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Name.....

Reg. No.....

**SECOND SEMESTER M.A. DEGREE (REGULAR/SUPPLEMENTARY)
EXAMINATION, APRIL 2024**

(CBCSS)

Economics

ECO 2C 08—QUANTITATIVE METHODS FOR ECONOMIC ANALYSIS—II

(2019 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

Part A (Multiple Choice Questions)

Answer all questions.

Each questions carries 1/5 weightage.

1. Which of the following is true for the empty set (\emptyset) ?
 - a) It is a subset of every set.
 - b) It is a superset of every set.
 - c) It is neither a subset nor a superset of any set.
 - d) It is both a subset and a superset of every set.
2. A Type II error is committed when :
 - a) The null hypothesis is incorrectly rejected.
 - b) The null hypothesis is correctly rejected.
 - c) The alternative hypothesis is incorrectly rejected.
 - d) The alternative hypothesis is correctly rejected.
3. In a manufacturing process, the average number of defective items produced per hour is 2. What is the probability of exactly 3 defective items being produced in a given hour ?
 - a) 0.067.
 - b) 0.180.
 - c) 0.203.
 - d) 0.265.

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4. The Mann-Whitney U test is used to compare :
- Two independent samples.
 - Two related samples.
 - Three or more independent samples.
 - Three or more related samples.
5. The method of maximum likelihood assumes that the sample data are :
- Normally distributed.
 - Log-normally distributed.
 - Exponentially distributed.
 - Independently and identically distributed.
6. A dice is rolled 8 times. What is the probability of getting exactly 3 sixes ?
- 0.054.
 - 0.091.
 - 0.122.
 - 0.157.
7. The F-statistic in ANOVA is calculated as :
- The ratio of the between-group mean squares to the within-group mean squares.
 - The ratio of the within-group mean squares to the between-group mean squares.
 - The ratio of the total sum of squares to the error sum of squares.
 - The ratio of the error sum of squares to the total sum of squares.
8. The Law of Large Numbers assumes that the trials or observations are :
- Independent and identically distributed.
 - Dependent and identically distributed.
 - Independent and non-identically distributed.
 - Dependent and non-identically distributed.
9. The mean squared error (MSE) of an estimator is a measure of :
- How close the estimator is to the true population parameter.
 - The variability of the estimator.
 - The systematic error in the estimator.
 - The efficiency of the estimator.

10. In a study, the average height of a sample of 100 individuals is found to be 165 cm, with a standard deviation of 5 cm. What is the 95 % confidence interval for the population mean height?
- a) (160 cm, 170 cm). b) (162 cm, 168 cm).
c) (163 cm, 167 cm). d) (164 cm, 166 cm).
11. The exponential distribution is commonly used to model :
- a) The number of successes in a fixed number of trials.
b) The waiting time between events occurring at a constant rate.
c) The distribution of discrete data.
d) The distribution of normally distributed data.
12. The Chi-square test statistic follows a Chi-square distribution under the null hypothesis when :
- a) The sample size is small.
b) The variables being tested are independent.
c) The variables being tested are dependent.
d) The sample mean is known.
13. In how many ways can the letters of the word "APPLE" be arranged?
- a) 60. b) 120.
c) 240. d) 720.
14. The critical value for a two-tailed z-test at a 95 % confidence level with a large sample size is approximately :
- a) 1.96. b) 1.64.
c) 2.58. d) 1.28.
15. Let X and Y be two independent random variables with expectations $E[X] = 3$ and $E[Y] = 4$. What is the expectation of their sum, $E[X + Y]$?
- a) 3. b) 4.
c) 7 d) 12.
- (15 × 1/5 = 3 weightage)

Turn over

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Part B (Very Short Answer Questions)

Answer any five questions.

Each question carries a weightage of 1.

16. Define Moments.
17. What is a binomial distribution ?
18. What is the use of the Chi-square distribution ?
19. Define critical region.
20. What are interaction effects ?
21. What does a sign test do ?
22. What is an interval estimation ?
23. What are the properties of the normal distribution ?

(5 × 1 =

Part C (Short Answer Questions)

Answer any seven questions.

Each question carries a weightage of 2.

24. Write a short note on the Signed rank test.
25. What is meant by the Power of a test ?
26. Discuss the Multiplication laws of probability.
27. Bring out the Properties of uniform distribution.
28. Explain the Method of maximum likelihood.
29. Describe the Conditional probability function.
30. Explain the F distribution.
31. State the Difference between one-way and two-way ANOVA.
32. Discuss the key features of the Continuous probability distribution.
33. Distinguish between null and alternative hypotheses.

(7 × 2 = 14)