THE OPEN UNIVERSITY OF SRI LANKA
B. Sc. DEGREE PROGRAMME – LEVEL 04 – 2004/2005
Botany – BTU 2102/ BTE 4102 – Genetics, Evolution & Introductory Molecular Biology

ASSESSMENT TEST II – NO BOOK TEST (NBT)

Reg. No. ----------

DATE : 12.03.2006 DURATION : ONE HOUR (4.00-5.00.p.m.)

This paper contains three (03) questions in Part A and two (02) questions in Part B. There are eight (08) pages in the question paper.

Answer all questions.
Answers should be written in the space provided in the question paper.

PART A (50 marks)

1.

1.1 State briefly, the importance of isolation of populations in speciation process.

1.2 List the different types of isolating mechanisms.

1.3 What is the mechanism that prevents the gene flow between horses and donkeys?

1.4 How polyploidy is involved in speciation?

2.

2.1 Draw a graph to show the frequency distribution of a trait that shows continuous variation.

2.2 Using a graph explain the impact of the directional selection on the frequency distribution of the trait mentioned above.

3.

3.1 Who put forward the hypothesis of continental drift?

3.2 Briefly explain this hypothesis.

3.3 Explain how the present day distribution of marsupials provides evidence to support the concept of drifting continents.

PART B (50 marks)

1.

1.1 Distinguish between DNA and RNA.

a) Chemically

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b) Functionally

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c) Location of the cell

1.2 What bases on the mRNA transcript would represent the following DNA sequence :

5' – TGCAGACA – 3' ?

1.3 What bases in the transcribed strands of DNA would give rise to the following mRNA base sequence :

5' - CUGAU - 3' ?

1.4 For each of the following nucleic acid molecules, state whether it is DNA or RNA and single stranded or double stranded.

Molecule	**%A**	**%G**	**%T**	**%C**	**%U**
a.	33	17	33	17	0
b.	33	33	17	17	0
c.	26	24	0	24	26
d.	21	40	21	18	0
e.	15	40	0	30	15
f.	30	20	15	20	15

2.

2.1 What is Recombinant DNA Technology ?

2.2 What is/are the major tool/s of Recombinant DNA Technology ?

2.3 What is the function of restriction enzyme ?

2.4 Name three (03) restriction enzymes.

2.5 Briefly explain the action of restriction enzyme.

2.6 State two (02) ways by which Recombinant DNA Technology could be applied in agriculture.
