Uva Wellassa University, Sri Lanka
B.Tech. Degree Programme - 2006/07
End Semester Examination- Semester 1
January -2008

BIO 203-2 Diversity of life

Answer both Part A and Part B **Time: Two (02) Hours**

Part A : Answer three questions including question number one (1).

1) Distinguish between,

I) Megaspore and Microspore
II) Ovule and Seed
III) Sporophyte and Gametophyte
IV) Rhizoids and Roots

(20 marks)

2) There is concern evidence that amphibian populations are decline worldwide as a consequence of factors that affect globally. Given that we aware the species extinction is a natural process, how do we determine whether there is a global decline that is deferent from the normal species extinction?

(15 marks)

3) (a) Briefly describe the major characteristics of gymnosperms.
(b) How does *Ginkgo* differ from *Nephrolepis* and *Pogonatum*?

(15 marks)

4) Historically fungi have been classified as being more plant like despite their lack of photosynthetic ability. Although we now know that fungi are more closely related to the animals than the plants, what characteristic would have initially led scientists to place them closer to the plants?

(15marks)

5) Being seed plants both gymnosperms and angiosperms produce pollen, ovules, and seeds. Then how do they differ in their reproductive cycles?

(15marks)

Part B: Answer three questions including question number one (1).

1) Distinguish between
   I) Sponges and *Hydra*
   II) Turbellarians and Cestods
   III) Branchiopods and Bryozoans
   IV) Bivalves and Cephalopods (20 marks)

2) (I) The use of DDT has been greatly reduced for ecological reasons. In the past, it has proven to be an effective Malaria deterrent. Many organizations would like to see this form of mosquito control resumed. Do you agree or disagree? Explain your reasoning using your knowledge in evolution.

   (II) How can you distinguish Gram positive bacteria from Gram negative bacteria, briefly describe the method.

   (15 marks)

3) You are on a zoological research expedition to South America. As the invertebrate specialist, you are asked by your fellow scientists to classify a number of animals.

Animal	Characteristics
A	Externally segmented body, no internal segments
B	No coelom, but has internal segments
C	Lives in water, has two body openings , sexes are separate
D	Backbone present, has digestive, circulatory, excretory system
E	Both male and female reproductive organs present
F	Externally segmented body , has internal segments

Which are annelids? Which are not, and which require more study to decide? Explain your answer for each animal.

(15marks)

4) You have found two specimens of a Ribbon worm and a Planarian in an aquatic environment. How can you explain morphological and development similarities and differences between the two organisms to a friend.

(15marks)

5) Compared with amphibians, reptiles have successfully won the terrestrial environment. Do you agree? Discuss the reasons. (15marks)

Part B: Answer <u>two questions</u> <u>only</u>

1. (a) The biologist C. Bergmann noted that mammals and birds living at higher latitudes are on average larger and bulkier than related species found at lower latitudes. This observation, sometimes called Bergman's rule, has exceptions, but appears to hold true in most cases. Suggest an evolutionary hypothesis for this "rule".

(b) One of the many mutant opponents that the movie monster Godzilla contends with is "Mothra", a giant Moth like (Insect) creature with a wingspan of several dozen feet. What physiological problems would "Mothra" face? Why do you think truly giant insects are improbable?

(25marks)

2. (a) What causes the common signs of inflammation – redness, swelling and heat- and how do these changes help protect the body against infection?

(b) What cells and functions would be deficient in a child born without a thymus?

(25marks)

3. (a) List out the three types of cells in gastric glands with their functions.

(b) Animals can use visual, olfactory, tactile and auditory signals to communicate. From what you know about these sensory systems, discuss the relative advantages and disadvantages of these systems for communication.

(25marks)

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