

5020 BUSINESS MATHEMATICS

INTRODUCTION

Business mathematics ordinary level is designed to introduce the main fundamental concepts and the various methods of calculation in the field of commerce. If successfully mastered, a candidate is well placed to work in any environment or to undertake further studies in business mathematics management marketing and accounting. The approach to the solution of problems and topics covered reflect the typical Cameroon business approach and ties up with the OHADA accounting system.

PROGRESSION OPPORTUNITIES AND CAREER PROSPECTS

(a) Progression Opportunities

The syllabus for intermediate level Business Mathematics, 5073 prepares candidates for:

1. High school studies.
2. Entrance into GTTTC (ENIET)
3. Professional training centres
4. University courses in accounting and Management.
5. Employment as junior financial clerk.

(b) Career prospects

- Successful candidates of intermediate level in Business Mathematics, 5073 could be employed by:
 1. Microfinance Establishments
 2. Banks
 3. Decentralized collectivities

AIMS

- The aim of this syllabus is to equip the candidate with the main fundamental aspects used and encountered in daily commercial and accounting activities.
- An understanding of the basic processes of arithmetic, addition, subtraction, multiplication and division.
- The basic principles involved in purchase and sale of goods.
- The basic manipulation of simple interest and compound interest calculation and application to other areas like discounting of bills, present value of a debt, etc.
- Simple foreign exchange transactions.
- Formulation of and solutions to business oriented mathematical equations (single and or simultaneous linear equations)

OBJECTIVES

Candidates should be able to handle short answer problems at a rapid pace and long answer problems on:

- a) Division, multiplication, addition and subtraction.
- b) Sale and purchase of goods.
- c) Simple interest.
- d) Percentages.
- e) Discounting of bills and equivalence of bills
- f) Current and interest account (concepts only).
- g) Salaries and wages
- h) Foreign exchange.
- i) Elementary statistics and probability.

New Structure of the Examination based on the current syllabus: Applicable from 2016 session.

The examination will consist of two written papers as follows:

Paper 1 shall consist of Multiple Choice Questions covering the entire syllabus. The paper shall test all the cognitive skills provided for in the syllabus (Blooms taxonomy).

Paper 2 shall comprise eight case-study and problem-solving questions for candidates to answer any five.

GUIDE

Paper	Type of question	Section/Part	Number of Questions and Specifications	Difficulty Level	Duration	Raw Mark	Weighting	Remark
1	MCQs covering the whole syllabus		50 Questions covering the entire syllabus: 25 on Knowledge 15 on comprehension, 10 on Application,	* 25 questions ** 15 questions *** 10 questions	1 ½ hours	100	30%	Calculators, Mathematical sets and tables/formulae booklet (from GCEB).
2	Case Study & Problem-solving		Eight questions Case Study & Problem-solving for candidates to answer any five. Knowledge -4, Comprehension – 3, Application – 1.	* 60 % (60 marks) ** 30 % (30 marks) ***10 % (10 marks)	2 ½ hours	100	70%	1. Questions Must cover at least 80% of the syllabus content 2 Calculators, Mathematical sets and tables/formulae booklet (from GCEB).

N/B: One Star questions (*) are average questions (questions of *moderate* difficulty) for any candidate who has covered and understood the syllabus.

Two Star Questions ()** are above average questions.

Three Star Questions (*)** are those with difficulty slightly above the two-star questions (often attempted by the outstanding candidates) or questions for the Chief Examiner, equally called Tag Questions.

SYLLABUS CONTENT

TOPICS	SUB TOPICS	Extend of mastery required and other relevant explanatory information
1. NUMBERS	1.1 The ordinary processes of number manipulation. The” four rules and their combination 1.2 Whole numbers 1.3 Directed numbers 1.4 Fractions	- Sequence of operations. Use of brackets - Prime numbers, common factors and common multiples, H.C.F., L.C.M. square roots cubes and cube roots - Use in practical situations e. g temperature change Vulgar and decimal fraction of a quantity. - One quantity as a part of another. - Conversion of vulgar to decimal and vice versa.
2. MEASURE, APPROXIMATION AND SPATIAL CONCEPTS	2.1 Measure of money including the use of foreign currencies, weight, length, area volume capacity. Time : 12 hours and 24 hours 2.2 APPROXIMATION: Writing to nearest whole, ten, hundred etc. Approximation to given decimal places. Approximation to money and measures. 2.3 Spatial concepts: Ability to recognize triangle, square, rectangle, circle and cuboid. Finding the perimeter of a triangle and circle, obtaining the area of a triangle, square and rectangle. Finding the volume of a cuboid	- Decimal currency. - Unit in common use for these. - Idea of significant places also required - Simple applications of these in business situation.
3. RATIO AND PROPORTION	3.1 RATIO 3.2 Proportion 3.2.1 Proportional numbers 3.2.2 Directly proportional numbers 3.2.3 Inversely proportional numbers.	- Meaning of, characteristics and operations on fractions - The use of these in sharing quantities. - More advanced situation involving capital ratios and profit sharing ratios.
4. PARTNERSHIP	4.1 Articles of partnership 4.2 Capital 4.3 Drawings	- Candidates are expected to appreciate the significance of partners of a business entity - make use of partnership agreement in the division of the net profit or loss between the partners.
5. PERCENTAGES AND APPLICATION.	5. 1 Direct percentages 5.2 Indirect percentages 5.3 Cost and selling price 5.4 Discount, rebate profit and loss	-Apply direct percentage on gross amount -percentages in series -from net value to gross value -Calculate the unique % for a series of percentages

