

EASTERN UNIVERSITY, SRI LANKA
FIRST YEAR FIRST SEMESTER EXAMINATION IN AGRICULTURE- 2009/2010
(May/June 2011)
(Re-Repeat)
AEN 1103 BASIC MATHEMATICS (1:15/00)



Answer all questions
Time: One hour

01. Find the following integrals:

$$(i) \int \left(\frac{x^4 + x}{\sqrt{x}} \right) dx;$$

$$(ii) \int (2x-3)^2 dx;$$

$$(iii) \int \sqrt{x^2 + 2x} (x+1) dx.$$

02. Evaluate the following limits of functions:

$$(i) \lim_{x \rightarrow 5} \frac{x^2 - 25}{x - 5};$$

$$(ii) \lim_{x \rightarrow 6} \frac{7 - 3x^2}{4x^2 + 3x - 2};$$

$$(iii) \lim_{x \rightarrow 0} \frac{x^2 + 3x}{2x^2 + 5};$$

$$(iv) \lim_{x \rightarrow 2} \frac{3x - 6}{x - 2}.$$

03. Prove the following identities:

$$(i) 1 + \tan^2 \theta = \sec^2 \theta;$$

$$(ii) (1 + \sin \theta) (1 - \sin \theta) = \cos^2 \theta.$$

04. Find $\frac{dy}{dx}$ if $x = 3z^2$ and $y = 8z^2 + 11z$.