



(Knowledge for Development)

KIBABII UNIVERSITY

UNIVERSITY EXAMINATION

2020/2021 ACADEMIC YEAR

FIRST YEAR SECOND SEMESTER

SPECIAL/SUPPLIMENTARY EXAMINATION

FOR THE DEGREE OF BACHELOR OF COMMERCE

COURSE CODE: BCO 122

COURSE TITLE: BUSINESS MATHEMATICS

DATE: 30/09/2021 **TIME:** 11.00 a.m-1:00 pm

INSTRUCTIONS TO CANDIDATES

Answer Question **One** and Any other **Two** Questions

TIME: 2 Hours

KIBU observes ZERO tolerance to examination cheating

This Paper Consists of 5 Printed Pages. Please Turn Over. 

QUESTION ONE (COMPULSORY)

a) Solve the following equation

$$3x + 4 = -8$$

3mks

b) Distinguish between the following terms.

i) Simple interest and compound interest.

2mks

ii) Nominal rate of interest and effective rate of interest.

2mks

c) The cost of 3 shirts and 2 dresses is kshs. 4,200. The cost of 2 shirts and 4 dresses is kshs. 6,000. Determine the cost of

i) One shirt

ii) One dress

3mks

c) Juma invested a certain amount of money in a bank which paid 12% p.a. simple interest. After 5 years, his total savings were sh 5,600. Determine the amount of money he invested initially.

4mks

d) Determine the rate per annum at which a certain amount of money doubles after being invested for a period of 5 years compounded annually.

4mks

e) State and explain the two types of annuities.

4mks

f) Solve for x in the equation

$$4x^2 - 3x - 1 = 0$$

3mks

g) Use crammer's rule to solve the following systems of equations.

$$x + 2y + 5z = 23$$

$$3x + y + 4z = 26$$

$$6x + y + 7z = 47$$

5mks

QUESTION TWO

- a) Calculate the amount that will be obtained if ksh 20,000 was invested after 2 years at 16% p.a. compounded quarterly. 4mks
- b) Determine the future value of a ksh 100,000 investment made at the end of every year for 5 years. Assume the required rate of return is 12% compounded annually. 6mks
- c) Jane was to receive ksh 200,000 three years from now on an investment and the required rate of return is 10%. What amount would he require today to be indifferent? 4mks
- d) The following are cash flows occurring at the end of the years indicated.

Year	cash flow sh"000"
1	400
2	800
3	500
4	400
5	300

Calculate the present value of these cash flows if the required rate of return is 8%. 6mks

QUESTION THREE

- (a) Write short notes on the following subheadings as used in matrix algebra.
- (i) Equality of matrices 4mks
 - (ii) Order of a matrix
- (b) Jane, Mary and Joseph purchased cereals A, B and C from Faida supermarket. Jane purchased 1kg of A, 3kg of B and 3kg of C and spent a total of ksh 650. Mary purchased 1kg, 4kg and 2kg of A, B and C respectively and spent ksh 700. Joseph bought 2kg of A, 2kg of B and 1kg of C and spent ksh 650.
- (i) Form three equations to represent the above information. 3mks
 - (ii) Express the above information in matrix form. 3mks
 - (iii) Using crammer's rule or otherwise, determine the unit price of each type of cereals. 10mks

QUESTION FOUR

- (a) Define the following terms as used in set theory.
- (i) Universal set
 - (ii) Equal sets
 - (iii) Union of sets 4mks
 - (iv) Intersection of sets
- (b) In an examination, 40% of the students passed Accounting, 45% passed Finance and 30% passed both subjects.. if 90 students failed in both exams: Determine the total number of students in the exam room. 3mks
- (c) A market researcher investigating consumers preference for three brands of beverages namely coffee, tea and cocoa in Bungoma town gathered the following information:
From a sample of 800 consumers, 230 took coffee, 245 took tea and 325 took cocoa. 30 took all the three beverages, 70 took coffee and cocoa, 110 took coffee only, 185 took cocoa only.
- Required:
- (i) Present the above information in a venn diagram. 4mks
 - (ii) The number of customers who took tea only. 2mks
 - (iii) The number of customers who took tea and coffee only. 3mks
 - (iv) The number of customers who took tea and cocoa only. 2mks
 - (v) The number of customers who took none of the beverages. 2mks

END
GOOD LUCK