G.PULLAIAH COLLEGE OF ENGINEERING & TECHNOLOGY (AT)

UNIT-II

Two marks questions

1. Define test of hypothesis
2. Define Null hypothesis
3. Define Alternative hypothesis
4. Write about one tailed test?
5. Write about two tailed test?
6. Find the value of the finite population correction factor for $n = 10\ and\quad N = 100$
7. Write about type I and type II errors
8. Define level of significance
9. What is the formula for confidence interval of single proportion?
10. What is the formula for confidence interval of single mea**n?**

Essay questions

I.Z-test for single proportion (Test of significance for single proportion)

1. In a sample of 1000 people in Karnataka 540 are rice eaters, and the rest are wheat eaters. Can we assume that both rice and wheat are equally popular in this state at 1% level of significance?
2. In a big city 325 men out of 600 men were found to be smokers. Does this information support the conclusion that the majority of men in this city are smokers?
3. A manufacturer claimed that at least 95% of the equipment which he supplied to a factory conformed to specifications. An examination of a sample of 200 pieces of equipment revealed that 18 were faulty. Test his claim at 5% level of significances4.4. 4. 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 P>0.5
5. Experience had shown that 20% of a manufactured product is of the top quality. In one day's production 0f 400 articles only 50 are of top quality. Test the hypothesis at 0.05 level
6. A) If 80 patients are treated with an antibiotic 59 got cured .Find Confidence limits to the true population of cure

   B) In a random sample of 400 industrial accidents, it was found that 231 were due at least partially to unsafe working conditions. Construct a 99% Confidence interval for corresponding true proportion
7. A random sample of 500 pineapples was taken from a large consignment and 65 were found to be bad .Find the confidence limits of bad pineapples in the consignment
8. Among 900 people in a state 90 are found to be wheat eater's .Construct a 99% Confidence interval for the true Proportion

II.Z-test for two proportions (Test for significant difference between proportions)

1. In city A, 20% of a random sample of 900 school had a certain slight physical defect .In another city B, 18.5% of a random sample of 1600 school boys had the same defect. Is the difference between proportions significant at 0.05 level of significance?
2. Amanufacturer of electronic equipment subjects samples of two completing brands of transistors to an accelerated performance test. If 45 of 180 transistors of the first kind and 34 of 120 transistors of the second kind fail the test, what can he conclude at the level of significance 0.05 about the difference between the corresponding proportion?
3. 100 articles from a factory are examined and 10 are found to be 15 defective .Test the significance between the difference of two proportions at 5% level an samples of 1200 and 900 respectively from the two populations

4.In a sample of 600 students of a certain college 400 are found to use ball pens. In another college , from a sample of 900 students 450 were found to use ball pens .Test whether the two colleges are significantly different with respect to habit of using ball pens

III.Z-test for single mean(Test of significance for single mean)

1.A sample of 64 students have a mean weight of 70 kgs .Can this be regarded as a sample from a population with mean weight 56 kgs and S.D. 25 kgs

2.The mean life time of a sample of 100 light tubes produced by a company is found to be 1560 hours with a population S.D.of 90 hours .Test the hypothesis for α=0.05 that the mean life time of the light tubes produced by the company is 1580 hours 3)The mean and standard deviation of a population are 11795 and 14054 respectively. If n=50, find 95% confidence interval for the mean

4)In a random sample of 60 workers ,the average time taken by them to get to work is 33.8 minutes with a S.D. of 6.1 minutes. Can we reject the null hypothesis?

IV.Z-test for two means (Test for significant difference between means)

1. A researcher wants to know the intelligence of students in a school. He selected two groups of students. In the first group there are 150 students having a mean I.Q of 75 with a S.D of 15 in the second group there are 250 students having mean I.Q of 70 with S.D. of 20

2. The mean yield of wheat from a district A was 210 pounds with S.D 10 per acre from a sample of 100 plots. In another district the mean yield was 220 pounds with S.D. 12 pounds from a sample of 150 plots. Assuming that the S.D of yield in the entire state was 11 pounds, test whether there is any significant difference between the mean yields of crops in the two districts.

3. Samples of students were drawn from two universities and from their weights in kilograms, mean and standard deviations are calculated and shown below. Make a large sample test to test the significance of the difference between the means

	Mean	S.D	Size of the sample
University A	55	10	400
University B	57	15	100

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 normal population

5. Two types of new cars produced in U.S.A are tested for petrol mileage; one sample is consisting of 42 cars averaged 15 kmpl while the other sample consisting of 80 cars averaged 11.5 kmpl with population variances as ${\sigma_1}^2 = 2.0 \ and \ {\sigma_2}^2 = 1.5$ respectively. Test whether is any significance difference in the petrol consumption of these two types of cars. (Use $\propto = 0.01$)