



**SIR ARTHUR LEWIS COMMUNITY COLLEGE
ACADEMIC YEAR (2024/2025) – SEMESTER ONE
END OF SEMESTER ALTERNATE EXAMINATION**

COURSE TITLE : **MATHEMATICS FOR FINANCE**

COURST CODE : **MAT108**

TUTORS : **TITUS MATHURIN**
PETRUS JN FRANCOIS

DATE : **15th January 2025**

TIME : **1:00 p.m.**

DURATION : **2 HRS.**

STUDENT ID# : **.....**

READ THE FOLLOWING INSTRUCTIONS CAREFULLY.

1. Write your student's ID number on all the work you hand in.
2. This paper consists of **three (3)** sections, ***all sections are compulsory.***
3. Section A consist fifteen (15) multiple choice questions.
4. Section B consist of fifteen (15) fill in the blank.
5. Section C consist of three (3) structured questions.
6. Section A & B are 15 marks each, section C is 30 marks, total 60 marks.
7. Write in BLACK or BLUE pen. ***(NO WRITING IN PENCIL)***
8. Show all calculations and working.
9. **Only NON-PROGRAMMABLE calculators are permitted.**
10. A formula sheet is included.
11. Do not use correction fluid.

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO

Simple Interest Formulas:

$$\text{Simple Interest} = Prt$$

$$\text{Future Value} = P(1 + rt)$$

$$\text{Present Value} = \frac{FV}{(1+rt)}$$

Compound Interest Formulas:

$$\text{Future Value} = P(1 + i)^n$$

$$\text{Present Value} = \frac{FV}{(1 + i)^n}$$

Ordinary Annuity Formulas:

$$\text{Future Value} = R \left[\frac{(1+i)^n - 1}{i} \right]$$

$$\text{Present Value} = R \left[\frac{1 - (1+i)^{-n}}{i} \right]$$

Annuity Due Formulas:

$$\text{Future Value} = R \left[\frac{(1+i)^n - 1}{i} \right] * (1 + i)$$

$$\text{Present Value} = R \left[\frac{1 - (1+i)^{-n}}{i} \right] * (1 + i)$$

SECTION A

1. If the value of $i = 0.05$ and interest is compounded semi-annual, determine the value of the interest rate (r) for the year.
 - a. 10 %
 - b. 0.1 %
 - c. 1 %
2. The difference between the future value and the interest value is called _____.
 - a. Interest value
 - b. Present value
 - c. Maturity value
3. All the following are types of loans EXCEPT:
 - a. Credit Card
 - b. Pounds Sterling
 - c. Debt Consolidation

The statement below is present to provide answers to questions 4 – 7:

Barry starts an IRA account at BOSL Ltd on August 1st, 2022, he expects to make regular payments of \$320.00 at the end of every quarter for the next 20 years.

4. What date will Barry make his last contribution to the account?
 - a. August 1st, 2042
 - b. July 31st, 2042
 - c. August 31st, 2042
5. What type of investment has Barry entered?
 - a. Annuity Due
 - b. Ordinary Annuity
 - c. Promissory Note
6. What is the total number of contributions will Barry make over the life of his investment?
 - a. 20
 - b. 80
 - c. 120

7. What does the abbreviation IRA mean?

- a. Investment Recovery Account
- b. Investment Retirement Account
- c. Interest Retirement Account

The statement below is present to provide answers to questions 8 - 10:

John Paul is a Financial Planner. He prepared a promissory note for one of his clients in November 2022. The diagram below is a copy of a promissory note that John Paul prepared for that client.

Promissory note template

I (Sarita Dhaliwal) of (Vancouver) shall lend to (Howard Grossman) of (Montreal) the sum of \$20,000.

The sum identified above shall be repaid in 24 payments and amortized over a period of 2 years at an interest rate of 5%.

The first payment shall begin on Jan 1, 2023.

The note shall be repaid in full on Dec. 1, 2025.

Late payments, if any, will be charged at an interest rate of 5%.

This note is entered into this 30th day of November, 2022.

