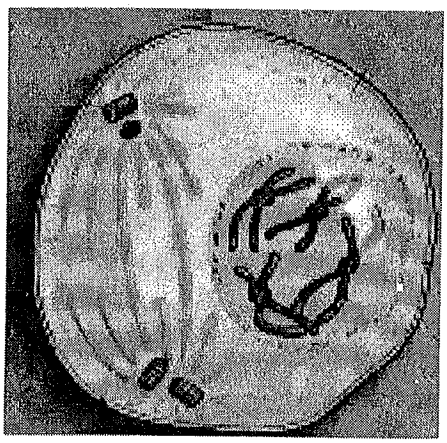
Uva Wellassa University, Sri Lanka
B.Tech. Degree Programme - 2006/07
End Semester Examination- Semester 2
June -2008

BIO 207-1 – Developmental Biology

Answer both Part A and Part B **Time: One (01) hour**

Part A : Answer <u>two</u> questions only.

1.(I) You are a scientist observing some animal cells under an electron microscope. Your observations are drawn in the following diagram.



(a) What is the current phase of the cell?
(b) How do you define whether the cell at meiosis I or meiosis II?

(II) Briefly compare asexual and sexual reproduction in Animal Kingdom.

(25 marks)

2. (I) Sea horses show one of the amazing reproduction mechanisms in the Animal Kingdom. Compare the reproduction of sea horse with a common bony fish.

(II)According to Greek mythology, Prometheus's punishment (for giving civilization to humans) was to be chained to a rock and to have an eagle eat a portion of his liver each day. His liver recovered from each night, thereby continually supplying food for the eagle and eternal punishment for Prometheus. How do you scientifically explain the above phenomenon?

(25 marks)

3. In a field visit you have collected several individuals and eggs of an unknown insect. After few days the eggs hatched and offsprings came out, which looked like an immature adults of the species. You observed, the rudiments of the wings, genital organs, and other adult structures in the offspring, and these structures became more mature with each molt. At the last molt, the emerging insects became winged and sexually mature adults. What do you call this pattern of insect development? How does this pattern of development differentiate from the pattern shown be butterflies.

(25 marks)

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

1. Angiosperms represent 88 percent of the species estimated to be in the Plant Kingdom. Describe how the ability to form a seed has contributed to make angiosperms the most widespread group of land plants.

(25 marks)

2. Cross pollination enhances the genetic diversity of plants increasing their chances of survival in changing environmental conditions. Describe the mechanisms that promote cross pollination in angiosperms.

(25 marks)

3. Compare sexual reproduction of plants with that of asexual reproduction (vegetative propagation). Discuss the advantages and disadvantages of the two systems.

(25 marks)