Registration Number:

Date & session:



**ST JOSEPH’S UNIVERSITY, BENGALURU -27**

**M.A. (Economics) – 2nd SEMESTER**

**SEMESTER EXAMINATION: APRIL 2024**

**(Examination conducted in May / June  2024)**

**EC 8121– STATISTICAL METHODS FOR ECONOMISTS**

**(For current batch students only)**

**Time: 2 Hours     Max Marks: 50**

**This paper contains \_\_\_2\_\_\_ printed pages and \_\_3\_\_\_ parts**

**PART-A**

**Answer any 5 of the following. 2m\*5q=10**

1. What is a positively skewed distribution?
2. What are equally likely and exhaustive events?
3. If the mean of binomial distribution is 10 and p=0.5, what is the variance of the distribution?
4. What is a null hypothesis?
5. Illustrate perfect positive correlation using a scatter plot.
6. Calculate the t statistic, given that $\overbar{x}=5$,µ=3 n=16 and s=1.
7. If the level of significance is 0.05, what is the value of type 1 error?

**PART-B**

 **Answer any 2 of the following. 5m\*2q=10**

1. Prove that the sum of deviations from the arithmetic mean is zero.
2. On average 4 cars pass a certain point on a road in a minute. Assuming that the distribution of cars passing on a road follows a Poisson distribution, find the probability that 4 cars pass in a minute.
3. Discuss the F test.

**PART-C**

**Answer any 2 of the following 15m\*2=30**

1.

Prove Bayes theorem. (7)

A gardener decides to test a new pesticide, which the manufacturer claims increases the yield, by applying it to one of his two gardens. The treated garden has 20 trees and the mean and standard deviation of the yield per tree are 98 kg and 10 kg, respectively. The untreated garden contains 15 trees and the values of mean and standard deviation are 94 and 8 kg, respectively. Test whether these results are consistent with yields drawn from the same population. Assume that the critical t value is 2. (8)

1.
2. Discuss correlation (7)
3. Find the coefficient of correlation for the following data and comment. (8)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| x | 250 | 300 | 350 | 400 | 450 | 500 |
| y | 280 | 700 | 650 | 580 | 480 | 420 |

1. Differentiate between quota sampling and simple random sampling. (5)
2. Using ANOVA test if the average annual scores of three students are the same. (10)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Student 1 | 14 | 15 | 13 | 14 |
| Student 2 | 12 | 10 | 17 | 11 |
| student 3 | 10 | 11 | 14 | 13 |