

EASTERN UNIVERSITY, SRI LANKA

FACULTY OF SCIENCE

First Year Second Semester Examination in Science - 2021/2022

(August/September 2024)

EN 1021 Basic Statistics

Answer all questions

Time : One hour

Calculator and Statistical table will be provided

1. (a) Marks (out of 50) of students in a class for a course unit, have been summarized as shown in table below.

Marks	$0 < X \leq 10$	$10 < X \leq 20$	$20 < X \leq 30$	$30 < X \leq 40$	$40 < X \leq 50$
Frequency	10	20	30	25	15

Find the mean, median and mode of marks.

[50 marks]

- (b) An examination was held to decide about the award of scholarship in a University. The weights of various subjects were different. The marks obtained by two candidates A and B on each subjects are given below:

	Statistics	Accountancy	Economics	Mercantile law
Weight	4	3	2	1
A's Marks	85	75	45	65
B's Marks	80	75	60	90

If the candidate getting highest marks is to be awarded the scholarship, who should get it?

[25 marks]

- (c) A school has two classes of grade ten (C_1 and C_2) with 30 and 40 students respectively. For a certain subject, their average marks are 45 and 70 and the standard deviations of marks are 5 and 7, respectively. Compare the variations of marks of these two classes, by using a suitable measure.

[25 marks]

2. A student obtained the following summation using the data relating to X and Y for the 8.

$$\sum_{i=1}^8 X = 180, \quad \sum_{i=1}^8 Y = 368, \quad \sum_{i=1}^8 X^2 = 5100, \quad \sum_{i=1}^8 Y^2 = 21174, \quad \sum_{i=1}^8 XY = 10380.$$

- (a) Compute the Pearson's correlation coefficient and interpret it. [30 marks]
- (b) Fit a regression model of the form of $Y = \beta_0 + \beta_1 X$. [10 marks]
- (c) Update the model after testing the significance of parameters β_0 and β_1 at 5% significance level. [40 marks]
- (d) Find the prediction error for $X = 10$. [10 marks]
- (e) Find the percentage of variation that covered by this model. [10 marks]