International Islamic University Chittagong

Department of Computer Science and Engineering

B. Sc. in CSE Midterm Examination, Spring- 2023

Course Code: STAT 2311 Course Title: Probability and Statistics

*Total marks: **30**, Time: **1** hours **30** minutes*

[Answer all the questions; Figures in the right hand margin indicate full marks.]

			CO	DL
1.				
a)	Explain the concept of variable with its importance in statistical research. Classify the following variables as either qualitative or quantitative: Ethnicity, Number of siblings, Country of origin, Volume, Brain activity as measured via EEG.	**5**	**CO1**	**C4**
b)	Distinguish between: (i) Primary data and secondary data. (ii) Discrete variable and continuous variable.	**5**	**CO1**	**C4**
2.				
a)	Under what circumstances is it not possible to calculate the geometric mean? Describe the concept of weighted arithmetic mean with its application.	**5**	**CO1**	**C2**
b)	The following grouped frequency table shows the length of time, t, in minutes, visitors watched an octopus swimming around a tank at an aquarium.	**5**	**CO1**	**C5**

Time(t)	$0 < t \leq 5$	$5 < t \leq 10$	$10 < t \leq 15$	$15 < t \leq 20$	$20 < t \leq 25$	$25 < t \leq 30$
Visitors	4	3	7	5	2	1

Determine graphically the median and mode of the time visitors spent observing the octopus.

3.						
a)	What do you mean by dispersion? Indicate the different measures of dispersion. Distinguish between mean deviation and standard deviation.	**5**	**CO1**	**C4**		
b)	Following is the frequency distribution of life length in hours of 20 electric bulbs:	**5**	**CO1**	**C4**		

Life Length	8.5-13.5	13.5-18.5	18.5-23.5	23.5-28.5	28.5-33.5
Frequency	3	5	7	4	1

Calculate the coefficient of variation (CV) and the standard error of mean (SEM) using the above data and comment on your results.

Or

a)	Suppose your midterm test score is 73 and your final exam score is 85. Using weights of 30% for the midterm and 70% for the final exam, compute the weighted average of your scores. If the minimum average for an A is 75, will you earn an A?	**5**	**CO1**	**C4**
b)	Using the numbers 2, 4, 8, 5, and 7, provide a justification for the following relationships: (i) A.M ≥ G.M ≥ H.M (ii) $\sigma_x > MD_{\bar{x}}$	**5**	**CO1**	**C5**