

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

EXAMINATION SESSION : December 2006 Final Examination

TUTOR (S) : Ms. L. Phillips, Mr. M. Rene

PROGRAMME TITILE(S) : Applied Arts Business Administration
Applied Arts Office Administration
Travel and Tourism
Food and Beverage Operations
Hospitality Studies

PROGRAMME CODE(S) : 3BS-ABA-AD, 3BS-AOA-AD
3HS-TAT-AD, 3HS-FAB-AD
3HS-HOS-AD

COURSE TITLE : **Mathematics of Finance**

COURSE CODE : **MAT105**

CLASS (ES) : Years One and Two

DATE : **Friday, 15th December, 2006**

COMMENCEMENT TIME : 9:00 a.m.

DURATION : 3 hours

INVIGILATOR(S) : Mr. N. Goolaman, Mr. W. La Montagne
Mrs. M. Lashley, Ms. L. Mc V- Simmons
Ms. P. Pascal, Ms. F. Paul
Mr. M. Philgence, Ms. L. Phillips
Ms. D. Preville, Mr. M. Rene

ROOM(S) : BUS R1, CEHI-1H-02, HOS-WS1, WS2
HOS R1, TRT R3

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INSTRUCTIONS

- This paper consists of **TWO** (2) sections. Students are required to do the following:
 - a) Section one – answer **BOTH** questions
 - b) Section two – answer **SIX** questions
- **Only ID** numbers must be written on your answer sheets.
- **DO NOT** write your names
- Writing paper, calendars, annuity tables and cover sheets will be provided by the invigilators
- Questions may be answered in any order, however they must be properly numbered
- Cell phones and beepers **ARE NOT** allowed in the examination room
- Borrowing / lending is **NOT** permitted

INSTRUCTIONS: There are TWO (2) questions in this section. Candidates are required to answer both showing all working clearly and neatly.

SECTION 1

Question 1:

The perfume factory made the following information available to you:

Fixed cost per period \$18,000; variable cost per unit is \$125.00 and selling price per unit is \$200; capacity per period is 500 units

You are required to perform breakeven analysis showing:

- a) an algebraic statement of:
 - i) the revenue function (2 mark)
 - ii) the total cost function (3 marks)

- b) Computation of the breakeven point:
 - i) in units (2 marks)
 - ii) as a percentage of capacity (3 marks)
 - iii) in sales dollars (2 marks)

- c) Determine the net income at a sales volume of 40% of capacity (3 marks)

- d) If fixed costs are decreased by \$6,000, determine the new breakeven point in units. (3 marks)

- e) Using the original information, if fixed costs are increased by \$2,000 and variable costs are changed to 50% of selling price determine the new breakeven point as a percentage of capacity. (5 marks)

Question 2

Bouquets Limited received an invoice dated June 2, for \$5,500 less 10%, 5.5%, 2%, terms 3/10 E.O.M. A cheque for \$1,900 (after discount) was mailed by Bouquet Ltd. On July 7 as part payment of the invoice.

- a) By how much did the Bouquet Company reduce the amount due on the invoice? (3 marks)
- b) How much does the company still owe? (2 mark)

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SECTION 2

INSTRUCTIONS: There are TEN (10) questions in this section.
Candidates are required to answer SIX (6) complete questions.

