STA201 Assignment 02

Question 1

150 steel workshops have the following distribution of average number of workers in various hourly wage brackets:

Wage Bracket:	500 – 600	600 – 700	700 – 800	800 – 900	900 – 1000
Number of workshops:	17	28	72	21	12
Average Number of Workers per workshop:	15	11	9	6	5

Find the mean, median and modal salary paid to the workers.

Question 2

A group of friends are going on a day out to Dhaka Resort. They divided their route into 3 equal parts, and planned on maintaining an average speed of 59 km/h on their way to their destination. Their speed for the first and second part were 65 km/h and 84 km/h respectively. What speed should they maintain for the third part of their journey if they are to achieve their target average speed?

Question 3

Let's assume you bought a new car with Tk. 5,500,000. The car depreciates in value by 35% after the first year, 15% after the second year, and 7% after the third year onward. What is the average rate of depreciation per year after three years? Therefore, what will be the value of the car after three years of use?

Question 4

Blood cocaine concentration (mg/L) was determined both for a sample of individuals who had died from cocaine-induced excited delirium (ED) and for a sample of those who had died from a cocaine overdose without excited delirium; survival time for people in both groups was at most 6 hours.

ED:	0	0	0	0	0.1	0.1	0.1	0.1	0.2	0.2
	0.3	0.3	0.3	0.4	0.5	0.7	0.8	1	1.5	2.7
	2.8	3.5	4	8.9	9.2	11.7	21			
Non-ED:	0	0	0	0	0	0.1	0.1	0.1	0.1	0.2
	0.2	0.2	0.3	0.3	0.3	0.4	0.5	0.5	0.6	0.8
	0.9	1	1.2	1.4	1.5	1.7	2	3.2	3.5	4.1
	4.3	4.8	5	5.6	5.9	6	6.4	7.9	8.3	8.7
	9.1	9.6	9.9	11	11.5	12.2	12.7	14	16.6	17.8

a. Determine the three quartile values for blood cocaine concentration for both ED and Non-ED samples.

b. Construct a comparative boxplot (two boxplots on the same set of axes, one above the other), and use it as a basis for comparing and contrasting the ED and non-ED samples.

Question 5

The mean of 250 observations was 58. Later on, it was found that two observations were misread as 82 and 9 instead of 182 and 98. Find the correct mean.

Question 6

The mean monthly salaries paid to 100 employees of a company were tk. 5000. The mean monthly salaries paid to male and female employees were tk. 5200 and tk. 4200 respectively. Determine the percentage of males and females employed by the company.

Question 7

A collar manufacturer is considering the production of new collars to attract young men. Thus following statistics of neck circumference are available based on measurements of a typical group of students of a particular university:

Mid values (in inches):	13.0	13.5	14.0	14.5	15.0	15.5	16.0	16.5
Number of students:	2	16	36	60	76	37	18	3

Compute the standard deviation and use the criterion $\bar{x} \pm 3\sigma$, where σ is the standard deviation and is the arithmetic mean to determine the largest and smallest size of the collar he should make in order to meet the needs of practically all the customers, bearing in mind that collars are worn on average half an inch longer than the neck size.

Question 8

The manager of Nando's Chicken has just received two dozen tomatoes from her supplier, but she is not ready to accept them. She knows from the invoice that the average weight is 7.5 ounces, but she insists that all be of uniform weight. She will accept them only if the average weight is 7.5 ounces and the standard deviation is less than 0.5 ounce. Here are the weights of the tomatoes.

6.3	7.2	7.3	8.1	7.8	6.8	7.5	7.8
7.2	7.5	8.1	8.2	8.0	7.4	7.6	7.7
7.6	7.4	7.5	8.4	7.4	7.6	6.2	7.4

What would be the manager's decision and why?

Question 9

A construction company is considering employing one of two training programs. Two groups were trained for the same task. Group 1 was trained by program A, group 2 by program B. For the first group, the times required to train the employees had an average of 32.11 hours and a variance of 68.09. In the second group, the average was 19.75 and the variance was 71.14. Which training program has less relative variability in its performance?

Question 10

The average and standard deviation of the weights of 350 Indian students are 55 kg and 3 kg respectively. And the average and standard deviation of weights of 450 German students are 60 kg and 4 kg respectively.

a. Determine the combined mean weight of all those Indian and German students.

b. Find the standard deviation of weight for the combined group of students.