Reg. No. : ....

Name : ....

I Semester M.A. Degree (CBSS – Reg./Sup./Imp.) Examination, October 2022
(2019 Admission Onwards)
ECONOMICS/APPLIED ECONOMICS/DEV. ECONOMICS
ECO1C03 : Quantitative Techniques for Economic Analysis

Time : 3 Hours   Max. Marks : 60

PART – A

Answer all the questions.

1. The matrix $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 2 & 0 \\ 0 & 0 & 4 \end{bmatrix}$ is a

    a) Identity matrix   b) Skew symmetric matrix
    c) Null matrix   d) Symmetric matrix

2. For any two matrices A and B, we have
    a) AB = BA   b) AB ≠ BA
    c) AB = 0   d) none of the above

3. A probability distribution for which mean and variance are equal
    a) Binomial   b) Uniform
    c) Poisson   d) Bernoulli

4. Any function of population value is called
    a) Statistic   b) Parameter
    c) Hypothesis   d) None

5. In a Poisson distribution, $P[X = 2] = P[X = 3]$. The value of λ is
    a) 0   b) 1
    c) 2   d) 3

P.T.O.

6. Standard error of sample mean depends on
    a) Sample size   b) SD
    c) Sample size and SD   d) None

7. If the mean of the estimator is not equal the population mean, the estimator is
   said
    a) Unbiased   b) Biased
    c) Positively biased   d) Negatively biased

8. The critical values are based on
    a) level of significance   b) power of the test
    c) error   d) statistic   (8×0.5=4)

PART – B

Answer any 8 questions.

9. Define inverse of a matrix.

10. $A = \begin{bmatrix} 2 & 4 \\ 3 & 2 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 3 \\ -2 & 5 \end{bmatrix}$, $C = \begin{bmatrix} -2 & 5 \\ 3 & 4 \end{bmatrix}$

    Find : 1) A + B

           2) 3A – C

11. Define equally likely event and mutually exclusive event with an example.

12. Define Poisson distribution with usual notations.

13. State central limit theorem.

14. List the characteristic of normal probability curve.

15. Distinguish between point and interval estimates.

16. Define consistency and efficiency of an estimator.

17. Define type I and type II error.

18. Distinguish between estimator and estimate.

19. List the utility of standard error.   (8×2=16)

PART – C

Answer any 4 questions.

20. $A = \begin{bmatrix} 0 & 2 \\ 3 & -4 \end{bmatrix}$, $KA = \begin{bmatrix} 0 & 3a \\ 2b & 24 \end{bmatrix}$

· Find K, a and b respectively.

21. Write a note on probability sampling techniques.

22. State the properties of determinant.

23. A bag contains 5 white and 4 black balls. Two balls are drawn at random one
    after the other without replacement. What is that both balls drawn are black ?

24. Write a note on Pareto distribution.

25. The proportion of women in a society is 0.48. Among 64 randomly selected
    people of the society. Let p1 be the proportion of women. In another selection
    of 86 people, let p2 be the proportion of women. Find

    a) Standard error of p1

    b) Standard error of p2

    c) Standard error of difference (p1 – p2)   (4×5=20)
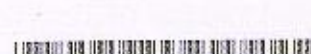
PART – D

Answer any 2 questions.

26. Find the inverse of a matrix $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 2 & 9 \end{bmatrix}$.

27. Eight coins are thrown simultaneously. Find the chance of obtaining

    a) at least 6 heads

    b) no heads

    c) all heads.

28. From the data given below about the treatment of 250 patients suffering from
    a disease. State whether the new treatment is superior to the conventional
    treatment.

Treatment	No. of patients		Total
	Favourable	Not favourable	
New	140	30	170
Conventional	60	20	80
Total	200	50	250

29. Explain binomial distribution in details.   (2×10=20)