2022

Economics

[HONOURS]

(CBCS)

(B.Sc. Third Semester End Examination-2022)

PAPER-CC7

[Statistical Methods for Economics]

Full Marks: 60   ***Time: 03 Hrs***

The figures in the right hand margin indicate marks
Candidates are required to give their answers in their own words as far as practicable
Illustrate the answers wherever necessary

Group-A

1. **Answer any ten questions of the following:**   **10x2= 20**

   a) Differentiate between attribute and variable.

   b) What is histogram? What are the uses of it?

   c) What is the probability of getting a total of 8 points in two throws of a balanced dice?

   d) In how many ways can the letters of the word 'STATISTICS' be arranged?

   e) A, B and C are three mutually exclusive and exhaustive events.

   Find $P(B)$, if $\frac{1}{3}(C) = \frac{1}{2}P(A) = P(B)$.

f)   What is a random variable? How is variance of it defined?

g)   If $Y = a + bx$, prove that $E(Y^2) = a^2 + 2abE(x) + b^2 E(x)$.

h)   Define moment generating function of a random variable.

i)   Dishtinguish between sample and population.

j)   What is the axiomatic definition of probability.?

k)   Distinguish between parameter and statistic.

l)   What do you mean by Simple Random Sample?

m) Find the expectation of Poisson distribution

n)   What is time reversal test?

o)   What do you mean by Gini-coefficient?

Group-B

Answer any four questions of the following: **4x5 = 20**

2.   The first two moment of a distribution about the value 5 of the variable are 2 and 20 Find mean and variance.

3.   State and prove Bayes' Theorem of probability. What are importance of Bayes' theorem?

4.   Show that poisson distribution can be obtained as a limiting form of a binomial distribution.

5.   The following table gives the joint distribution of x and y:

x \ y	0	1	2
1	0.3	0.2	0.1
2	0.1	0.0	0.3

i)   Are x and y independent?

ii)   Determine the correlation coefficient between x and y.

6.   Distinguish between Point and Interval Estimation.

7.   Prove that the Normal Distribution is Symmetric.

8.   Let there be a point C on a line Segment AB. What is the probability that the smaller and the bigger parts is less than 2/7?

Group –C

Answer any two questions: **2x10 = 20**

9.   State and prove total theorem of probability when events are i) mutually exclusive and ii) not mutually exclusive.   5+5

10. a) Distinguish between pair-wise independence and mutually independence.

b) The probability that Asok can solve a problem in business statistics is 4/5, that Amal can solve it is 2/3, and that Abdul can solve it is 3/7. If all of them try independently, find the probability that the problem will be solved.   5+5

11. a) State the properties of a good estimator.

b) Show that for SRSWR the sample mean $(\bar{x})$ is the minimum variance unbiased estimator (MVUE) of the population.

12. Find the mean $(\bar{x})$ and variance of the Bionomial distribution.