

Assignment 2: Probability and Statistics
2024-2025 (Odd Semester): Department of Computer Science and Engineering

1. The mean height of students in a college is 155cms and standard deviation is 15. What is the probability that the mean height of 36 students is less than 157 cms.
2. A normal population has a mean of 0.1 and standard deviation of 2.1. Find the probability that mean of a sample of size 900 will be negative.
3. A sample of 400 items is taken from a population whose standard deviation is 10. The mean of the sample is 40. Test whether the sample has come from a population with mean 38. Also calculate 95% confidence limits for the population .
4. The means of two large samples of sizes 1000 and 2000 members are 67.5 inches and 68 inches respectively . Can the samples be regarded as drawn from the same population of S.D 2.5 inches.
5. In a random sample of 125 cool drinkers, 68 said they prefer thumsup to Pepsi. Test the null hypothesis $P = 0.5$ against the alternative hypothesis hypothesis $P > 0.5$?
6. Random samples of 400 men and 200 women in a locality were asked whether they would like to have a bus stop a bus stop near their residence . 200 men and 40 women in favour of the proposal. Test the significance between the difference of two proportions at 5% LOS?
7. A sample of 26 bulbs gives a mean life of 990 hours with a S.D of 20 hours. The manufacturer claims that the mean life of bulbs is 1000 hours. Is the sample not upto the standard?
8. Samples of two types of electric bulbs were tested for length of life and following data were obtained

Type 1	Type 2
Sample number , $n_1 = 8$	$n_1 = 7$
Sample mean , $\bar{x} = 1234$	$\bar{x} = 1036$
Sample S.D , $s_1 = 36$	$s_1 = 40$

Is the difference in the mean sufficient to warrant that type 1 is superior to type 2 regarding length of life.

9. The blood pressure of 5 women before and after intake of a certain drug are given below:

Before	110	120	125	132	125
After	120	118	125	136	121

Test whether there is significant change in blood pressure at 1% LOS?

10. On the basis of information given below about the treatment of 200 patients suffering from disease , state whether the new treatment is comparatively. Superior to the conventional treatment.

Treatment	Favourable	Not favourable	Total
New	60	30	90
Conventional	40	70	110