Uva Wellassa University of Sri Lanka
Faculty of Science and Technology
Department of Science and Technology
100 Level 1st Semester Examination –May/July 2017
SCT 103-0 Basic Calculus

Instructions to candidates
Duration: One(01) hour
Number of questions: Two(02) Essay Questions
Mark allocation: 50 mark
Use standard symbols without definition.
Scientific calculators are allowed.
Answer all questions

1.

a) Find each of the following limits.

i. $\lim_{x\to 2}(6x+2)$ (02 mark)

ii. $\lim_{x\to 4}\frac{x^2-16}{x-4}$ (03 mark)

iii. $\lim_{x\to\infty}\frac{2017x^5-2x^3+7x+1}{x^5-x^2+2x-7}$ (03 mark)

iv. $\lim_{x\to -3}\frac{x+3}{\sqrt{x+7}-2}$ (03 mark)

v. $\lim_{x\to 2}\frac{x^4-16}{x-2}$ (04 mark)

b) Differentiate the following functions with respect to x.

i. $y=6x^{10}+2x^8+3x^7-x^5+2x^2-5$ (02 mark)

ii. $y=(2x+3)(x+1)$ (02 mark)

iii. $y=e^x\ln 3x$ (02 mark)

iv. $y=\frac{3x^3-2x^2-1}{x^3+1}$ (04 mark)

2.

a. Integrate the following functions with respect to x.

i. $\int(6x^{2016}+4x^{2005}+2x^{1995}+1985)dx$ (04 mark)

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ii. $\int\left(\frac{2x-5x^7}{x^2}\right)dx$ (04 mark)

iii. $\int\frac{x+2}{x^2+4x-7}dx$ (04 mark)

iv. $\int\cos 3x\,dx$ (04 mark)

b. Find the value of the following integrals.

i. $\int_0^4(1-x)dx$ (04 mark)

ii. $\int_1^e x\ln x\,dx$ (05 mark)

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