VIT
Vellore Institute of Technology

FALL Semester 2022-2023

Continuous Assessment Test – II

Programme Name: MCA

Course Code & Name:

MAT5007 –Applied Statistical Methods

Number:5832 Slot: D2 Exam Duration: 90 minutes Maximum Marks: 50

(ANSWER ALL QUESTIONS -5x10=50 Marks)

1. The incident of defective in 200 samples of 6 is shown in the following table

No of defective per sample	0	1	2	3	4	5	6	Total
No of samples	36	70	61	25	7	1	0	200

Assuming these results follows a binomial distribution, compute the theoretical binomial probabilities and frequencies.

2. Fit a Poisson distribution for the following data and also test for the goodness of fit.

x	0	1	2	3	4	5	6	7
f	314	335	204	86	29	9	3	0

3. The average ticket price for a major league baseball game was \$11.98 in 1998 (USA Today, November 11, 1998). Adding the cost of food, parking, and souvenirs, the average cost for a family of four to attend a game was approximately \$110.00. Assume the normal distribution applies and that the standard deviation is \$20.00. What is the probability the cost will exceed \$100.00?

   a) What is the probability a family will spend \$90.00 or less?

   b) What is the probability a family will spend between \$80.00 and \$130.00?

4. The Education testing service conducted a study to investigate difference between the scores of male and female students on the scholastic aptitude test. The study identified a random sample of 562 female and 852 male students who had achieved the same high score on the mathematics portion of the test. That is, the female and male students were viewed as having similarly high abilities in mathematics. The SAT verbal scores for two samples are as follows. Female Students $\overline{x_1}$=547, S1=83 Male Students $\overline{x_2}$ =525, S2=78.Do the data support the conclusion that given a population of female students and a population of male students with similarly high mathematical abilities, the female students will have a significantly higher verbal ability? Test at .01 level of significance. What is your conclusion?

5 A sample of 1545 men and a samples of 1691 women were used to compare the amount of housework done by women and men in dual-earner marriages. The study showed that 67.5% of the men felt the division of housework was fair and 60.8% of the women felt the division of housework was fair. Is the proportion of men who felt the division of housework was fair greater than the proportion of women who felt the division of housework was fair? Support your conclusion with a statistical test using a .05 level of significance.