TOPICS	SUB TOPICS	Extend of mastery required and other relevant explanatory information
	5.5 Price increase / decrease	- Applications: - Calculate selling and cost price. - Markup and margins. - Calculate the selling price VAT inclusive. - Multiplier effect - Percentages in series - The establishment of an invoice. -Reconstituting an invoice from net amount.
6. EQUATION FORMULATIONS.	6.1 Simple linear equations . 6.2 Linear equations with two variables (simultaneous equations). 6.3 Graphs	-Solve equation with two variables -Graph of the equations
7. WAGES AND SALARIES	7.1 Definition 7.2 Distinction between wages and salaries 7.3 Calculations of the various elements of Gross salaries (Basic, overtime, commissions).	-Define the salary and wage -Differentiate salary from wage -Calculate the gross salary from the three elements; -Calculate the commissions on sales with different ranges and rates
8. DISCOUNTING OF BILLS OF EXCHANGE	8.1 Definition and establishing the formulae 8.2 Calculations 8.3 Calculation of the different commissions and taxes. 8.4 Calculation of real rate of discount and the cash price rate. 8.5 Establishing the discounting statements.	-Definition -Formula - The discount, the present value, the duration, the due date, the rate, the nominal value. -Calculate commissions on bills, --Calculate the VAT on commissions. -Calculate the single rate after all the deductions -Prepare a discounting statement for several bills (at most four).
9. EQUIVALENCE OF BILLS AND PAYMENTS	9.1 Equivalence of two bills or payments 9.2 Replacement of several bills or payments by a single bill / payment 9.3 Calculation of the common due date and the average due date.	-Calculate the date of equivalence -Calculate the nominal value of the single bill or payment. -Calculate the due date for several bills or payments. -Calculate the average due date of bills or payments;
10. SIMPLE INTEREST	10.1 Derivation of the formulae 10.2 The various manipulations of the formulae when time is in years, quarters of a year, months weeks and days. 10.3 The calculation of Interest rate, Time Capital, when this is the only missing information 10.4 Relation between simple interest and compound interest.	-Definition of the simple interest -Specify the maximum duration (2yrs) -when the duration is in years -when the duration is in months -when the duration is in days - Calculation of the interest rate, time (duration), principal or present value (capital), acquired value or future value (amount). - Graphical representation of interest, Future value and present value as function of time.

TOPICS	SUB TOPICS	Extend of mastery required and other relevant explanatory information
11. COMPOUND INTEREST	11.1 Definition of compound interest 11.2 Calculation of the future value of a capital at compound interest 11.3 Calculation of the total interest yielded	- Calculations year by year - Calculations using the general formula
12. CURRENT AND INTEREST ACCOUNT:	12.1 Definition of current account. 12.2 Definition of current and interest account. 12.3 Definition and determination of the value date. 12.4 Internal rates and commissions. 12.5 The closing date. 12.6 Current accounts layout.	-Define a current account -Define current and interest accounts -Current account and interest account compared. -Define the value date; -Value date for deposits -Value date for withdrawal. -Non reciprocal interest rates. -Constant and variable rates. -Define a closing date and illustrate -Present a layout of a current account.
13. FOREIGN EXCHANGE TRANSACTIONS	13.1 Definition of foreign exchange. 13.2 Parity 13.3 Major foreign currencies. 13.4 Calculations involved in the exchange of foreign currencies.	-Define foreign exchange -Define parity and illustrate. -List the main currencies and their areas: USA dollar, Yen, Euro, Yen, Yuan, Pound, -Give the rates and the transactions
14. SPEED AND DISTANCE	14.1 Define speed and distance 14.2 Speed of an object 14.3 Time for two object to meet 14.4 Time for a fast object to overtake a slow object	- Determine the speed of an object using algebra and by graph - determine the time for two object to meet - determine the time for a fast object to overtake a slow object
15. STATISTICS AND PROBABILITY	15.1 Data collection 15.2 Measures of central tendencies 15.3 Measures of dispersion 15.4 Elementary probability	- Sources of data - Method of collection - Classification (Grouped and ungrouped data) - Presentation (Tabular, graphical) - The mean - The median - The mode - Range - The mean deviation - The variance and the standard deviation - The quartiles and the inter quartile range - The probability of a single event as a fraction or decimal.

DIFFERENCES BETWEEN THE REVISED SYLLABUS AND THE PREVIOUS ONE.

Some topics have been re- arranged, reframed or adjusted for the better understanding of the users. The syllabus is presented in a tabular form for better understanding of the various areas covered.

REMARKS (Cross curricula demands)

- ✓ The following notions are expected to have been taught:
Division, multiplication, addition and subtraction (horizontally, vertically and other wise).
- ✓ Some of the methods and notations used in pure or general mathematics may be applicable in certain situations.
- ✓ Candidates should be able to formulate and solve linear equations with one or two unknowns.

TEXTBOOKS AND REFERENCE MATERIALS

S/N	AUTHORS	TITLES/ISBNM	PUBLISHERS
1.	J.H. Harvey	The Arithmetic of commerce	/
2.	D.J. Booth	A First Course in Statistics	/
3.	R. N. Rowe	A First Course in Business Mathematics and Statistics	/
4.	Michael MUKONTSO	Business Mathematics Made Simple Volume One	Mbasso Publishers 2012
5.	Cyril Nguti	Business Mathematics	ANUCAm