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21. Deline rank or a matrix. Determine the rank of the given matrix.

22. Explain ANDVA in regression.
23. What is meant by a dishibution 7-1 low Mest is used in synothesis making of

24. Entirementure between more and colorers of a matrix. Give suitable example.
25. Examine the algorithment of Bayner theorem.
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E. Solve the redowing simultandous equations using Commerts rule:

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(2014 Admission Onwards)

ECONOMICS/APPLIED ECONOMICS/DEVELOPMENT ECONOMICS

ECO 1C03 : Quantitative Techniques for Economic Analysis

Time: 3 Hours Max. Marks: 60

PART - A

Answer all questions. All questions carry equal marks.

A confidence interval consists of

A) A confidence level

B) A statistic

C) A margin of error

D) All the above

2. Power of a hypothesis test is the probability of

A) Committing a type I error

B) Committing a type II error

C) Not committing a type I error D) Not committing a type II error

The statistical test used to determine whether two population means are different when the variances are known and the sample size is large is called

A) Chi-square test

B) Z-test

C) One tailed test

D) None of these

4. Poisson distribution exhibits the characteristic feature

A) Mean = standard deviation

B) Mean = variance

C) Variance = coefficient of skewness

D) Variance = coefficient of kurtosis

5. Which one of the following is not a distribution free test?

A) Kruskal-Wallis test

B) Student's t test

C) Fisher-Irwin test

D) Wilcoxon test

P.T.O.



- A) Both are rectangular
- B) Both have same order
- C) Number of columns of A is equal to columns of B
- D) Number of rows of A is equal to number of columns of B
- 7. If |A| = 0, then A is
 - A) Zero matrix

- B) Singular matrix
- C) Non-singular matrix
- D) 0

8. What is the probability of getting a sum 9 from two throws of a dice ?

A) 1/6

B) 1/8

C) 1/9

D) 1/12

 $(8x\frac{1}{2}=4)$

PART - B

Answer any eight questions. No answer should exceed one page.

- 9. Distinguish between type I and type II error.
- 10. Define scalar matrix.
- Bring out relation between symmetric matrix and skew symmetric matrix using suitable example.
- 12. Define total sum of squares.
- 13. Write a short note on estimation theory.
- 14. What is an alternative hypothesis?
- 15. Distinguish between upper triangular matrix and lower triangular matrix.
- 16. What do you mean by log-normal distribution?
- 17. Distinguish between parameter and statistic.
- 18. A pair of dice is thrown. Find the probability of obtaining a sum of 8 or getting an even number on both the dice.
- 19. What do you mean by research methodology?

 $(8 \times 2 = 16)$

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PART - C

Answer any four questions. No answer should exceed 21/2 pages.

- 20. Differentiate between point estimate and interval estimate.
- 21. Define rank of a matrix. Determine the rank of the given matrix.

$$A = \begin{bmatrix} 1 & 2 & 1 \\ 2 & 3 & 1 \\ 1 & 1 & 2 \end{bmatrix}.$$

- 22. Explain ANOVA in regression.
- 23. What is meant by t distribution ? How t-test is used in hypothesis testing of regression coefficients ?
- 24. Differentiate between minor and cofactor of a matrix. Give suitable example.
- 25. Examine the significance of Bayes' theorem.

 $(4 \times 5 = 20)$

PART - D

Answer any two questions. No answer should exceed 6 pages.

26. Solve the following simultaneous equations using Crammer's rule :

$$5x - 6y + 4z = 15$$

 $7x + 4y - 3z = 19$
 $2x + y + 6z = 46$

- What is a normal distribution? Illustrate the properties of a normal distribution.
- Discuss different types of sampling in research.
- 29. A researcher had heard that colour blindness is related to gender in certain populations. He collected samples of 1000 people in a village, of which 480 are males and 520 are females. In the sample 38 males and 6 females have colour blindness. Using the above information prepare the contingency table and test whether colour blindness is dependent or independent of gender.

 $(2 \times 10 = 20)$