SECOND SEMESTER M.A. DEGREE EXAMINATION, APRIL 2022
(Regular/Improvement/Supplementary)

ECONOMICS
FECO2C08: QUANTITATIVE METHODS FOR ECONOMIC ANALYSIS II

Time: 3 Hours   **Maximum Weightage: 30**

Part A: Multiple choice questions. Answer *all* **questions. Each carries** $^1/_5$ **weightage.**

1.   The Axiomatic definition of probability was introduced by

      a) Bernoulli   b) Von Mises   c) Kolmogorov   d) None of these

2.   Probability of a sure event is

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

3.   If A and B are independent events with P(A) = 0.4 and P(B) = 0.5 then P(A ∩ B) is

      a) 1   b) 0.9   c) 0.02   d) 0.2

4.   If X is the life length of an electric bulb then X is a

      a) discrete random variable   b) continuous random variable

      c) not a random variable   d) None of these

5.   For which distribution Mean is always equal to Variance

      a) Binomial   b) Poisson   c) Uniform   d) Normal

6.   Name a continuous probability distribution.

      a) Normal   b) Poisson   c) Binomial   d) None of these

7.   The mean of standard normal distribution is

      a) 0   b) 1   c) -1   d) 2

8.   The coefficient of skewness of Normal distribution is

      a) 0   b) 1   c) 2   d) 3

9. The square of a standard normal variate is

    a) Normal   b) Chi Square   c) t   d) F

10. Students t distribution was introduced by

    a) Bernoulli   b) Laplace   c) Gosset   d) Fisher

11. Accepting the null hypothesis when it is actually false is termed as

    a) Type I Error   b) Type II Error

    c) Standard Error   d) Power

12. To test the significance of single mean for small samples we use

    a) Z test   b) t test   c) F test   d) None of these

13. For testing the independence of attributes we use

    a) Z test   b) t test   c) χ^2test   d) F test

14. ANOVA is used for testing the equality of several ………….

    a) Means   b) Variances   c) Proportions   d) None of these

15. The degrees of freedom of a 2 x 3 contingency table is

    a) 6   b) 2   c) 3   d) 1

$$(15 \times {}^1\!/_5 = 3 \text{ weightage})$$

Part B: Very short answer questions. Answer any *five* questions. Each carries 1 weightage.

16. Define random experiment with one example.

17. Write down the sample space for tossing two coins.

18. Define Poisson Distribution.

19. A card is randomly drawn from a pack of playing cards. What is the chance that it is a King?

20. If X is the number shown up on throwing a fair die find E(X)

21. Define Statistic and Parameter.

22. Write down the test statistic for testing the equality of means using large samples.

23. Define size and power of a test.

$$(5 \times 1 = 5 \text{ weightage})$$

Part C: Short answer questions. Answer any *seven* questions. Each carries 2 weightage.

24. Write down the Mathematical and Axiomatic definition of probability.

25. Let A and B try to attain their targets independently. If the chance of A attains the target is 0.5 and the chance of B is 0.6. What are the chances of:

    a) both attain their target?

    b) at least one attains the target?

26. What is the chance that a leap year consists of 53 Sundays? What is the chance in the case of a non-leap year?

27. Define normal distribution and write its properties.

28. Define point estimation. What are the properties of a good estimator?

29. Explain the common procedure of testing of hypothesis.

30. If a random sample of size 400 has mean 70 and standard deviation 10, test whether the population mean is 73.

31. Explain two samplet test.

32. Describe the chi square test for goodness of fit.

33. Write down the ANOVA table for two way classification, stating the terms used in it.

(7 × 2 = 14 weightage)

Part D: Essay questions. Answer any *two* questions. Each carries 4 weightage.

34. a) State Bayes Theorem.

    b) A company has three plants X, Y, Z producing identical products and their product share are 50%, 30% and 20%. Of their products 6%, 4%, 5% respectively are usually defective. If an item produced by the company is found to be defective, what is the chance that it was produced by plant Z?

35. A medicine was administered to 5 patients for reducing blood pressure and the results are

Patient :	1	2	3	4	5
BP Before :	120	118	125	136	121
BP After :	110	120	123	132	125

    Examine whether the medicine is effective in reducing the BP significantly.

(P.T.O.)

36. Out of a sample of 120 persons in a village 76 were vaccinated and out of them 24 were infected. Out of those who were not vaccinated 12 persons were not infected. Examine whether the vaccine is effective in preventing infection. Test at 1% level.

37. Perform an analysis of Variance for the following data

    Sample 1 :   14   16   18

    Sample 2 :   18   16   16   19   20

    Sample 3 :   14   13   15   22

(2 × 4 = 8 weightage)