

FACULTY IN CHARGE: DR. B. JAGANATHAN

TESTING OF HYPOTHESIS

PROBLEM SHEET

(T TEST AND F RATIO TEST)

s.no	Questions
1	A random sample of 16 households is taken from a large block of flats, and shows that household expenditure on food is 42 dollars per week, with a standard deviation of 10 dollars. Assuming that household expenditure on food is normally distributed, find the 95% confidence interval for the population mean.
2	The heights of 10 males of a given locality are found to be 70,67,62,68,61,68,70,64,64,66 inches. Is it reasonable to believe that the average height is greater than 64 inches?
3	Two samples of 6 and 7 items have the following values for a variable. Sample 1: 39,41,42,42,44,40 Sample 2: 40,42,39,45,38,39,40 Do the sample variances differ significantly?
4	The price of a popular tennis racket at a national chain store is 179 dollars. Ria bought five of the same racket at an online auction site for the following prices: 155, 179,175,175,161. Assuming that the auction prices of rackets are normally distributed, determine whether there is sufficient evidence in the sample, at the 5% level of significance, to conclude that the average price of the racket is less than 179 dollars if purchased at an online auction.
5	An economist wishes to determine whether people are driving less than in the past. In one region of the country, the number of miles driven per household per year in the past was 18.59 thousand miles. A sample of 15 households produced a sample mean of 16.23 thousand miles for the last year, with sample standard deviation 4.06 thousand miles. Assuming a normal distribution of household driving distances per year, perform the relevant test at the 5% level of significance.
6	Two random samples gave the following results: Sample 1: $n_1 = 10$, mean = 15, sum of squared deviations from the mean = 90 (sum of squared deviations from the mean) Sample 2: $n_2 = 12$, mean = 14, sum of squared deviations from the mean = 108 Test whether the samples come from the same normal population at 5% significance level.
7	In an experiment on pea-breeding, Mendel obtained the following frequencies of seeds: 315 round and yellow, 101 wrinkled and yellow, 108 round and green, 32 wrinkled and green. According to his theory of heredity, the numbers should be in proportion 9:3:3:1. Is there any evidence to doubt his theory at 5% level of significance?

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