MAASAI MARA UNIVERSITY

REGULAR UNIVERSITY EXAMINATIONS
2021/2022 ACADEMIC YEAR
FIRST YEAR FIRST SEMESTER

SCHOOL OF BUSINESS AND ECONOMICS
CERTIFICATE IN BUSINESS MANAGEMENT

COURSE CODE: CBM 02
COURSE TITLE: BUSINESS MATHEMATICS

DATE: 31ST MARCH, 2022   **TIME: 1100-1300**

INSTRUCTIONS TO CANDIDATES

Question **ONE** is compulsory

Answer any other T**HREE** questions

QUESTION ONE

a) You are given the following sets. Use them to find:

   i.   Union of sets
   ii.   Intersection of sets
   iii.   Set difference A-B & B-A

$A =$ {a,b,c,d} $B =$ {c, d, e, f, g} (6 marks)

b) Differentiate between census and sampling   (4 marks)

c) A set of scores is obtained from a particular test. Use it to calculate mean, mode, median and range

     44, 40, 60, 63, 70, 44, 80, 52, 61   (4 marks)

d) Distinguish between classification and tabulation of data   (2 marks)

e) What is the chance/probability of rolling a one or five in a situation with two possible outcomes

                                          (2 marks)

f) Define the term statistical inquiry as it is used in business mathematics   (2 marks)

g) Solve the following simultaneous equations by substitution method

$$3x + y - 2 = 0$$

$x - 2y = 1$ (5 marks)

QUESTION TWO

a) Explain the meaning of the following terms as used in set theory

   i.   Finite and infinite sets
   ii.   Null sets/empty sets
   iii.   Disjoint sets
   iv.   Universal and complimentary sets   (8 marks)

b) Compute the slope of a straight line segment that connects points [0, 4] and [5, 0] and draw a sketch of the straight line   (7 marks)

QUESTION THREE

a) Solve the following simultaneous equations

$$2x + y - 2z = -1$$

$$3x + 3Y - z = 5$$

$x - 2y + 3z = 6$ (10 marks)

b) There are ten different outcomes: 11, 12, 13, 14, 15, 16, 17, 18, 19, 20.

   i.   What is the probability of rolling a 12   (1 mark)
  ii.   What is the probability of rolling a 14 or 15   (2 marks)
 iii.   What is the probability of rolling an odd number   (2 marks)

QUESTION FOUR

a)State the seven stages of statistical investigation   (7 marks)

b) Define an index number and then use the data below to construct a price index for both 1997 and 2000 a laptop with base year 1999

Year	1997	1999	2000
Price	3000	2000	1000

  (8 marks)

QUESTION FIVE

  a) Hank was helping his aunt with her finances. Auntie Em took out a loan for a new television set two years ago and agreed to pay $121.88 each month for five years at 12.5% interest. How much did the TV cost (before the interest is added in) (5 marks)
  b) Isaac wants to take a loan amounting to 4,000,000 to buy a Nissan so as to do transport services. The bank gives him two options to either do:
      i.   Take the loan at a simple interest of 15% payable in 6 years   (4 marks)
     ii.   Take the loan at an interest of 10% compounded monthly payable in 6 years
         (4 marks)

Determine the amount he will pay in each option and advise him on which one to take (2 marks)

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