3. (a) Mrs. Tibbs purchased a refrigerator valued at \$6,000. She paid 10% down and agreed to pay his balance and interest at 15% p.a. in 36 monthly instalments. Determine the payoff figure just after she made the 20th payment. (Use the sum of the digits method). (8 marks)
- (b) How long will it take to build a fund of \$10,000 by saving \$300 every six months at 10., 5% compounded semi-annually? (4 marks)
4. (a) Stone Rivers discovered that he has \$3,500 in his account today. If the interest rate is 4% compounded quarterly, how much was deposited in the account three years ago? (3 marks)
- (b) What nominal rate compounded semi-annually is equivalent to 14% p.a. compounded monthly? (4 marks)
- (c) You borrowed \$2,500 on May 1, 1982 at 14% compounded semi-annually and interest on the loan amounts to \$150, on what date is the loan due? (5 marks)
5. (a) Mr. Speare bought a stove and made a down payment of \$60. He agreed to pay \$100 per month thereafter for two years. If interest is 6% compounded monthly, what was the cash price of the stove? (5 marks)
- (b) At the end of each month during a two-year period, a manager of a company invested one-fifth of his monthly salary of \$10,000. How much will the amount be three years after the last investment is made if interest is 3% compounded monthly? (7 marks)
6. (a) ~~Barry invested his money at 5 1/2% compounded quarterly and Sammy invested his money at 6% compounded monthly. Which one of the two rates is better? (Use effective rate) (5 marks)~~
- (b) If \$900 accumulates to \$1,500 in four years, determine the interest rate compounded monthly. (4 marks)
- (c) If \$670 is borrowed for three (3) years at 10 1/2%, what is the amount due at the end of the third year? (3 marks)
7. (a) Saving for his retirement thirty years from now, Mr. Leafy set up a saving plan whereby he will deposit \$100 at the end of each month for the next 20 years. Interest is 10% compounded monthly.
- i) How much will be in the account at the date of retirement? (6 marks)
- ii) How much will Mr. Leafy contribute to the account? (3 marks)
- iii) How much of the total is interest? (1 marks)
- (b) How many days are required for \$240 to yield \$1.60 at 8% p.a. (2 marks)
8. (a) What amount must be paid if the following invoices, all with terms 5/15, 2/30, n/60 are paid together on December 12, 2006:
Invoice No. 512 dated November 5, 2006 for \$1,500
Invoice No. 612 dated November 12, 2006 for \$700
Invoice No. 712 dated November 30, 2006 for \$770 (5 marks)

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- (b) A man owes \$700 due in 8 months and (b) \$1,200 plus 5% interest due in 2 months. If interest is 7% now what single payment ten months from now will be equivalent to the two original debts? (7 marks)
- 9 (a) Jack owes Jacklyn \$300 due in 2 years and \$800 due in 5 years. Assume that the two debts are to be settled by two equal payments in 1 ½ years and 4 years respectively. What is the size of each payment if interest is 12% compounded semi-annually. Comparison (focal) date is four (4) years from now. (8 marks)
- (b) A man wishes to have \$6,000 at the end of 2011 (5 years from now). If his money can be invested at 4% compounded quarterly, how much must he invest at the end of each quarter during the period? (4 marks)
- 10 (a) Jill plans to deposit \$200 at the end of each month into a bank account for a period of 2 years after which she plans to deposit \$300 at the end of each month into the same account for another three years. If the bank pays interest at 6% compounded monthly, how much will she have in the account by the end of year 5. (Assume no withdrawals during the period.) (9 marks)
- (b) Colin paid \$10,000 for a seven-year bond issued by the City of Castries. He received interest amounting to \$3,500 over the life of the bond. What rate of simple interest did the bond pay? (3 marks)
11. (a) The Swan family is planning to buy a house four (4) years from now. It is predicted that the cost of a house will increase at 5% compounded annually during that period. If this prediction is right, how much can they expect to pay for a house that currently costs \$210,000? (4 marks)
- (b) Joann invested \$15,000 in mutual fund five (5) years ago. If the fund grew at the rate of 9.8% compounded monthly, what would be the value of Joann's account today? (4 marks)
- (c) Dinah's parents have inherited some money and wish to set up a Trust fund for her. They estimate that they will need \$100,000 in 13 years. How much should they set aside in trust now if they can invest the money at 8.5% compounded quarterly? (4 marks)
12. (a) A seven-year promissory note for \$12,000 dated May 2, 2002 bearing interest at 18% compounded quarterly is discounted on September 2, 2004 at 15.5 % compounded semi-annually. Find the proceeds of the note. (6marks)
- (b) Mr. Sprat bought a used car for \$6,000. He made a down payment of \$500 and made quarterly payments of \$500 for 3.25 years. What is the nominal interest rate charged? (Use interpolation to solve) (6 marks)

END OF EXAMINATION

MERRY CHRISTMAS & A HAPPY NEW YEAR