



SCSI/SECI2143: PROBABILITY & STATISTICAL DATA ANALYSIS
2021/2022 – SEMESTER 2

ASSIGNMENT 4

(Total Marks: 50)

Submission Date: 2nd July 2022.

QUESTION 1

[15 MARKS]

The data (Table 1) show the lists of sugar consumption (kg per capita) and the number of diabetes patients (per million people) for selected countries.

Table 1: Sugar consumption and diabetes patients

Sugar	diabetes patients
5	6
6	9
4	3
4	2
5	11

- Construct a scatter plot, and comment on the features of the plot. (4 marks)
- Does there appear to be a linear relationship between the two variables? How would you characterize the relationship? (4 marks)
- Compute the value of the correlation coefficient. Is the value of r consistent with your answer to part (b)? (3 marks)
- Is it reasonable to conclude that by sugar consumption against the number of diabetes patients? Explain. (4 marks)

QUESTION 2**[20 MARKS]**

Table 2 displays data on age and price for the second-hand car in Malaysia for particular make and model. Ages are in years and price are in hundreds of RM (Ringgit Malaysia).

Table 2: Age and price for the second-hand car

Age (year)	Price (RM 100)
5	85
4	103
6	70
5	82
5	89
5	98
6	66
6	95
2	169
7	70
7	48

- a) Construct a scatterplot for these age and price data. (4 marks)
- b) Draw a simple linear regression line. (4 marks)
- c) Describe the apparent relationship between age and price of second-hand car. (4 marks)
- d) Interpret the slope of the regression line in terms of prices for second-hand car. (4 marks)
- e) Use the regression equation to predict the price of a 3-year-old second hand car and a 4-year-old second hand car. (4 marks)

QUESTION 3**[15 MARKS]**

Table 3 show the measurement of the different size of product after the treatment was given. Group of products receive different product treatment. For example, product A, explore the product in the outside building, Product B, was putting in the building and Product C was keeping in the container and place in the dark place in specific room. After 30 days, the measure of the size of product was shows in Table 3.

Table 3: Measure the different size of product after the treatment

Product A	Product B	Product C
210	210	180
240	240	210
270	240	210
270	270	210
300	270	240

Conduct the ANOVA test for above data by,

- a) Define the hypothesis statement. (2 marks)
- b) For each product, find mean and variance. (3 marks)
- c) Calculate the test statistics. (2 marks)
- d) Calculate numerator and denominator degree of freedom. Use $\alpha = 0.05$ (3 marks)
- e) State the critical value. (2 marks)
- f) Test the claim and state the conclusion. (3 marks)

----- End of Questions -----