ZIMBABWE EZEKIEL GUTI UNIVERSITY

FACULTY OF HEALTH, SCIENCE AND TECHNOLOGY

DEPARTMENT OF DIGITAL TECHNOLOGY

EXAMINATION PAPER

COURSE CODE	:	MIS102
COURSE TITLE	:	APPLIED STATISTICS
SPECIAL REQUIREMENTS	:	**None**
DURATION	:	3 Hours
LEVEL	:	1.2
DATE	:	2022

09 FEB 2022

INSTRUCTIONS TO CANDIDATES:

1. Answer all the 5 questions.
2. Show all the working
3. Calculators and slide rules are allowed
4. Each question carries 20 marks

Question 1

a. Define the following terms giving examples:
   i. Statistics [2]
   ii. Probability Distribution [2]

b. Explain the differences between these terms using examples
   i. Population and sample [4]
   ii. Discrete and random variable [4]

c. Given the following data set 14, 10, 13, 14, 8, 22, 14, 15, 11, 16, 15, 13, 14, 13
   Find the following
   i. Median [1]
   ii. Mode [2]
   iii. Mean [2]
   iv. Upper quartile [3]

Question 2

a. Identify the sampling procedures that would be appropriate in the following situations explaining your reasoning and how it will be carried out.
   i. A local education officer wishes to estimate the mean number of children per family on a large housing estate. [5]
   ii. A consumer protection body wishes to estimate the proportion of trains that are running late. [5]

b. Discuss and three reasons why you would prefer to sample instead of using the whole population during data collection. [10]

Question 3

a. A pair of fair dice is rolled. Let X denote the sum of the number of dots on the top faces.
   i. Construct the probability distribution of X in fair dice. [6]
   ii. Find $P(X \geq 9)$. [3]
   iii. Find $P(X=9)$ [2]
   iv. Find the probability that X takes an even value. [3]

b. A die is tossed and a coin is rolled
   i. Present the sample space [3]
   ii. Find the probability that a die shows an even number and the coin a head [3]

Question 4

a. A die is rolled,
   i. Present the sample space [2]
   ii. Find the probability that an even number is obtained. [3]

b. Given the table below:

x	0	1	3	5	6	9
y	-1	2	3	4	7	8

   i. Find the line of best fit in the form [6]
   ii. Calculate the coefficient of correlation [5]
   iii. Find x if y is 5 [2]
   iv. Find y if x is 4 [2]

Question 5

The information was copied from the forms and the ages listed as:

25 67 54 68 48 36 62 59 36 67 29 55 34 35 66 37 22 26 45 59 73 27 72 41 48 53 56 42 56 23

31 38 26 29 63 38 29 60 51 32 22 65 36 45 33 19 39 71 35 35 32 36 39 29 53 60 38 41 52 46

   i. Plot these data as a sorted stem-and-leaf diagram. [6]
   ii. Describe the shape of the distribution. [2]
   iii. Are there extreme/outlying values, if there which ones [2]
   iv. By grouping the data find the variance and the standard Deviation of the data set above [10]