

Uva Wellassa University
Faculty of Animal Science and Export Agriculture
B.Sc. in Export Agriculture
B.Sc. in Palm & Latex Technology and Value Addition
B.Sc. in Tea Technology and Value Addition



End Semester Examination July / August 2016
Year I Semester I

Mathematics for Biological Science (EAG 101-1)

Instructions

Answer All Questions

No. of Questions : Three (03) Questions

No. of Pages : Two (02) pages

Marks allocated : 100%

Time : One (01) hour



Question 01

Consider the following two functions $f(x)$ and $g(x)$ as given below.

$$f(x) = x + 5$$

$$g(x) = 3x^2 - 3$$

1.1 Find the inverse of $f(x)$ and $g(x)$ and comment whether inverse is a function or not. (10 marks)

1.2 Find the composite function of $g(f(x))$. (10 marks)

Question 02

2.1 Find the limits of following functions.

2.1.1 $\lim_{x \rightarrow 3} -x^3 + 10$ (05 marks)

2.1.2 $\lim_{x \rightarrow 2} \frac{x^2 - 4}{x^2 - 2x}$ (05 marks)

2.1.3 $\lim_{y \rightarrow \infty} \frac{y^4 + y^3 + 6}{5y^4 - 2y}$ (05 marks)

2.2 Integrate the following functions with respect to x .

2.2.1 $\int x^3 - x^{-2} + 2 dx$ (07 marks)

2.2.2 $\int \frac{2x+1}{2x^2+2x+3} dx$ (08 marks)

Question 03

3.1 Find the derivative of following functions given below with respect to x .

3.1.1 $y = \frac{x^2+4x}{x-2}$ (10 marks)

3.1.2. $y = e^x \ln x$ (10 marks)

3.2 First year Export Agriculture students planned to print a poster for the 10th anniversary exhibition of Uva Wellassa University. They were able to find length and width of the poster as a function of x . Width of that poster is $(36 - x^2)$ and length of that poster is $[(x + 2) / (6 + x)]$.

3.2.1 Find the area of the poster as a function of x . (05 marks)

3.2.2 Use method of derivative to find the value of x which gives the maximum area for the poster. (15 marks)

3.2.3 Find the width and the length which gives the maximum area for the poster. (10 marks)

