

School of Liberal Education

Department of Humanities
Mid Term Examination

Exam Date: 01 Oct 2023
Time : 90 Minutes
Marks : 50

Sem V - K1UB505T - Econometrics I

*Your answer should be specific to the question asked
Draw neat labeled diagrams wherever necessary*

- 1) Assume that half the population is vegetarian so that the chance of an individual being a vegetarian is $1/2$. Assuming that 100 investigators each take sample of 10 individuals to see whether they are vegetarians, how many investigators would you expect to report that three people or less were vegetarian? K2 (2)
- 2) Explain the binomial distribution. Under what conditions it is used? K1 (3)
- 3) Discuss type I and type II errors. K2 (4)
- 4) Time taken by the crew, of a company, to construct a small bridge is a normal variate with mean 400 labour hours and standard deviation of 100 labour hours. What is the probability that the bridge gets constructed between 350 to 450 labour hours K2 (6)
- 5) Poisson distribution is a limiting case of binomial distribution, explain. K3 (6)
- 6) Suppose that a Central University has to form a committee of 5 members from a list of 20 candidates out of whom 12 are teachers and 8 are students. If the members of the committee are selected at random, what is the probability that the majority of the committee members are students? K3 (9)
- 7) Find the probability of getting exactly 3 defective articles in a packet of 10 articles selected at random K4 (8)
- 8) The following data relates to weight of 10 persons before joining a health club and after 6 months from joining it. Test whether there is a significant change in the weights after 6 months from joining club. Weight before joining the club: 120, 125, 115, 130, 123, 119, 122, 127, 128, 118 . Weight after 6 months of joining the club: 111, 114, 107, 120, 115, 112, 112, 120, 119, 112. K4 (12)

OR

The given data is about the level of income before and after the covid-19, find out whether covid-19 had a significant impact on the income level using t-test. Before covid-19: 15, 16, 18, 20, 24, 30, 38, 40, 34, and 20. After covid-19: 10, 12, 15, 20, 21, 20, 28, 29, 10, and 12. K4 (12)