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7020/P2/ Business Mathematics

# SOUTH WEST REGIONAL MOCK EXAMINATION TECHNICAL AND VOCATIONAL EDUCATION

#### THE TEACHERS' RESOURCE UNIT (TRU) Cellule d'appui à l'action Pédagogique

IN COLLABORATION WITH En collaboration avec

## THE REGIONAL INSPECTORATES OF PEDAGOGY AND

THE SUBJECT TEACHERS' ASSOCIATIONS (STA)

Date: Tuesday 25/03/2025

ATVE/ ADVANCED LEVEL

Specialty Name and Acronym	Commercial Specialties Except HEC		
Subject Title	Business Mathematics		
Subject Code No.	7020		
Paper No.	2		

**3 HOURS** 

## INSTRUCTIONS TO CANDIDATES

### Answer any FIVE questions

Show all the steps in your calculation, giving the answer at each stage.

Use calculators, tables where appropriate

You will be provided with graph paper (s) where necessary

You are advised to read carefully through the questions paper before you begin your answers You are reminded of the necessity for Good English and orderly presentation in your answers

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#### **Ouestions** One

Afriland and NFC. Bessem saved 1,500,000 in Afriland and 2,000,000 in NFC and received a total Bessam and Lamgmia are two traders who make their yearly saving in two banks each; interest of 265,000fcfa in a year. Langmia on the other hand saved 1,100,000fcfa with Afriland bank and 800,000fcfa in NFC and received a total interest of 151,000fcfa in a year. Interest is compounded annually.

- a) Calculate the interest rate paid by each of the Bank
- b) Calculate for Afriland First Bank the effective rate if interest is compounded
  - i) Monthly
  - ii) Quarterly
  - iii) Continuously.
- c) Calculate the amount a trader who saves 500,000 FCFA with Afriland Bank will receive if interest is compounded:
  - i) Monthly
  - ii) Quarterly
  - iii) Continuously

**Question** Two

a) A project has the following the cash flows:

Year	0	1	2	3	4	5	6
Cash flow (FCFA)	(400,000)	0	0	271,000	0	0	476,500

**Required:** Calculate the IRR of the project.

b) A civil servant took a loan of 8,000,000fcfa from BICEC Bank, at an interest rate of 11.74% refundable in 10 constant annuities. Calculate:

- i) Calculate the interest for the 5th and 6th payment
- ii) The amount of the constant annuities
- iii) The future value of the loan
- iv) The amount of the last amortisation

**Ouestion Three** 

- a) A mobile phone kiosque records its monthly deposits from customers in AP from January to December 2024. The kiouque recorded 1,695,500 FCFA and 1,724,500 FCFA in the month of September and November respectively. Calculate
  - i) The amount recorded in October
  - ii) The common difference
  - iii) The amount recorded in January
  - iv) The total annual deposit
  - v) The month deposit of 1,652,000 FCFA will be recorded
- b) A man sold a FCFA 50,000,000 of 4% at 78 and with the proceed bought as many as possible 6% stock at 57. if the brokerage was 0.2% on each transaction, find the change in his income (8marks)

#### Question Four

- a) DHL bought a new Reefer with a useful life of 6years for the delivery of parcels. Annual depreciation for the 3rd and 6th years is 637500 and 332779 respectively
  - i) Calculate the rate of depreciation
    - ii) The cost of the Reefer
  - iii) Present first and last lines of the depreciation schedule
- (12 marks) Two capitals of 300 000 FCFA and 400 000 FCAF payable respectively in 8 and 6 years are discounted at 7% b) compound interest. Determine the date at which the discount values of the bills will be the same (8 marks)

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(10 marks)

(6 marks)

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(10 marks)

(10 marks)

(12 marks)

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Question Five

- a) A merchant borrows from his banker a sum of 10,000 FCFA at the end of the first year he pays his lender 4,900 FCFA at the end of the second year he pays 6540 FCFA, thus extinguishing his debt.
  - i) Calculate the interest rate
  - ii) Present the amortisation schedule
  - iii) Calculate the  $1^{st}$  and the  $2^{sd}$  amortisation if the annuities where constant.

(10 marks)

- b) A loan is refundable by 4 annuities in decreasing arithmetic progression. The unpaid balance before the last annuity is 375,000 F and the interest of the first year is 210,000 FCFA
  - i) The amounts of the loan
  - ii) Calculate the interest rate
  - iii) The common difference
  - iv) The last annuity
  - v) Present the amortisation schedule

(10 marks)

#### Question Six

The Management of VATICAN EXPRESS wants to buy a new bus worth 2 500 000 FCFA which will be depreciated in 4 years. At the end of its usage period, the scrap value is estimated at 300 000 FCAF. The operating cost will amount to 500 000 FCFA in 2018, 600 000 in 2019, 800 000 FCFA in 2020, and 800 000 FCFA in 2021. The turnover generated will be 1 400 000 CFA in the first two years and 1 500 000 FCFA in the next two years. The agency is subject to a tax of 33% on profit. You are required to calculate

- i) The present values at a discounting rate of 4% and 9%
- ii) The net present value for each of the rates
- iii) The internal rate of return
- iv) The profitability index using the discounting rate of 4%

20 marks)

#### **Ouestion Seven**

- a) La Regional Bank issued a debenture loan with the following characteristics
  - No of debentures issued 20 000
  - Nominal value 5,000 F CFA
  - Issue price 4975 FCFA
  - Nominal interest rate 9,5%
  - Redeemable price 5 000 FCFA
  - Amortisation by means of 10 annuities.
  - i) Present the first 2 and last 3 lines of the amortization schedule.
  - ii) After how long will half of the Debenture issued be amortised
  - iii) Calculate the rate of return on the loan upon issue.

#### **Questions** Eight

The market department of SOCUCAM Mbanjock wants to manufacture and market a new brand of sugar. The financial department provides the following details:

- The demand function of company is p = 42 0.001x;
  - The cost function LSC(x) = 30x + 1200;
  - where xis the number of units demanded
  - i) Revenue Function and the total revenue at 1500unit
  - ii) Marginal Revenue Function
  - iii) Determine the profit function
  - iv) Determine marginal profit function
  - v) Calculate the profit for 1000 units

(20 marks)

(20 marks)

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