

# Uva Wellassa University

Faculty of Management

Degree of Bachelor of Business Management in Hospitality, Tourism and Events  
Management

100 LEVEL 1<sup>st</sup> SEMESTER EXAMINATION – JUNE / JULY 2017

HTE 161-2 Business Mathematics



### Instructions to candidates:

No. of pages : Two (02)  
No. of questions : 04 Essay Questions  
Time : 02 Hours  
Marks allocated : 100 Marks

**Answer all questions.**

**Calculators are allowed.**

1. a. Let  $A = \begin{pmatrix} 4 & 8 \\ 3 & 6 \end{pmatrix}$  and  $B = \begin{pmatrix} 5 & 2 \\ 3 & 4 \end{pmatrix}$  then find ;

i.  $A - B$  (2 Marks)

ii.  $AB$  (3 Marks)

iii. transpose of matrix  $AB$  (3 Marks)

b. Let  $P = \begin{pmatrix} 4 & 1 & 3 \\ 6 & 0 & 2 \\ 7 & 5 & 0 \end{pmatrix}$ , find determinant of  $P$ , hence obtain the inverse of matrix  $P$ .

(10 Marks)

c. Solve the following system of linear equations using Cramer's Rule method.

$$2x + 3y = 6$$

$$5x + y = 2$$

(7 Marks)

2. a. Find each of following limits.

i.  $\lim_{x \rightarrow 1} (x + 2)^2$  (3 Marks)

ii.  $\lim_{x \rightarrow 3} \frac{(x^6 - 729)}{(x - 3)}$  (3 Marks)

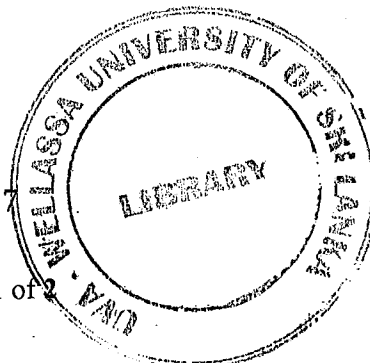
b. Differentiate the following functions with respect to  $x$ .

i.  $y = 2x^4 - 3x^2 + 5x - 2$  (2 Marks)

ii.  $y = \ln(2x^2 - 3x + 2)$  (2 Marks)

iii.  $y = \frac{(4x^3 - 5x^2 + 2x + 6)}{(4x + 5)^3}$  (4 Marks)

iv.  $x^2 + 5xy - 3xy^2 + 2x - 3y = 7$  (6 Marks)



- c. Find the stationary points of the following function and obtain whether that point is a maximum or minimum, hence sketch the graph.

$$y = 3x^3 - 5x^2 + 2x - 3$$

(10 Marks)

3. a. Integrate the following functions with respect to relevant subject.

i.  $\int (2u^4 + 3u^2 - \frac{1}{u} + 9) du$  (3 Marks)

ii.  $\int (\ln t + e^{-5t} + 2t - 1) dt$  (3 Marks)

iii.  $\int x \ln x dx$  (3 Marks)

- b. Evaluate the values of following integrations.

i.  $\int_{-1}^1 (\frac{2}{x^3} + 4x^2 - 5e^{-2x} + \ln x + 1) dx$  (4 Marks)

ii.  $\int_0^5 (11u^2 - 5u + 3)(e^{2u}) du$  (6 Marks)

iii.  $\int_0^1 (t^3 - 5t^2 + 2t + 7)\ln(t) dt$  (6 Marks)

4. a. Mr. Kamal takes a loan of Rs.800,000 to buy a used truck at the rate of 13.5 % simple interest per annum. Calculate the total amount to be paid for the loan amount to repay it from 6 years?

(4 Marks)

- b. Mr. John borrowed Rs.8000 for 4 years to make home improvements. If he repaid a total of Rs.10320, at what interest rate did he borrow the money?

(4 Marks)

- c. If you start a bank account with Rs.10,000 and your bank compounds the interest quarterly at an interest rate of 8%, how much money do you have at the year's end? (assume that you do not add or withdraw any money from the account)

(5 Marks)

- d. Calculate the present value of an annuity-immediate of amount Rs.100 paid annually for 5 years at the rate of interest of 9%.

(7 Marks)