STA201 Assignment 1 (Fall 2022)

Question 1

The following table shows some information on a variety of different vehicles. Using the information given in table 1, answer question **1(A) – 1(C)**.

Table-1: Cars

Model	Number of gears	Size of Engine	Transmission	Vehicle Class	Highway Mileage	City Mileage	Model Year
Allion	6	3.4	Manual	Midsize Car	22	17	1997
Axio	7	2.5	Manual	Small Car	26	22	2000
Aqua Hybrid	8	3.5	Automatic	Small Car	30	24	2021
Corolla	5	3	Manual	Midsize Car	25	22	2001
Vezel	8	6.8	Automatic	Large Car	18	15	2022
Premio	6	3.3	Automatic	Midsize Car	22	17	2016
Harrier	7	4.2	Automatic	Large Car	18	15	2020
Naoh	7	5.4	Automatic	Large Car	20	16	2018

Question 1(A)

(i) How many variables are listed in table 1?

(ii) Classify the variables according to their types (Qualitative / Quantitative).

(iii) Construct a frequency distribution table to represent the summary information of the variable "**Vehicle Class**" and display the results in a pie chart.

Question 1(B)

Complete the following table and answer the questions:

Table 2: Frequency Distribution of Transmission by Number of Gears

Transmission	Number of Gears				Total
	5	6	7	8	
Automatic					
Manual					
Total					

(i) What is the modal response for the variable "**Transmission**"? (Which has the highest frequency?)

(ii) What proportion of vehicles have seven gears?

(iii) What proportion of Automatic vehicles have eight gears?

(iv) What proportion of vehicles with six gears are Manual?

(v) Construct a side-by-side bar chart to represent the information given in table 2.

Question 1(C)

Complete the following table and answer the questions:

Table 3: Frequency distribution of Highway Mileage

Highway Mileage	Tally	Frequency	Relative frequency	Cumulative relative frequency
15 – 20				
20 – 25				
25 – 30				
30 – 35				

(i) What proportion of vehicles have mileage between 20 and 30 Highway Mileage?

(ii) What proportion of vehicles have mileage of at least 30 Highway Mileage?

(iii) Construct a histogram to display the data represented in table 3.

Question 2

Recall that 65 purchasers have participated in a survey and have rated the XYZ-Box video game system. The composite ratings that have been obtained are as follows:

39	38	40	40	40	46	43	38	44	44	44
45	42	42	47	46	45	41	43	46	44	42
38	46	45	44	41	45	40	36	48	44	47
42	44	44	43	43	46	43	44	44	46	43
42	40	42	45	39	43	44	44	41	39	45
41	39	46	45	43	47	41	45	45	41	

(a) Construct a stem-and-leaf display for the 65 composite ratings.

(b) If we consider a purchaser to be "very satisfied" if his or her composite score is at least 42, can we say that almost all purchasers of the XYZ-Box video game system are "very satisfied". Describe in your own words.

Question 3

A group of colleagues is going to Safari Park for a day. They arranged their trip into three halves and planned to travel at a speed of 68 kilometers per hour on their journey to their goal. Their top speeds were 72 km/h and 88 km/h for the first and second parts, respectively. If they are to meet their intended average speed, what speed should they maintain throughout the third part of their journey?

Question 4

Suppose, you spent Tk. 3,500,000 to buy a new car. After the first year, the car depreciates by 40%, 20% after the second year, and 10% after the third year.

(a) What is the average rate of depreciation per year after three years?

(b) What will be the value of the car after three years of use?

Question 5

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**	**0.3**	**0.4**	**0.4**	**0.5**	**0.5**	**0.5**	**0.5**
0.6	**0.7**	**0.7**	**0.8**	**0.9**	**1**	**1.5**	**2**	**2.1**	**2.5**
3	**3.9**	**5**	**8.5**	**11**	**12.5**	**14**			

NON-ED:

0	**0**	**0**	**0.1**	**0.1**	**0.2**	**0.3**	**0.3**	**0.3**	**0.5**
0.6	**0.6**	**0.8**	**0.8**	**0.8**	**0.8**	**1**	**1.5**	**2**	**2.2**
2.6	**3.3**	**5**	**5.5**	**7**	**7.7**	**9**	**11**	**12**	**15**
18	**19.5**	**22**	**24**	**25.5**	**25.5**	**25.5**	**27**	**27.5**	**28**

(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)

(c) Describe (Compare and Contrast) the ED and Non-ED samples in your own words from the boxplot.