

Introduction to Statistical Methods
(S1-23_AIMLCZC418) – Assignment 2
AIML Section- 2

Each question carries 02 Marks (2.5 x 4 = 10 Marks)

Duration: 23rd February 2024 – 10th 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. A psychological study was conducted to compare the reaction times of men and women to a stimulus. Independent random samples of 100 men and 100 women were employed in the experiment. The results are shown in the table below. Do the data present sufficient evidence to indicate a difference between true mean reaction times for men and women? (Use $\alpha = 0.05$)

Men	Women
$n_1=100$	$n_2=100$
$\bar{X}_1 = 2.70$	$\bar{X}_2 = 2.54$
$s_1^2 = 0.36$	$s_2^2 = 0.40$

2. A population of cats is known to have 160 heart beats per minute. When 13 cats were each fed on a fixed quantity of drug and data taken on their beats, the mean 148 with standard deviation 27.5. Find if there is change in heart beat due to the drug. (Table value at 5% level of significance is 1.782 for 12 d.f.)
3. Assume that air ticket reservation from Delhi to Gulf is uniformly distributed during all days in winter season. To determine whether it is uniform we selected a random sample reservation list for 10 days. The following information is drawn from the list.

S. No	1	2	3	4	5	6	7	8	9	10
No. of Reservations	65	80	100	98	75	80	82	70	60	90

Test the validity of the assumption using Chi - square test. Take LOS as 5 %.

4. Three sets of five mice were randomly selected to be placed in a standard maze but with different colour doors. The response is the time required to complete the maze as seen below. Perform the appropriate analysis to test if there is an effect due to door colour. (Use $\alpha = 0.01$)

Colour	Time			
Red	9	11	10	9
Green	20	21	23	17
Black	6	5	8	14

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