduction, convection, radiation and evaporation (8)
[12]

QUESTION 8

Write a brief report on the ecological importance of fungi **[10]**

TOTAL: 100 marks