BAPATLA ENGINEERING COLLEGE::BAPATLA
DEPARTMENT OF MATHEMATICS (INFORMATION TECHNOLOGY)
PROBABILITY AND STATISTICS (2022-2023, SEM – IV) 20MA003
II ASSIGNMENT MODEL QUESTIONS & 2nd Home Assignment.

BITS

1. Write the test statistic for two means large sample case.
2. What are the confidence limits for difference of two means in large sample case.
3. What is the test statistic for two means in simple sample case.
4. What is the test statistic for one variance.
5. Write the critical region for testing null hypothesis $\sigma_1^2 = \sigma_2^2$
6. What is the test statistic for one proportion and critical region for testing it.
7. What is the test statistic for two proportions and state its critical region.

MAIN QUESTIONS:

1. Two types of new cars produced in U.S.A. are tested for petrol mileage, one sample is consisting of 42 cars averaged15 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 there is any significance difference in the petrol consumption of these two types of cars. (Use $\alpha = 0.01$)

2. A simple sample of the height of 6400 Englishmen has a mean of 67.85 inches and a S.D. if 2.56 inches while a simple sample of heights of 1600 Australians has a mean of 68.55 inches and S.D. of 2.52 inches. Do the data indicate the Australians are on the average taller than the Englishmen? Use 0.05 level of significance.

3. Two independent sample of 8 and 7 items respectively have the following values:

Sample I	11	11	13	11	15	9	12	14
Sample II	9	11	10	13	9	8	19	---

Is the difference between the means of sample significant. Use $\alpha = 0.05$

4. Playing 10 rounds of gold on his home course, a gold professional averaged 71.3. Test the null hypothesis that the consistency of his game on his home course is actually measured by $\sigma = 1.20$, against the alternative hypothesis that he is less consistent. Use the level of significance $\alpha = 0.05$.

5. In one sample of 10 observations, the sum of the squares of the deviations of the sample values from sample mean was 120 and in the other sample of 12 observations, it was 314. Test whether the difference in variances is significant at 5% in variance level.

6. Among 100 fish caught in a large lake, 18 were inedible due to the pollution of the environment. With what confidence can we assert that the error of this estimate is at most 0.065?

7. In a random sample of 125 cool drinkers, 68 said they prefer Thumsup to Pespsi. Test the null hypothesis $p=0.5$ against the alternative hypothesis $p > 0.5$.

8. A manufacturer 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 $\alpha = 0.05$ about the difference between the corresponding sample proportions.