



Uva-Wellassa University, Sri Lanka.

1st semester Examination Dec/Jan 2010

BIO-412-3 – Enzyme and Recombinant DNA Technology

Time: Three (03) hours

Total five (5) questions

Answer four (04) questions only

1. a. What is DNA sequencing?
(05 marks)
- b. Explain why DNA sequencing is important.
(05 marks)
- c. Describe the Sanger or Dideoxy method of DNA sequencing
(15 marks)

2. Write short notes on any three (03) of the following.
 - a. Genetic Code
 - b. Central Dogma of molecular biology
 - c. Operon
 - d. DNA polymerase III
(25 marks)

3. a. Draw a labelled diagram to illustrate the eukaryotic gene.

(05 marks)

b. How eukaryotic gene expression is controlled transcriptionally?

(20 marks)

4. During the 2004 tsunami, a six months old boy was separated from his parents. The parents attempt to find the missing boy was in vane. However, one year after the incident the parents came to know that the boy is still alive and living in an orphanage. In the orphanage mother identified the boy by a birth mark. However, the father of the missing boy is not very sure about it. He thinks that this could be another boy and not his son. As a molecular biologist, how can you help these parents to correctly identify the boy as their son or not?

(25 marks)

5.

a. In a transgenic experiment a biotechnologist transformed an elite corn variety with a pest resistant gene isolated from a soil bacterium. The method he employed to deliver the gene construct into target corn cells was particle gun (gene gun). When using gene gun, it is possible that several copies of the gene construct get inserted into target cells. At the end of the experiment he obtained a putative transgenic corn plant. Describe a method to determine how many copies of bacterial gene are there in this transgenic corn plant.

(20 marks)

b. Describe with a labelled diagram only, how the biotechnologist in the above experiment may have incorporated the bacterial gene into the corn plant.

(05 marks)