c. Show that sample variance is an unbiased estimator of population variance in case of large sample size. 4

UNIT-IV

7. a. Write short notes on the following (any two): 4+4=8

   i. Type I error vs Type II error

   ii. Paired t test

   iii. Null hypothesis vs alternative hypothesis

   b. Discuss the procedure of testing the significance of Pearsonian correlation coefficient. 6

8. a. Write short notes on the following (any two): 4+4=8

   i. Applications of Large Sample Test

   ii. Assumption of students t test

   iii. Critical region

   b. Discuss the procedure of testing the significance of population variance. 6

UNIT-V

9. Explain Spearman Rank correlation test for testing the significance between two series of marks. 14

10. Write short notes on the following (any two): 7+7=14

   a. Parametric test vs Non-parametric tests

   b. ANOVA and its usefulness in statistics

   c. Sign test

★★★

PG Even Semester Exam, May 2025

Economics

2nd Semester

COURSE NO. ECO-205

[Statistics for Economics]

Full Marks : 70
Pass Marks : 28

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer five questions, taking one from each Unit

UNIT-I

1. a. State the properties of correlation coefficient. 5

   b. Distinguish between product moment correlation coefficient and rank correlation coefficient. 4

   c. Calculate correlation coefficient from the following data and interpret the result. 4+1=5

X:	4	8	12	16	20
Y:	5	10	15	20	25

2. a. Distinguish between partial correlation and multiple correlation. 4

b. Discuss the significance of rank correlation in economics. 4

c. The following are the ranks obtained by 10 students in the examination of accountancy and economics. Calculate rank correlation coefficient and comment on the result. 5+1=6

Ranks in Accountancy	Ranks in Economics
6	4
4	1
3	6
1	7
2	5
7	8
9	10
8	9
10	3
5	2

UNIT-II

3. a. Define mathematical expectation of a random variable. 4

b. Distinguish between probability mass function and probability density function. 4

c. Find E(x) , V(x) and Mx(t) from the following probability distribution. 2+2+2=6

X: -2 0 2 3

P(x): 0.27 0.12 0.26 0.35

4. a. Distinguish between Binomial distribution and Poisson distribution. 4

b. Show that V(X+Y) = V(X) +V(Y), if X and Y are independent random variables. 4

c. Check whether the following density function is a probability density function or not. 4

$f(x)= x^2+1$ for $o \leq x \leq 1$.

d. State any two properties of normal distribution. 2

UNIT-III

5. a. Distinguish between parameter and statistic. 4

b. Define sampling distribution of a statistic. Why does population mean not have a sampling distribution? Discuss. 2+2=4

c. What is standard error? Add a note on the utility of standard error in statistics. 2+4=6

6. a. Distinguish between multiphase sampling and multistage sampling with the help of suitable examples. 5

b. Discuss Yamane's method of estimating sample size in case of known population size. 5