BLG1502

ANIMAL AND PLANT DIVERSITY

Duration 2 Hours 100 Marks

EXAMINERS:
FIRST
SECOND
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This paper consists of SIX pages

ANSWER ALL THE QUESTIONS
QUESTION 1

Choose the best answer for each of the following questions. Write only the number with the correct answer next to it. Each answer must be on a separate line in your answer book.
Example: 1 1 a

1 1 The gram stain is a procedure that microbiologists use to
a. determine if a bacterial strain is a pathogen
b. determine if a bacterial sample can break down oil
c. infer the structure of a bacterial cell wall and bacterial response to antibiotics
d. count bacteria in medical or environmental samples
e. all of the above

1 2. Which of the following characteristics of plants is absent in their closest relatives, the charophytes?
   a. chlorophyll b
   b. cellulose in cell walls
   c. formation of cell plate during cytokinesis
   d. sexual reproduction
   e. alternation of generations

1 3. 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, family, genus, species
   d. phylum, kingdom, order, class, species, family, genus
   e. phylum, family, class, order, kingdom, genus, species

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

[TURN OVER]
15 Which of these 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 these are correct

16 The body is capable of catabolizing many substances as sources 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

17 Animals require certain amino acids in their diet. An amino acid that is referred to as nonessential 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

18 Folic acid supplements have become especially important for pregnant women. Why?
   a Folic acid deprivation is a cause of heart abnormalities in a newborn
   b The folic acid stored by pregnant women is removed from their circulation
   c Folic acid supplies vitamins that pregnant women lose
   d Folic acid deprivation is associated with neural tube abnormalities in a fetus
   e The fetus makes high levels of folic acid

19 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
   e ingestion

[TURN OVER]
1. 10. 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 ventricle → 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

   10 x 2 = [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 with its term on a separate line in your answer book.

2. 1. An organism that is capable of both heterotrophy and photosynthesis

2. 2. 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. 3. The use of living organisms to detoxify and restore polluted and degraded ecosystems

2. 4. The ovule-producing reproductive organ of a flower, consisting of the stigma, style and ovary

2. 5. A group of plant-like protists that is most closely related to plants

   [5]

**QUESTION 3**

3. 1. Describe the binomial system of classification

3. 2. Name the different hierarchical classification groupings

3. 3. Discuss the structure of the prokaryotic cell wall and explain how the structure could be of medicinal value

3. 4. Name the five characteristics that define land plants

   [21]

[TURN OVER]
QUESTION 4

Give a schematic and labelled representation of the life cycle of a moss
Include blocks of information to explain each stage

[14]

QUESTION 5

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

[15]

QUESTION 6

Name the hormones of
6 1  the anterior pituitary gland
6 2  gonads
6 3  adrenal gland
6 4  pineal gland

[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
7 2  the male gamete
7 3  asexual reproduction in which new individuals arise from outgrowths of existing ones
7 4  asexual reproduction in which the body breaks into several pieces, some or all of which develop into complete adults
7 5  the development of an egg without
7 6  an individual that has both male and female reproductive systems
7 7  chemical signals released by one organism that influence the physiology and/or behaviour of other individuals of the same species

[TURN OVER]
7.8 a sac in females of certain insects in which sperm may be stored for a year or more
7.9 a common opening to the outside for the digestive, excretory and reproductive systems
7.10 the largest semen-secreting gland

[10]

QUESTION 8
Give scientific name of the human being

[1]

TOTAL: 100 marks