



TECHNICAL UNIVERSITY OF MOMBASA

SCHOOL OF BUSINESS

DEPARTMENT OF MANAGEMENT SCIENCE

UNIVERSITY EXAMINATION FOR:

BACHELOR OF COMMERCE (PROCUREMENT OPTION)

BPC 4400: E-PROCUREMENT AND SUPPLY CHAIN MANAGEMENT

END OF SEMESTER EXAMINATION

ORDINARY EXAMINATIONS

SERIES: DECEMBER 2016

TIME: 2 HOURS

DATE: DECEMBER 2016

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of FIVE questions. Attempt Question ONE and any other TWO Questions

Do not write on the question paper.

QUESTION ONE

a) If $U = \{a, b, c, d, e, f, g, h, i, j\}$

$A = \{a, b, c, d, e, j\}$

$B = \{c, d, e, f, g\}$

$C = \{b, c, d, e, h\}$

$D = \{c, d, e, g\}$

$E = \{b, c, d, e, j\}$

[5 Marks]

b) Define the following terms

i) Disjoint set

ii) Complement of a set

[3 Marks]

b) i) Calculate the rate of interest when Kshs. 24,000 now provides a perpetual annuity of Kshs. 600 p.a.

[3 Marks]

ii) A farmer bores a hole 250m deep. Estimate the cost of boring if the cost is Kshs. 80 for drilling the first meter with an increase in cost of Kshs. 5 for each succeeding metre.

[5 Marks]

c) i) A firm expects its sales to grow by 10% per month. If the January sales is Kshs. 120,000. Calculate the expected total annual sales.

[4 Marks]

ii) Calculate how much money should be invested now in order to acquire Kshs. 120,000 after six years if the investment rate is 12%.

[4 Marks]

d) Solve the following quadratic functions

i) $5x^2 - x - 4$

[3 Marks]

ii) $6x^2 - x - 5$

[3Marks]

QUESTION TWO

a) Solve the equation using factorization method

i) $6x^2 + 7x - 5 = 0$

[3 Marks]

ii) $5x^2 - x - 4$

[3Marks]

b) A certain commodity has linear function going through the following points

When $P = \text{Kshs. } 8,000$ $q = 800$ units

$P = \text{Kshs. } 3,000$ $q = 550$ units

Required i) Obtain the Linear function that goes through the points given above

[5 Marks]

i) Explain whether it's a demand or supply function.

[1 Mark]

c) A five year employment contract provides for an annual increase of Kshs. 4,000 p.a. if the starting salary is Kshs. 64,000, determine

i) The salary at the end of the fifth year

[3 Marks]

ii) Total earnings over this period

[2Marks]

QUESTION THREE

Q.3 a) If $U = (1,2,3,4,5,6,7,8,9,10,11,12)$

$A = (1,2,3,4,7,9,11)$

$B = (4,5,6,10,12)$

$C = (5,6,7,10,11)$

$D = (6,8,10,11,12)$

What is

i) $A \cup B$

ii) $A \cap B$

iii) $A \cap C$

iv) $B \cap C$

v) A'

b) Solve the Linear Function which goes through the following points

$(x,y) = (2,6), (x,y) = (5,24)$

[4 Marks]

ii) What is the straight line which has a slope $b = -4$ and goes through $(x,y) = (16,22)$

[4 Marks]

c) In a geometric progression, the 6th term is 8 times the 3rd. the common ratio is

$$ar^5 = 8a^{r^2}$$

[3 Marks]

d) Solve for Y in the equation:

$$Y^2 - y - 20$$

[4 Marks]

d) A Principal of Kshs. 24,000 is invested at 12% for 4 years. Calculate the future value if the interest is compounded.

i) Annually

ii) Semi – annually

iii) Quarterly

e) What is the straight line which has a slope $b = -2$ and goes through $(x, y) = (10,24)$

[2 Marks]

QUESTION FIVE

5. a) A person pays sh. 1,000,000 for a new house. A down payment of sh. 300,000 leaves a mortgage of sh.700,000 with interest computed at 10.5% per year compounded monthly. Determine the monthly mortgage payment if the loan is to be repaid over 20 years (6 marks)

b) Calculate the amount of money to invest now in order to acquire Kshs. 64,000 after six year. The investment rate is 12%.

[4 Marks]

c) Explain the meaning of the following

- i) Polynomial functions
- ii) Multivariant functions
- iii) Exponential functions

(3Marks)

d) The profit function for a firm is

$$P = - 10q^2 + 36,000q - 45,000$$

What is the profit expected to equal to if 1,500 unit are sold

[4 Marks]

e) A quadratic equation is defined as $ax^2 + bx + c = 0$, show that $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ (4 marks)