Sarita Dhaliwal 
Lender's name and signature

Howard Grossman 
Borrower's name and signature

8. What is the name of the payee of the promissory note.

- a. Sarita Dhaliwal
- b. Howard Grossman
- c. Joh Paul

9. What is the start date of the promissory note?

- a. November 30th, 2022
- b. January 1st, 2023
- c. December 1st, 2025

10. What type of promissory note did John Paul prepare?

- a. Interest-bearing
- b. Non-interest bearing
- c. Secured

11. Determine the exact number of days between July 3rd, 2021 and January 2nd, 2025.

- a. 1,620 days
- b. 1,260 days
- c. 1,980 days

12. What is the position/condition that occurs at any focal date when dealing with simple or compound interest?

- a. Total revenues = Total costs
- b. Total payments = Total sales
- c. Total loans = Total payments

13. What type of cost does not change based on the number of units produced?

- a. Total Fixed cost
- b. Variable cost per unit
- c. Total variable cost

14. In the short run, fixed cost is expected to _____.

- a. Change
- b. Remain the same
- c. Doesn't exist

15. Graphically, the break-even point exists when the _____.

- a. Total cost line intercepts the total variable line.
- b. Total variable line intercepts the Total revenue line.
- c. Total cost line intersects the Total revenue line.

SECTION B

1. Another word used synonymously for future value is _____.

2. The proceeds from a promissory note is the same as _____.

3. Two (2) types of financial institutions registered to operate in St. Lucia are _____ and _____.

4. A company's Break-even quantity is 60, when the company sells 60 and 59 units respectively, it is expected to _____ and make a _____ respectively.

5. Break even = _____ - _____.

6. When preparing an amortization schedule, calculating the amount that is applied to the principal = _____.

7. Future value is always _____ than the present value.

8. The exact number of months between April 12, 2024 and September 11, 2024 is _____.

9. Financially, time is _____.

10. A loan was taken six (36) months ago from now and the agreed upon focal date is one (1) year from now. It will take _____ years for the loan to get to the focal date.

SECTION C

1. Joseph takes two loans from Ist National Bank Ltd; the first loan of \$1,000.00 was taken thirty-six (42) months ago and the second loan of \$2,500.00 was taken one hundred and four weeks from now. Ist National Bank Ltd charges interest at 13% p.a. compounded quarterly and requires Joseph to make one payment in 3.5 years from now to clear the loans at an agreed focal date of twenty-four (24) months from now. Using the information provided, perform the following tasks:

- a. Draw a well labeled timeline to represent the information. **[2 marks]**
 - b. Determine the length of time, in years, for all Joseph's loans to get to the focal date. **[2 marks]**
 - c. Determine the length of time, in years, for Joseph's payments to get to the focal date. **[1 mark]**
 - d. Calculate the value(s) of all Joseph's loans at the focal date. **[4 marks]**
 - e. Calculate the value of Joseph's payment at the focal date. **[2 marks]**
 - f. Calculate the value of Joseph's payment at the focal date. **[1 mark]**
2. A 5- year, \$10,000.00 interest-bearing promissory note is to be discounted four (4) years from its issue date at 13% compounded quarterly.
- a. Calculate the values for i and n . **[2 marks]**
 - b. Determine the value of the note at maturity. **[3 marks]**
3. Jane is expected to deposit \$450.00 into an account that pays interest at 12% p.a. compounded monthly at the end of every month for the next 4 years.
- a. State the type of annuity presented in the above statement. **[1 mark]**
 - b. Calculate the values for i and n . **[2 marks]**
 - c. Calculate the amount in the account after 4 years. **[3 marks]**
4. Sara took a \$1000 loan from CIBC at interest 16% p.a. compounded quarterly to be repaid by making regular quarterly payments of \$275.49 in one (1) year. Copy and complete the amortization schedule below.

Time k	Payment C	Interest Paid I_k	Principal Repaid P_k	Balance B_k
0				1000.00
1	275.49	40.00	235.49	764.51
2	275.49	30.58	244.91	519.60

END OF EXAMINATION