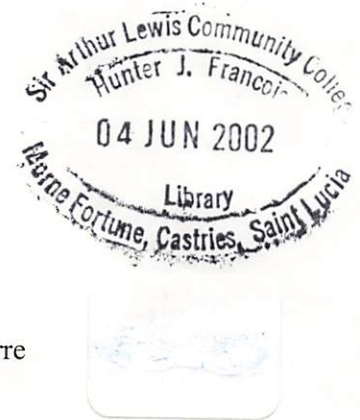


ITEMS PAST PAPERS
MANAGEMENT STUDIES

SIR ARTHUR LEWIS COMMUNITY COLLEGE
DIVISION OF TECHNICAL EDUCATION AND MANAGEMENT STUDIES

EXAMINATION SESSION : May 2001, Final Examination
TUTORS : Mrs. S. Finisterre/Mr. M. Rene
PROGRAMME TITLE : Business Studies
Secretarial Studies
PROGRAMME CODE : BUS/SEC
COURSE TITLE : Elements of Business Mathematics
COURSE CODE : EBM 311
CLASS(ES) : 1BUS/1SEC
DATE : 14th May 2001
TIME : 1:00 p.m.
DURATION : 3 hours
ROOM : University Centre
INVIGILATOR : Mrs. F. Henry/Mrs. S. Finisterre
Mrs. L. Mc Vane Simmons

#M2



INSTRUCTIONS:

This examination paper comprise Two Sections: Section A and B

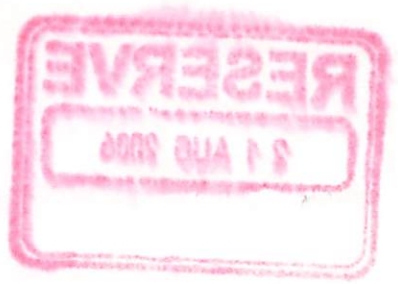
SECTION A - COMPULSORY

SECTION B - OPTIONAL (Answer any five questions)



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A Compulsory Section (50 Marks)

Answer *ALL* questions in this section

1. If fixed costs of manufacturing a product are 4, variable costs per unit are 1 and $P = 10 - 2Q$
 - (a) Obtain an expression for profit in terms of Q (8 marks)
 - (b) For what values of Q does the firm break even? (12 marks)

2. If the cost of repairs to a new car is \$20 in the first year and this cost increases thereafter by \$25 each year, write down and simplify a formula for the cost of the repairs in n^{th} year. Find also the total amount paid in repair bills up to the end of the n^{th} year. (10 marks)

3. National Bank offers a return to 5% compounded annually on the Super Saver Account. The rival Royal Credit Bank offers a return of 3% the first year and 7% in the second year and subsequent years (both compounded annually). Which bank would you choose to invest in if you decide to invest a principal for
 - (a) Two years (8 marks)
 - (b) Three years (12 marks)

Show how your answer is developed.

B Optional Section (50 Marks)

Answer any **FIVE** questions in this section. Each question is worth **10 marks**

4. Solve the following systems of equations:
 - (a)
$$\begin{aligned} 3x - 6y &= -3 \\ -4 + 8y &= -1 \end{aligned}$$
 - (b)
$$x^2 = 3x + 1$$

5. Engineering estimated indicate the variable costs of manufacturing a new product will be \$35 per unit. Based on market research, the selling price of the product is to be \$120 per unit and variable selling expenses is expected to be \$15 per unit. The fixed costs applicable to the new product are estimated to be \$2,800 per period and capacity per period is 100 units.

Perform a breakeven analysis showing:

Computation of the break-even point

- (i) In units
 - (ii) As a percent of capacity
 - (iii) In sales dollars
6. Use Geometric progression to find the amount of five deposits of \$3000 each made at the end of 5 consecutive years respectively at 12% compounded annually, just after the last deposit has been made.
7. Bruce traded his service station's compressor for a new one having a cash price of \$2,460. He made a down payment of 10% of the cash price, received a trade-in allowance of \$200 and signed a contract requiring 21 monthly payments of \$112.50 each. Determine the amount of interest charged.
8. **Linmore** store bought freezers for \$3,200 less 33 1/3%, 25%, 5%. The store's overhead is 36 1/2% of regular selling price and the usual profit is 15% of regular selling price. The freezers are marked so that a 20% discount can be advertised without affecting the store's margin. During a clearance sale some of the freezers were sold at a markdown of 45%.
- (a) What was the price during the clearance sale?
 - (b) What was the realised rate of mark-up based on cost ?
 - (c) How much operating profit (or loss) was realised on each freezer sold during the clearance sale?
9. John bought a car for \$7,250. He received a trade-in allowance of 16% and made a cash payment of \$450. He financed the balance over 48 months in equal monthly payments including interest at the nominal rate of 7.5 % per annum. What is the pay off figure on the loan after 27 months.
10. Saving of his retirement 25 years from now, Mr. Marley set up a savings plan whereby he will deposit \$25. At the end of each month for the next 15 year. Interest is 12% compounded monthly.
- (a) How much money will be in Mr. Marley's account
 - (b) How much will Mr. Marley contribute
 - (c) How much is interest