



STAMFORD COLLEGE

SCHOOL OF BUSINESS

DIPLOMA IN CORPORATE ADMINISTRATION (SEMESTER 3)

DCA 112: QUANTITATIVE METHODS

Date : 11 October 2006 (Wednesday)

Time : 9.30 am – 11.30 am

Duration: 2 hours

Instructions to Candidates

Question 1 from Section A is compulsory. Answer FOUR out of FIVE questions in Section B.

Please ensure that this examination paper contains SIX questions on FOUR printed pages before you start the examination.

Books, papers and other written materials are not allowed to be brought into the examination hall. A candidate who violates the examination rules of Stamford College or commits a malpractice will be disqualified from the examination.

Write your Examination Index Number on each page of your answer booklet.

SECTION A

Question 1 (Compulsory)

(a) Solve for x:

$$\text{Log}_A A^x = -3x + 4$$

(1 mark)

(b) Evaluate the following using calculator to two decimal points:

(i)
$$\frac{2.4 + \log 2.6}{\sqrt[4]{23.6}}$$

(ii)
$$\frac{8 \times (2 - 1 \times +3 - 1) - 6}{3 \times 2 - 2 \times (4 + 1.2) \div 2}$$

(2 marks)

(c) Solve for x:

$$\frac{3x + 6}{3} + \frac{2x}{5} = \frac{6}{30}$$

(2 marks)

(d) Solve the inequality given below:

$$|2x - 3| < 3$$

(1 mark)

(e) Find the value of x:

$$2(3x - 5) + 6 = 142$$

(2 marks)

(f) Given $5x^2 - 8x - 1 = 0$, how many solutions does it have?

(2 marks)

(Total = 10 marks)

SECTION B

Answer FOUR out of FIVE questions.

Question 2

- (a) Rearrange the following to make x the subject:

$$y = 5 - \sqrt{\frac{4}{x-3}}$$

(2 marks)

- (b) Solve the following simultaneous equations:

$$5x + 2y = 5400 \quad \text{and} \quad x + 2y = 2800$$

(4 marks)

- (c) A French businessman converts a certain sum of money into pounds and spends $\frac{3}{4}$ of it buying a British car. The remaining quarter he spends on a holiday in Spain. If the amount spent in Spain was 506,542.80 pesetas, how much was the car in pounds?

(Note: 9.83 Franc = 1 British pound ; 181.21 Peseta = 1 British)

(4 marks)

(Total = 10 marks)

Question 3

- (a) Peter and Jane earn a combined monthly income of \$3 000 .They have to meet the following expenses each month:

Food	\$640	Electricity, water and gas	\$110
Telephone	\$ 40	Hire purchase payments	\$180
Housing Loan	\$360	Insurance	\$ 75
Car Maintenance	\$165	Others	\$350

- (i) Calculate their total monthly expenses

(2 marks)

- (ii) Express their monthly savings as a percentage of their income.

(2 marks)

- (b) A man leaves Town A at 09.25 in a car, passes through Town B at 10.55 and arrives in Town C at 12.40. The distance from Town A to Town C is 195 Km and the man travels at a constant speed throughout. Find the distance from Town B to Town C.
(4 marks)
- (c) A certain job can be completed in 15 days by 12 men. How long will it take 5 men to complete the same job; assuming they work at the same rate?
(2 marks)
- (Total = 10 marks)

Question 4

- (a) Find the perimeter and area of the following geometrical figures:
- (i) A triangle of sides 8cm, 9cm and 10 cm. (3 marks)
- (ii) A rectangle with length 9 cm and breadth 7 cm. (1 mark)
- (b) A circle has a radius of 7m. Find its area and circumference.
(3 marks)
- (c) A 400 gram can of mixed nuts costs \$4.20. If 1 ounce = 28.349 grams, what is the unit price per ounce?
(3 marks)
- (Total = 10 marks)

Question 5

The following information is given for a manufacturing process:

Fixed cost per month is RM2000

Variable cost per unit is RM10

Selling price per unit is RM20

- (a) Derive the total cost and total revenue function in terms of q where q is the quantity sold.
(2 marks)
- (b) Find the break-even point.
(2 marks)

- (c) Sketch total cost, total revenue and profit functions into one graph and label its break even point.

(6 marks)

(Total = 10 marks)

Question 6

- (a) A firm produces two products, X and Y with a contribution of \$8 and \$ 10 per unit respectively.

Production data are : (per unit)

	Labour hours	Material A	Material B
X	3	4	6
Y	5	2	8
Total Available	500	350	800

Solve the above problem using the graphical method.

(5 marks)

- (b) Draw the network for the following problem:

Activity	Preceding Activity
1	-
2,3,4	1
5	2
6	3
7	5
8	6
9	7,8
10	3
11	4
12	9,10,11

(5 marks)

(Total = 10 marks)

– END OF PAPER –