INTI International University & Colleges

FINAL
Examination Paper

(COVER PAGE)

Session	:	August 2016
Programme	:	Diploma in Information and Communication Technology (DICTN)
Course	:	**MAT1103: Fundamentals of Mathematics**
Date of Examination	:	04 December, 2016 (Sunday)
Time	:	2:00pm – 4:00pm Reading Time : Nil
Duration	:	2 Hours

Special Instructions :

This question paper consists of **SIX (6)** questions. Answer any **FOUR (4)** questions in the answer booklet provided. All questions carry equal marks.

Materials permitted :
Non programmable calculator

Materials provided :
Formula Booklet 1

Examiner(s)	:	**Aung Min** and Foong Jin Yuan
Moderator	:	Dr Ng Set Foong

*This paper consists of **4** printed pages, including the cover page*

(d) Find $\frac{dy}{dx}$ for the following functions. Simplify the answer.

(i) $y = 3x^2 + 5x - 14.$ (3 marks)

(ii) $y = (x^2 + 5x)(2x - 7)$ (6 marks)

Question 3

(a) Sketch the graph of the function $y = 2x^2 + 5x - 3$ by showing its vertex, x and y intercepts clearly. (8 marks)

(b) Let $f(x) = 7x + 6$ and $g(x) = 2x^3 + 5$, Find

(i) $(f + g)(2)$ (3 marks)

(ii) $(f.g)(2)$ (2 marks)

(iii) $(f \circ g)(2)$ (3 marks)

(iv) $g^{-1}(x)$ (4 marks)

(c) Evaluate the following integral.

$\int_1^2 x(x^2 - 4)\, dx$ (5 marks)

Question 4

(a) Find the simultaneous solution of the following system.

$$x - y + z = 3$$
$$2x + y + 2z = 12$$
$$-x - 3y + z = -3$$

(7 marks)

(b) Sketch the graphical solution of the following system of inequalities:

$$2x + 3y \leq 6$$
$$x - y \geq 4$$
$$y \geq -4$$

(7 marks)