20P263 (Pages: 3) Name…….

Reg. No……..…..

SECOND SEMESTER M.A. DEGREE EXAMINATION, APRIL 2021

(CUCSS - PG)

(Regular/Supplementary/Improvement)

CC19P ECO2 C08 - QUANTITATIVE METHODS FOR ECONOMIC ANALYSIS II

(Economics)

(2019 Admission - Regular)

Time: Three Hours Maximum: 30 Weightage

Part A

Answer ***all*** questions. Each questions carries 1/5 weightage.

1. The probability for the sample space S is given by P(S) = _____

   a) 1 b) 0 c) 5 d) 0.5

2. The probability of the intersection of two mutually exclusive events is always:

   a) Infinity b) zero c) one d) none of these

3. If A is an event, the conditional probability of A given A is equal to:

   a) zero b) One c) 0.5 d) Infinite

4. If X is a random variable then E(log x) represents:

   a) Arithmetic Mean b) Geometric Mean c) Harmonic Mean d) Logarithmic Mean

5. A family of parametric distribution in which mean is equal to variance is:

   a) Binomial distribution b) Normal distribution

   c) Gamma distribution d) Poisson distribution

6. The Student's 't' distribution is introduced by:

   a) William S Gosset b) Laplace c) Karl Pearson d) none of these

7. The standard normal curve is symmetric about the value:

   a) 0.5 b) 1 c) ∞ d) 0

8. If F(x) is the distribution function of a random variable X then $F(\infty) =$

   a) 1 b) 0 c) 0.5 d) ∞

9. An unbiased estimator of population mean is

   a) sample median b) sample variance

   c) sample mean d) sample proportion

10. The concepts of consistency, sufficiency and efficiency are due to:

    a) J. Neyman b) R. A. Fisher c) C. R. Rao d) Karl Pearson

11. The statistic for testing Goodness of Fit is using which distribution:

    a) Chi-square distribution b) Normal distribution

    c) Uniform distribution d) Exponential distribution

12. The shape of frequency curve of student's 't' distribution is

    a) straight line b) symmetric c) positively skewed d) negatively skewed

State whether the following statements are TRUE or FALSE.

13. Mutually Exclusive events are independent.
14. For Normal distribution, mean deviation about mean is greater than quartile deviation.
15. Mean is greater than variance for Binomial distribution.

(15 × 1/5 = 3 Weightage)

Part B (Very Short Answer Type)

Answer any ***five*** questions. Each question carries 1 weightage.

16. Define Random Variable with an example.
17. State Bayes' theorem.
18. State any two properties of Probability Mass Function.
19. Define mathematical expectation and state any two of its properties.
20. Define Binomial distribution with parameters *n* and *p*.
21. Define Null and Alternative hypothesis.
22. Distinguish simple and composite hypothesis.
23. Distinguish between an estimate and estimator of a parameter.

(5 × 1 = 5 Weightage)

Part C (Short Answer Type)

Answer any ***seven*** questions. Each question carries 2 weightage.

24. Explain Axiomatic definition of probability.
25. State and prove Addition theorem of probability.
26. Define Poisson distribution and derive its mean
27. Write any four properties of Normal distribution.
28. Explain the terms 'Standard Error' and 'Sampling Distribution'.
29. Explain the desirable properties of a good estimator.
30. Describe the Maximum Likelihood method of estimation.
31. Explain Type I and Type II errors.
32. Distinguish parametric and non parametric test. Also explain advantages of non parametric tests.
33. What do you understand by Analysis of Variance?

(7 × 2 = 14 Weightage)

Part D (Essay Answer Type)

Answer ***two*** questions. Each question carries 4 weightage.

34. Define Sampling distributions and write short note on i) Chi-square distribution ii) Student's *t* distribution.
35. The monthly income of a group 1000 employees of a company is assumed to be normally distributed with mean Rs. 29000/- and standard deviation 1300/-. What is the probability that a randomly selected employee's income i) is at least Rs. 32000/- ii) lies between Rs. 28000/- and 30000/-. iii) What is the least income of the 100 maximum income employees
36. A survey of magazine subscribers showed that 45.8% rented a car during the past 12 months for business reasons, 54% rented a car during the past 12 months for personal reasons, and 30% rented a car during the past 12 months for both business and personal reasons.

    (a) What is the probability that a subscriber rented a car during the past 12 months for business or personal reasons?

    (b) What is the probability that a subscriber did not rent a car during the past 12 months for either business or personal reasons?

37. Two samples of sizes 100 and 90 are taken from two populations. Suppose that mean of the samples are 80 and 72 and standard deviations are 12 and 15 respectively. Test at 5% level of significance whether the means of the populations are equal

(2 × 4 = 8 Weightage)

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