

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

EXAMINATION SESSION : December 2007 Examination

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

PROGRAMME TITLE : Applied Arts – Business Administration  
- Office Administration  
Hospitality Studies

PROGRAMME CODE : 3BS-ABA-AD  
3BS-AOA-AD  
3HS-HOS-AD/3HS-FAB-AD/3HS-TAT-AD

**COURSE TITLE** : **Mathematics for Finance**

**COURSE CODE** : **MAT105**

CLASS (ES) : Year 1 and year 2

**DATE** : **Wednesday, 12<sup>th</sup> December, 2007**

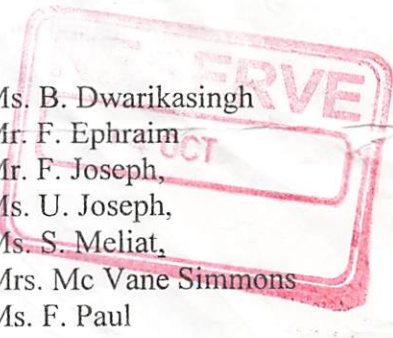
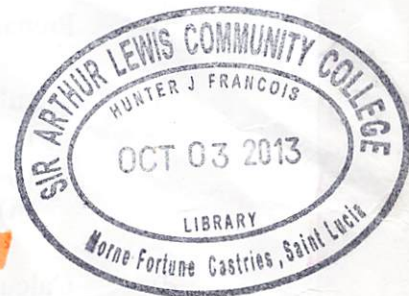
COMMENCEMENT TIME : 9:00 a.m.

DURATION : 3 hours

INVIGILATOR (S) : Mrs. D. Alfred, Ms. B. Dwarikasingh  
Mrs. F. B-Henry, Mr. F. Ephraim  
Mrs. M. Lashley, Mr. F. Joseph,  
Ms. E. Louisy, Ms. U. Joseph,  
Mrs. A. Reid Ms. S. Meliat,  
Mrs. Mc Vane Simmons  
Ms. F. Paul

ROOM (S) : TRT R3, CEHI-1H-02  
BUS R1, HOS R2/R1

#M33



**INSTRUCTIONS:**

This Examination Paper consists of *two (2)* sections.

**Section I – One (1) Question; *Compulsory (24 marks)***

**Section II – Eight (8) Questions; *Answer four (4) complete questions (14 marks each)***

***Writing Paper, Graph Paper, Tables and Calendars will be provided by the invigilators.***

***Students are advised to use a pen to write this examination.***

***LENDING OR BORROWING IS PROHIBITED.***

- ◆ Please number your responses accurately
- ◆ Write your ID Number on *each* answer sheet
- ◆ All cell phones must be turned off during the Examination
- ◆ **Note:** Bags, books as well as writing paper not given by the invigilator should be deposited at the front of the examination room or as otherwise indicated.
- ◆ Students must sign IN and OUT on the exam class list

**SECTION I**  
**Question 1. : Compulsory**

**The following information concerning a product was obtained from the books of Business International: Read the data and then answer the questions that follow. Graph sheets will be provided by the invigilators.**

Sales per unit \$200.00. Variable selling expenses \$20.00 per unit and fixed costs per period \$45,000. In addition there were variable administrative expenses of \$30.00 per unit. Sales capacity per period 1,200 units.

Perform breakeven analysis providing the following:

- a) an algebraic statement of the:
  - i) total revenue function (2 marks)
  - ii) total cost function (3 marks)
- b) Prepare a detailed breakeven chart (7 marks)
- c) Calculate breakeven point:
  - i) in units (3 marks)
  - ii) as a percentage of capacity (2 marks)
  - iii) in sales dollars (1 marks)
- d) Calculate net income at a sales volume of 20% of capacity. (3 marks)
- e) What is the new breakeven point in units if fixed costs are increased by \$3,000? (3 marks)

**SECTION II**

**Instructions: This section contains eight questions (8). Candidates are required to answer four (4) complete questions. All working must be shown clearly and neatly. Tables, calendars and foolscap sheets will be provided by the invigilators.**

