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Daffodil International University

Department of Software Engineering
Faculty of Science & Information Technology
Midterm Examination, Fall 2024
Course Code: STA 101; Course Title: Statistics I
Sections & Teachers: AST (41_A-41_G), MNM (41_H-41_N)
Time: 1 Hour 30 Mins **Marks: 30**

Answer ALL Questions

[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]

1.	a)	A researcher wants to study the number of hours students spend studying per week. The university has 15,000 students. The researcher selects a sample of 500 students using stratified random sampling based on their major (e.g., Science, Arts, Engineering). **Clarify** population, sample, parameter, statistic, variable and sampling technique from the above case study.	3	CLO-1 *Level-C2*
	b)	**Compare** the appropriate measures of central tendency for nominal, ordinal, interval and ratio data?	2	
2.	a)	Suppose, following data represents the amount of time (in minutes per day) spending on social media of 15 students in a shelf: 250, 320, 280, 310, 400, 290, 300, 330, 180, 290, 480, 285, 275, 260, 295.		CLO-2 *Level-3*
		i) **Construct** an appropriate graph using the above data.	3	
		ii) **Decide** is there any "Outlier" in the above dataset. Also represent with a modified box-Plot.	4	
	b)	Consider the following data set representing the weekly income (in dollars) of a group of employees: 400, 450, 500, 550, 600, 650, 700, 750, 800, 1200. **Calculate** the mean, median, and mode.	3	
		i) If a new employee with a weekly income of 5000 dollars joins the group, **investigate** how this change will affect the mean, median, and mode.	2	
		ii) **Determine** which measure of central tendency would you recommend using to describe the data after the new employee joins, and why?	1	
3.	a)	The weekly sales of phone of two brands Samsung and One plus are recorded as below:	5	CLO-3 *Level-3*

OnePlus	59	75	95	100	56	85
Samsung	80	90	150	125	82	95

Compare brand seems to be more consistent in respect to sales. **Solve** using relative measure of dispersion.

	b)	In a survey of 10 SWE students, we gathered data on their weekly coding practice (in hour). The recorded times are as follows: 3.0, 2.9, 3.7, 4.0, 3.1, 3.6, 4.3, 3.4, 2.2, 2.1. **Detect** 20% students practice time who spend maximum time in coding in a week.	2	