(Knowledge for Development)

KIBABII UNIVERSITY

(KIBU)

UNIVERSITY EXAMINATIONS

2020/2021 ACADEMIC YEAR

END OF SEMESTER EXAMINATIONS

YEAR TWO SEMESTER ONE EXAMINATIONS

FOR THE DIPLOMA IN
(INFORMATION TECHNOLOGY)

COURSE CODE : DIT 072

COURSE TITLE : INTRODUCTION TO PROBABILITY AND STATISTICS

DATE: 10/01/2022 **TIME:** 11.00 A.M. - 1.00 P.M.

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE AND ANY OTHER TWO

QUESTION ONE [COMPULSORY] (28 MARKS)

a. Define the following terms

    i.   Statistics   (2 marks)

    ii.   Probability   (2marks)

    iii.   Qualitative data   (1 mark)

    iv.   Quantitated data   (1 mark)

b. Name and explain the two sources of data   (2 marks)

c. Construct frequency distribution table for the following marks obtained by 20 students

    23 50 38 42 63 75 12 33 26 39 35 47 43 52 56 59 64 77 15 21   (5 marks)

d. Compute the arithmetic mean, mode and median of the followings   (4 marks)

x	1	3	2	4
f	5	2	4	1

e. Suppose a game is to be played with a simple die assumed fair in this game a player wins $20 it a 2turns up, $40 if 4 turns up ,losses $30 if 6 turns up, will the player neither wins or loses if any other faces turned up.   (3 marks)

f. Rolling a six sided die find the probability of having even numbers   (2 marks)

g. Given the following data 3,4,5,6,and 7 find the variance   (2marks)

h. Define the term range   (2 marks)

QUESTION TWO (16 MARKS)

a. Construct a frequency histogram using 6 classes for this data

    76 84 76 103 92 47 98 54 80 91 69 86 83 75 93 89 96 65 94 85   (6marks)

b. Find the estimate of the variance and standard deviation of the following data for the marks obtained in a test by 88 students   (6 marks)

x	0-10	10-20	20-30	30-40	40-50
f	6	16	24	25	17

c. A group of accounting students are tested in QT techniques and management accounting. Their ranking in the two test were as follows

QT	2	7	6	1	4	3	5	8
MA	3	6	4	2	5	1	8	7

Calculate the spearman rank correlation coefficient (4 marks)

QUESTION THREE (16 MARKS)

a. Define the following terms: (3 marks)

Classical probability

Conditional probability

b. A couple has two children what is the probability that both are boys. (2 marks)

c. Give the axioms of probability (4 marks)

d. Find the variance of the following random variable

$$f(x) = \begin{cases} \frac{1}{2}x & 0 \leq x \leq 2 \\ 0 & otherwise \end{cases}$$

(4 marks)

e. When a coin is tossed the probability of having a head (H) is $\frac{1}{3}$, if the coin is tossed 2 times what is the probability of having two tails (TT). Using a tree diagram (3 marks)

QUESTION FOUR (16 MARKS)

a. Find the standard deviation of the following grouped data (9 marks)

Class	f
10−20	5
20−30	4
30−40	8
40−50	13
50−60	12
60−70	9
70−80	7
80−90	3

b. The following table shows the pattern of inspection of expenditure and defective parts delivered to customers

expenditure	25	30	15	75	40	65	24	35	70
Defective parts	50	35	60	15	46	20	45	42	22

Find how strong is the relation between inspection in expenditure and defective and what extend they may predict the defective part deliveries from the knowledge of expenditure inspection   (7 marks)

QUESTION FIVE (16MARKS)

a. Using the following data find the best line of feat   (8 marks)

expenditure	25	30	15	75	40	65	24	35	70
Defective parts	50	35	60	15	46	20	45	42	22

b. The table below shows the weights (kg) of members in a sports club. Calculate the mean , mode and median of distribution   (8 marks)

class	frequency
40-49	6
50 – 59	8
60-69	12
70 – 79	14
80-89	7
90 – 99	3