

BLG1502

October/November 2010

ANIMAL AND PLANT DIVERSITY

Duration 2 Hours

100 Marks

EXAMINERS
FIRST
SECOND

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This paper consists of FIVE pages

ANSWER ALL QUESTIONS IN THE EXAMINATION ANSWERBOOK PROVIDED

[TURN OVER]

QUESTION1

Choose the correct answer for each of the following questions. Write only the number of the question with the correct option (i.e. letter a, b, c, d or e) next to it. Each answer must be on a separate line in your answer book.

Example: 1.1 a

- 1.1 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.
- 1.2 In the moss life cycle, the sporophyte
- a consists of leafy green shoots
 - b is the heart-shaped prothallus
 - c consists of a foot, stalk and a capsule
 - d is the dominant generation
 - e All of the above are correct
- 1.3 Which one of the following is an INCORRECT contrast between dicotyledons (stated first) and monocotyledons (stated last)?
- a Two cotyledons – one cotyledon
 - b Leaves net veined – leaf veins parallel
 - c Stem vascular bundles scattered – stem vascular bundles in a ring
 - d Flower parts in fours or fives – flower parts in threes
 - e All of these are a correct contrast
- 1.4 Land plants 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
- 1.5 Which of the following is found in seed plants?
- a Roots, stems and leaves
 - b Complex vascular tissue
 - c Pollen grains that are not flagellated
 - d Retention of megasporophyte within the ovule
 - e All of the above are correct

[TURN OVER]

- 1 6 Regeneration, the regrowth of lost body parts, normally follows ..
- a fragmentation.
 - b all types of asexual reproduction
 - c all types of sexual reproduction
 - d fission.
 - e parthenogenesis
- 1 7 An advantage of asexual reproduction is that.
- a asexual reproduction produces offspring that respond effectively to new pathogens
 - b asexual reproduction enhances genetic variability in the species
 - c asexual reproduction allows the species to endure long periods of unstable environmental conditions
 - d asexual reproduction enables the species to rapidly colonize habitats that are favorable to that species
 - e asexual reproduction allows a species to readily rid itself of harmful mutations
- 1 8 A cloaca is an anatomical structure found in many nonmammalian vertebrates, which functions as .
- a a source of nutrients for developing sperm in the testes
 - b a specialized 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
- 1 9 An example of a connective tissue is the
- a nerves
 - b cuboidal epithelium
 - c skin
 - d blood
 - e smooth muscles
- 1 10 Connective tissues have. .
- a a supporting material such as chondroitin sulfate.
 - b many densely-packed cells without an extracellular matrix
 - c the ability to transmit electrochemical impulses
 - d relatively few cells and a large amount of extracellular matrix.
 - e an epithelial origin

10×2=[20]

[TURN OVER]

QUESTION 2

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

- 2 1 The two-part Latinized name of a species, consisting of a genus and species name (1)
- 2 2 A staining method that distinguishes between different kinds of bacterial cell walls (1)
- 2 3 The use of living organisms to detoxify and restore polluted and degraded ecosystems (1)
- 2 4 The ovule-producing reproductive organ of a flower, consisting of the stigma, style and ovary (1)
- 2 5 A group of plant-like protists that is most closely related to plants (1)
- [5]**

QUESTION 3

- 3 1 Compare 5 differences between monocotyledonous plants and dicotyledonous plants. Present your results in a table. (10)
- 3 2 Describe the process of double fertilization in flowering plants (5)
- 3 3 By means of a labelled diagram, describe the life cycle of a fern, clearly distinguishing between the gametophyte and the sporophyte generations. (10)
- [25]**

QUESTION 4

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

Describe what an apicomplexan is and using an annotated drawing, explain the two-host life history of Plasmodium, which causes malaria **[15]**

[TURN OVER]

QUESTION 6

Name the hormones of

- | | | |
|-----|------------------------------|-------------|
| 6 1 | the anterior pituitary gland | (6) |
| 6 2 | gonads | (3) |
| 6 3 | adrenal gland | (4) |
| 6 4 | pineal gland | (1) |
| | | [14] |

QUESTION 7

Give one or two words for the following

- | | | |
|-----|--|------------|
| 7 1 | The creation of offspring by the fusion of haploid gametes to form a zygote that is diploid. | (1) |
| 7 2 | The male gamete | (1) |
| 7.3 | Asexual reproduction in which new individuals arise from outgrowths of existing ones. | (1) |
| 7 4 | Asexual reproduction in which the body breaks into several pieces, some or all of which develop into complete adults | (1) |
| 7 5 | The development of an egg on the outside | (1) |
| | | [5] |

QUESTION 8

Give the scientific name of the human being

[1]**QUESTION 9**

Give the function of the following:

- | | | |
|-----|--------------------------------------|------------|
| 9 1 | Proximal tubule | (1) |
| 9 2 | Descending limb of the loop of Henlé | (1) |
| 9 3 | Ascending limb of the loop of Henlé | (1) |
| 9 4 | Distal tubule | (1) |
| 9 5 | Collecting duct | (1) |
| | | [5] |

TOTAL: 100 marks