

Uva Wellassa University, Sri Lanka
End Semester Examination – January 2010
MRT 201-1 Biology for Mineral Science



Time: One (01) hour

Total 06 Questions

Answer two (02) questions, including question number one (01) from both part "A" and part "B".

Part A

1. (a) Draw the structural organization of prokaryotic gene and eukaryotic gene and state the difference between them.

(10 marks)

- (b) A group of PhD students, working on rice genome project in California University, wanted to find out the possible m-RNA which was generated from a particular DNA segment that they isolated from rice (*Oryza sativa*) root. One strand (strand 'A') of that segment is as follows.

-AGCTTGGCTATAGTCAAATGGC-

Predict the opposite (complementary) DNA sequence (strand 'B') and write the possible m-RNA sequence which is derived from the strand 'B'.

(15 marks)

2. (a) Name the possible stages of cell cycle.

(5marks)

- (b) Draw the growth curve of microorganisms and briefly explain the stages.

(10 marks)

- (c) State the difference between preparing spread plate and pour plate.

(5 marks)

- (d) What is a total count? Name two equipments which can be used for total count.

(5marks)

3. Write short notes on following.

(a) Watson and Crick model of DNA.

(7 marks)

(b) Factors affecting for the enzymatic rate.

(10 marks)

(c) Mitosis cell division.

(8 marks)

Part B

1. (a) Write brief account on iron bacteria, *Leptothrix*.

(5 marks)

(b) How *Leptothrix* convert non available ore in to simpler soluble forms?

(10 marks)

2. (a) How elements are going through a cycle?

(10 marks)

(b) Explain the cycling of Sulphur (S) or a Phosphours (P) in the environment.

(25 marks)

3. (a) What is meant by the MPN number?

(5marks)

(b) Why MPN count is important?

(5 marks)

(d) Explain the laboratory method that can be used to detect the MPN number for a particular water sample.

(25 marks)