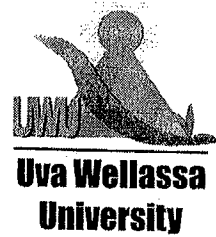




Uva Wellassa University, Sri Lanka
Faculty of Science and Technology
Science and Technology Degree Program
2nd Semester Examination – September / October 2013



BGE-131-3/SCT 102-3
Basic Mathematics and Engineering Technology

Number of questions: Three (03)

Answer all questions

Time allocation: Three (03) hours

Total marks allocated: 100

Part C

1. Solve following equations and inequalities for x .

a. $x^2 + 8x - 3$

b. $3xe^{-x} + x^2e^{-x} = 0$

c. $\frac{2x-3}{3} - \frac{5x+4}{6} > 5 - \frac{3x}{8}$

d. $|2 - x| \geq 7$

(40 marks)

2.

a. A persons IQ is given by the formula

$$IQ = \frac{MA}{CA} 100$$

Where MA is mental age and CA is chronological age. If $80 \leq IQ \leq 140$ for a group of 12 years old children, find the range of their mental ages?

(10 marks)

b. Differentiate the following functions.

i. $y = 5x^2e^x$

ii. $y = \frac{\ln x}{x^3}$

(20 marks)

3. Evaluate the following integrals.

a. $\int_{-1}^1 5x + 1 dx$

b. $\int_0^1 x^2(x^3 + 1)^3 dx$

c. $\int_0^1 \frac{x}{e^x} dx$

(30 marks)