SECOND SEMESTER M.A. DEGREE EXAMINATION, APRIL 2024

(CBCSS - PG)

(Regular/Supplementary/Improvement)

CC19P ECO2 C08 – QUANTITATIVE METHODS FOR ECONOMIC ANALYSIS – II

(Economics)

(2019 Admission onwards)

Time: 3 Hours   Maximum: 30 Weightage

Part A

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

1. The probability of all possible outcomes of a random experiment is always equal to

   (a) One   (b) Zero   (c) Infinity   (d) None of these

2. The probability of intersection of two disjoint events is always

   (a) Infinity   (b) Zero   (c) One   (d) None of the above

3. If X is a random variable and 'b' is a constant then $V(X + b)$ is:

   (a) $V(X) + b$ (b) $V(X)$ (c) $bV(X)$ (d) None of these

4. If A is a constant $E(A) =$:

   (a) A   (b) 0   (c) 1   (d) 0.5

5. If X and Y are random variables, then $E(X+Y) =$------, provided all the expectations exist:

   (a) $E(XY)$ (b) $E(Y)$ (c) $E(X)+E(Y)$ (d) None of these

6. Mean of binomial distribution is:

   (a) Always more than its variance   (b) Always less than its variance

   (c) Always equal to its variance   (d) Always equal to standard deviation

7. A family of parametric distributions in which mean is equal to variance is

   (a) Binomial distribution   (b) Uniform distribution

   (c) Poisson distribution   (d) None of these

8. Normal distribution was discovered by:

   (a) Laplace   (b) De-Moivre   (c) Gauss   (d) All the above

9. There are, generally speaking, two types of statistical inference. They are:

   (a) sample estimation and population estimation

   (b) Estimation theory and hypothesis testing

   (c) interval estimation for a mean and interval estimation for a proportion

   (d) independent sample estimation and dependent sample estimation

10. Chi square distribution curve is:

   (a) Negatively skewed   (b) Symmetrical

   (c) Positively skewed   (d) None of these

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

   (a) J. Neyman   (b) R. A. Fisher   (c) C.R. Rao   (d) J. Bernoulli

12. Large sample tests are conventionally meant for a sample size

   (a) $n = 20$ (b) $n < 30$ (c) $n \geq 30$ (d) $n = 100$

13. The critical region in hypothesis testing gives:

   (a) Region of acceptance   (b) Region of rejection

   (c) Sample space   (d) The experimental region

14. To test the significance of proportion, we use:

   (a) t-test   (b) F-test   (c) Normal test   (d) Chi-square test

15. While performing Kruskal-Walis test, the ranks are asigned:

   (a) Independently to the observations for each treatment

   (b) For observations in each block independently

   (c) By pooling all the observations

   (d) None of the above

(15 × 1/5 = 3 Weightage)

Part B (Very Short Answer Questions)
Answer any *five* questions. Each question carries 1 weightage.

16. State classical definition of probability

17. Define random variable with an example.

18. Define discrete Uniform distribution.

19. Define Normal distribution.

20. Mention any two uses of F test.

21. Define consistency of an estimator.

22. Give the test statistic in the case of small sample test to test whether the mean of a normal population has a specified value, (1) when S. D is known (2) when SD is unknown

23. What is ANOVA?

(5 × 1 = 5 Weightage)

Part C (Short Answer Questions)
Answer any *seven* questions. Each question carries 2 weightage.

24. State and prove the addition theorem of probability.

25. A random variable takes 1 and 2 with probs 1/3, 2/3. find E(X) and variance.

26. State and prove multiplication theorem of expectation

27. What is the importance of Lognormal distribution?

28. Explain (i) Standard Error (ii) Sampling Distribution

29. Explain how you would find interval estimates for the mean of a normal population.

30. Explain with example Simple and Composite hypothesis.

31. Explain the terms (i) Critical region (ii) Size of the test (ii) Type I and Type II errors.

32. Distinguish between parametric and non-parametric test.

33. Explain two way ANOVA technique.

(7 × 2 = 14 Weightage)

Part D (Essay questions)
Answer any *two* questions. Each question carries 4 weightage.

34. (i) State and prove Bayes theorem.

   (ii) Two urns I and II contain respectively 3 white and 2 black bails, 2 white and 4 black balls. One ball is transferred from urn I to urn II and then one is drawn from the latter. It happens to be white. What is the probability that the transferred ball was white?

35. Describe the Binomial distribution. Derive its mean and variance.

36. Explain different methods of estimation.

37. Explain (i) Mann Whitney U test (ii) Kruskal Wallis test.

(2 × 4 = 8 Weightage)

****