(Knowledge for Development)

KIBABII UNIVERSITY

(KIBU)

UNIVERSITY EXAMINATIONS

2021/2022 ACADEMIC YEAR
END OF SEMESTER EXAMINATION
SECOND YEAR FIRST SEMESTER

FOR THE DIPLOMA IN
(INFORMATION TECHNOLOGY)

COURSE CODE: DIT 072

COURSE TITLE: INTRODUCTION TO PROBABILITY AND STATISTICS

DATE: 16/05/2022 TIME: 9.00 A.M-11.00 A.M   2 HOURS

INSTRUCTIONS TO CANDIDATES
ANSWER QUESTION ONE AND ANY OTHER TWO QUESTIONS

QUESTION ONE (COMPULSORY) (24 MARKS)

a. Define the following terms

    i.   Statistics   **(2 marks)**

    ii.   Probability   **(2marks)**

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 51 54 72 68

36 65 52 60 27 34 47 48 55 58 59 62 51 48 50 41 57 65 54 43 56 44 30 46

67 57   **(6 marks)**

d. Compute the arithmetic mean, mode and median of the followings   **(3 marks)**

x	1	3	2	4
f	5	2	4	1

e. Given the relative frequency below draw the frequency Polygon

$5 < x \leq 15$
$15 < x \leq 25$
$25 < x \leq 35$
$35 < x \leq 45$
$45 < x \leq 55$
$55 < x \leq 65$

    (4 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   **(3 marks)**

QUESTION TWO (18 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 **(6 marks)**

QUESTION THREE (18 MARKS)

a. Define the following terms: **(3 marks)**
   i. Classical probability
   ii. 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

$$f(x) = \begin{cases} \frac{1}{2}x & 0 \le x \le 2 \\ 0 & otherwise \end{cases}$$ **(5 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. **(4 marks)**

QUESTION FOUR (18 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