- 2. (a) On March 1, 2002 Mr. Reeves deposited \$1,500 into a registered retirement savings plan with the Bank of St. Lucia for 6 years at interest of 5% compounded quarterly. Subsequently, the interest rate was changed to 6% compounded semi-annually on September 1, 2004. What will be the value of the investment at the end of its term if there are no further changes in the interest rate? (7marks)
- (b) Payments of \$1,000, \$1,200 and \$1,500 are due in 6 months, 18 months and 30 months respectively. What single payment would settle the debt four years from now if interest is 10% compounded semi-annually? (7 marks)
- 3. (a) Find the difference between the following two investments: a) \$1,500 invested for 5 years at 4% compounded monthly and b) \$1,500 invested for 5 years at 4% per annum. (4 marks)
- (b) Mrs. Greene bought a television set from a hire purchase company for \$4,000. She paid 5% down and agreed to pay the balance and interest at 12% p.a. in 42 monthly installments. Determine the payoff figure after the 24<sup>th</sup> payment is made. (Use sum of the digits method) (7 marks)

- (c) What sum of money will earn \$115.00 from September 1, 1984 to August 1, 1985 at 15% per annum? (3 marks)
4. (a) At the end of each month during a four-year period the manager of a small business invested one-fifth of his monthly salary of \$7,000. How much will the investment be worth two years after the last deposit is made if interest is 5% compounded monthly. (7 marks)
- (b) Find the proceeds of a promissory note for \$5,000 discounted 24 months before maturity at 10.5% compounded quarterly. (4 marks)
- (c) What sum of money will accumulate to \$2,500 in eight months at 9.5% per annum? (3 marks)
5. (a) Mr. Rivers bought a stove for \$3,000. He made a down payment of \$500.00 and agreed to pay the balance in 15 monthly payments. If interest is 4% compounded monthly, how much should Mr. Rivers pay each month? (6 marks)
- (b) If John borrowed \$2,000 on December 1, 1998 at 6% compounded semi-annually and interest is \$150, on what date is the loan due? (4 marks)
- (c) How many months are required for \$260 to yield \$3.90 interest at 6% per annum? (2 marks)
- (d) At what rate of interest will \$1,500 grow to \$1,600 from June 1, to December 1, 2007? (2 marks)
6. (a) \$10,000 is put into a five-year term deposit paying 11.5% compounded semi-annually. After five years the deposit is converted into an ordinary annuity of equal semi-annual payments of \$2,000 each. If interest remains the same, what is the term of the annuity? (7 marks)
- (b) A promissory note of \$6,000 dated May 1, 1999 at 8% compounded quarterly for 5 ½ years is discounted on November 1, 2002. Find the proceeds if it is discounted at 12% compounded monthly. (7 marks)
7. (a) Mr. Claus opened a savings account on December 1, 1980 with \$1,200.00. He added \$1,200 on July 1, 1981 and \$1,200 on November 1, 1982. How much is in the account on January 1, 1984 if the deposit earns 12% interest compounded monthly? (6 marks)
- (b) A debt of \$2,400 due in 2 months is to be paid by 3 equal payments due in 3, 5, and 7 months hence. What is the size of each payment if interest is 5% p.a.. Comparison date is 5 months hence. (8 marks)

8. (a) Mr. Branch bought a piano and paid \$1,000 down. He agreed to pay \$200 at the end of each month for 3 ½ years. If interest is 15% compounded monthly. What was the cash price of the piano? (6 marks)
- (b) Saving for his daughter's university education 15 years from now Mr. Hope set up a savings plan whereby he will deposit \$150 at the end of each month for the next ten years. Interest is 6% compounded monthly.
- i) How much will be in the savings account at the date of entry into university? (4 marks)
  - ii) How much will Mr. Hope contribute? (2 marks)
  - iii) How much interest is included? (2 marks)
9. (a) Company ABE received an invoice dated April 20 from Windwards Limited with terms 5/20 R. O. G. for the following items:  
20 tea trays at \$30.00 each  
30 desks at \$500 each  
30 chairs, at \$250 each
- All items are subject to trade discounts of 10%, 5%, 2%
- i) If the shipment was received on May 28, what is the last day of the discount period? (2 marks)
  - ii) What is the amount due if the invoice is paid on June 15? (2 marks)
  - iii) If a partial payment only is made on the last day of the discount period, what is the amount due to reduce the outstanding balance to \$2,000? (3 marks)
- (b) What amount must be remitted if the following invoices all with terms 5/10, 2/30, n/60 are paid together on December 8:  
Invoice No. 222 dated November 2, for \$600  
Invoice No. 333 dated November 14, for \$2,000  
Invoice No. 444 dated November 30, for \$900 (7 marks)

**END OF EXAMINATION**

**Merry Christmas, Happy New Year**