THE OPEN UNIVERSITY OF SRI LANKA
BACHELOR OF MANAGEMENT STUDIES PROGRAMME
LEVEL 03 – 2006/2007
FINAL EXAMINATION 2007
QUANTITATIVE TECHNIQUES FOR MANAGEMENT – MCU 1207
DURATION : THREE (03) HOURS

DATE : 24.02.2007   TIME : 9.30 a.m – 12.30 p.m

Answer Any Five (05) Questions. All questions carry equal marks. Use of Non-programmable calculators are allowed.

1)   (i)   Simplify the following expression

$$\left[\frac{(x^2-4)(y^2+4y+4)}{(x+2)(y+2)}\right]-2\,(x-2)$$

        (ii)   Solve the following equation
                 $$\frac{2x+4}{3}+\frac{x-7}{2}=6$$

        (iii)   It is given that

                 $$x=\frac{(a+b)(2a^2-12)}{3ab}$$

                 a)   Find the value of "x" if a = 4 and b = 5

                 b)   If a = 2b, what value of "a" would make "x" equal to 10 ?

        (iv)   Solve the simultaneous equations

                 2x + y = 9
                 x + 3y = 17

        (v)   If the sum of two numbers is 11 and their product is 28 find the two numbers.

2) (i) Simplify the following expressions

  a) $$\dfrac{\left(b^3\right)^{2/3}\left(a^2-b^2\right)^{3/2}}{b^2(a-b)\ \sqrt{(a+b)(a-b)}}$$

  b) $$\dfrac{Log\ x^2+Log\ y-Log\ x}{Log\ (xy)}$$

  (ii) In an arithmetic progression the first term is 5 and the common difference is 4.
  a) Find the sum of the first ten terms.
  b) How many terms should we add up to make the sum of terms equal to 90.

  (iii) If a person deposits Rs.8000 in a savings account which pays an annual compound interest of 7% what will be the amount in his account after three years.

3) (i) Find the differential coefficients of the following functions
  a) $2x^2+4x+7$ b) $\dfrac{x^2+3}{x+2}$

  (ii) If $y=x^3+7x^2+4$, find $\dfrac{d^2y}{dx^2}$

  (iii) Find the turning points (the maxima and minima) of the function given by
  $$y=x^2-8x+3$$

  (iv) Evaluate the following

  a) $\int 3x^2+4x+7\ \ dx$

  b) $\int_2^4 6x^2-5x+2$

(4) Briefly describe the following methods of collecting data highlighting their advantages and disadvantages.

  a) Secondary data
  b) Postal questionnaire
  c) Interview method
  d) Direct observation

(5) The performance of opening batsmen, Anil and Sunil, at eight test matches is given below.

SCORE OF ANIL

MATCH	SCORE
1	87
2	80
3	103
4	86
5	74
6	86
7	76
8	101

Sunil : Mean Score is 98 Median Score is 90 and Standard deviation is 75.

i) Calculate mean, median and standard deviation score of Anil.

ii) Calculate coefficient of variation of the scores of both batsmen.

iii) What is the mean score of the opening batsman?

iv) Which of the two players would you consider to be more consistent? Explain with reasons.

(6) (a) What is an index number?
Discuss the applications of index numbers in business and industry?

(b) Following table shows the data pertaining to three commodities.

Item	Year			
	2005		2006	
	Quantity	Price	Quantity	Price
Bread	20	12	16	16
Dhal	10	62	12	64
Coconuts	10	10	8	16

i) Calculate simple price and quantity relative indexes for each commodity.
ii) Calculate simple aggregate value indexes for each commodity.
iii) Calculate Laspeyre's and Paasche's price indexes.
iv) Interpret the results of (i), (ii) and (iii) above
(Use 2005 as the base year)