



**INTI**

INTERNATIONAL COLLEGE PENANG (507232-U)  
LAUREATE INTERNATIONAL UNIVERSITIES

RESIT  
Examination Paper

(COVER PAGE)

Session : AUGUST 2016

Programme : CERTIFICATE IN BUSINESS STUDIES

Course : MAT1001: MATHEMATICS

Date of Examination : 13 December 2016 (Tuesday)

Time : 11:00am - 1:00pm Reading Time : Nil

Duration : 2 Hours

Special Instructions :

This paper consists of FIVE (5) questions.

Answer any FOUR (4) questions in the answer booklet provided.

All questions carry equal marks.

Materials permitted :

Non-Programmable Scientific Calculator

Materials provided :

Nil

Examiner(s) : Foong Jin Yuan

Moderator : Dr. Ch'ng Pei Eng

*This paper consists of 6 printed pages, including the cover page.*

INTI INTERNATIONAL COLLEGE PENANG  
CERTIFICATE IN BUSINESS STUDIES (CBSI)  
MAT1001 : MATHEMATICS  
RESIT EXAMINATION : AUGUST 2016 SESSION

**Instructions:** This paper consists of **FIVE (5)** questions. Answer any **FOUR (4)** questions in the answer booklet provided. All questions carry equal marks.

**Question 1**

(a) Let  $a = 2$ ,  $b = 3$ ,  $c = -4$  and  $d = 5$ , evaluate the value for:

(i)  $\frac{c-ab}{ab+d}$  (2 marks)

(ii)  $3(7d - 4b) + c$  (2 marks)

(iii)  $(b - c) - (a + d)$  (2 marks)

(b) Determine which numbers in the set  $\{-3, -1, 4, 5, \frac{1}{5}, \sqrt{3}, \pi\}$  are in each category listed below?

(i) Natural numbers (2 marks)

(ii) Whole numbers (2 marks)

(iii) Prime numbers (2 marks)

(iv) Irrational numbers (2 marks)

(c) The sum of four consecutive integers is 66. Find the integers. (4 marks)

(d) Find the midpoint of AB where A(-2, 6) and B(10, 15). (3 marks)

(e) Simplify the expression below. Assume all variables are not zero and write your answer without negative exponents.

$$\left(\frac{y^2y^3x^{-2}}{y^2x^{-2}x^4}\right)^{-2}$$

(4 marks)

**Question 2**

(a) Solve each equation.

(i)  $8x + 4(x + 3) = 28$  (2 marks)

(ii)  $15p + 18\left(\frac{p-2}{3}\right) = 12p$  (2 marks)

(b) For each function, find  $f(3)$  and  $f(-5)$ .

(i)  $f(x) = 7 - 4x$  (2 marks)

(ii)  $f(x) = 2 - 3x$  (2 marks)

(c) Solve the system by using substitution method.

$$\begin{aligned} 6x - 12y &= 15 \\ 6x + 6y &= 14 \end{aligned}$$
 (5 marks)

(d) Find the gradient of the line passing through  $P(4, 3)$  and  $Q(3, 9)$ . (3 marks)

(e) Sketch the graph of  $y = 5x - 2$ . (3 marks)

(f) Solve  $\frac{3x}{x-1} - \frac{5}{x+3} = 3$ . (6 marks)

## Question 3

(a) Given:

Line A :  $y = -4x - 5$

Line B :  $x = 4y - 6$

Determine whether the lines A and B are parallel, perpendicular or neither. (3 marks)

(b) Write each of the following in scientific notation.

(i) 56700000 (1 mark)

(ii) 0.0000312 (1 mark)

(c) Simplify the expression below. Assume that the variable is a positive number and write your answer without negative exponents.

$$\frac{c^7 c^5}{(c^3)^3}$$

(2 marks)

(d) Factorize  $16x^2 - 49y^2$  completely. (3 marks)

(e) Solve the system of equations below.

(i)  $6x - 10y = 8$

$x = 9y - 7$  (4 marks)

(ii)  $6x + 9y = 6$

$4x^2 + y^2 = 4$  (5 marks)

(f) Factor each polynomial.

(i)  $x^6 + 2x^3 - 3$  (3 marks)

(ii)  $3y^4 - 5y^2 - 2$  (3 marks)

**Question 4**

(a) Evaluate the expression below when  $x = 3$  and  $y = -2$  :

$$\frac{y^2 - x^3}{4x - 3}$$

(2 marks)

(b) Find an equation of the line that has gradient  $-2$  and passes through  $(3, 5)$ . (2 marks)

(c) The sum of three consecutive odd integers is 177. Find the integers. (4 marks)

(d) Solve the following inequality:

(i)  $\frac{2}{3}(x - 1) + \frac{1}{2}(x - 2) \geq x - 1$  (3 marks)

(ii)  $\left| \frac{2x-5}{6} \right| > 12$  (3 marks)

(iii)  $6(6 - 2w) > -4(2w + 4)$  (2 marks)

(iv)  $-2 \leq \frac{5-2x}{2} \leq 2$  (3 marks)

(e) Factorize  $3x^4 - 25x^3 + 8x^2$  completely. (3 marks)

(f) Solve  $2|3x - 2| = |4x + 6|$ . (3 marks)

**Question 5**

(a) Expand  $(x - y)(2x^2 - 5xy + y^2)$ . (3 marks)

(b) Simplify  $(-5xy^2 + 2x^2y) - 2(-3yx^2 - 4y^2x)$ . (3 marks)

(c) Let  $f(x) = 3x - 5$  and  $g(x) = 2x - 7$ , find

(i)  $(g \circ f)(3)$  (3 marks)

(ii)  $(f \circ g)(-2)$  (3 marks)

(d) Simplify  $-2(3a^2 + 5b^2 - 6) - 3(2b^2 - 5 - 2a^2)$ . (3 marks)

(e) Solve  $x^2 - x - 20 = 0$  by using factorization method. (3 marks)

(f) Given  $P(7, 5)$  and  $Q(1, -9)$ .

(i) Find the midpoint of  $PQ$ . (2 marks)

(ii) Find the gradient of  $PQ$ . (2 marks)

(g) Solve the equation  $2x^2 - 7x - 9 = 0$  by using quadratic formula below and round off your answer into 3 significant figures.

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

(3 marks)