Introduction to Statistical Methods
S1-23_AIMLCZC418 – Assignment 2

AIML Section - 4

Each question carries 2.5 Marks (4 x 2.5 = 10 Marks)
Duration: 23 February 2024 – 10 March 2024

1) Submissions are individual
2) Solve these on paper, scan, and upload
3) Plagiarism results in zero marks
4) Write your name, BITS ID and Section on each page.

Questions:

1. The article "Effect of Internal Gas Pressure on the Compression Strength of Beverage Cans and Plastic Bottles" (*J. of Testing and Evaluation*, 1993: 129–131) includes the accompanying data on compression strength (lb) for a sample of 15-oz aluminium cans filled with strawberry drink and another sample filled with cola.

Does the data suggest that the extra carbonation of cola results in a higher average compression strength? Take $\alpha = 0.05$.

	sample size	sample mean	sample SD
Strawberry drink	15	540	21
Cola	15	554	15

2. An automobile tyre manufacturer claims that the average life of a particular grade of tyre is more than 20,000 km. A random sample of 16 tyres is having mean 22,000 km with a standard deviation of 5000 km. Validate the claim of the manufacturer at 5% LOS.

3. The severity of a disease and blood group were studied in a research project. The findings are given in the following table, known as the m x n contingency table. Can this severity of the condition and blood group are associated. Severity of a disease classified by blood group in 1500 patients. Test at 5% LOS.

Condition	Blood Groups				Total
	O	A	B	AB	
Severe	51	40	10	9	110
Moderate	105	103	25	17	250
Mild	384	527	125	104	1140
Total	540	670	160	130	1500

4. A random sample is selected from each of three makes of ropes and their breaking strength(pounds) are measured with the following results:

I	70	72	75	80	83		
II	100	110	108	112	113	120	107
III	60	65	57	84	87	73	

Test whether the breaking strength of ropes of three makes differ significantly at 5 % LOS.

----------ALL THE BEST ----------