K23U 0112

Reg. No. : ....

Name : ....

VI Semester B.A. Degree (C.B.C.S.S. – Supplementary) Examination, April 2023
(2017 to 2018 Admissions)
CORE COURSE IN ECONOMICS/DEVELOPMENT ECONOMICS
6B12ECO : Basic Tools for Economic Analysis II

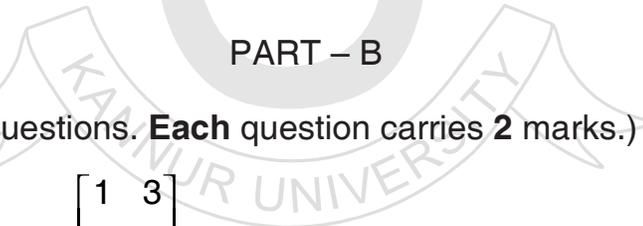Time : 3 Hours   Max. Marks : 40

PART – A

(Answer **all** Questions. **Each** question carries **1** mark.)

1. What do you mean by identity matrix ?

2. What is meant by differentiation ?

3. Define correlation.

4. What do you mean by an index number ?   **(4×1=4)**

PART – B

(Answer **any seven** questions. **Each** question carries **2** marks.)

5. Given $A = \begin{bmatrix} 9 & 4 \\ 2 & 7 \\ 3 & 5 \\ 8 & 6 \end{bmatrix}$ $B = \begin{bmatrix} 1 & 3 \\ 6 & 5 \\ 2 & 8 \\ 9 & 2 \end{bmatrix}$. Find A + B.

6. Prove that matrix addition is commutative.

7. Find $\lim_{x \to 4} [x^3(x + 4)]$.

8. Find $\dfrac{dy}{dx}$ given $y = x^3 + 4x^2 + 5x$.

9. What do you mean by higher order derivatives ?

P.T.O.

10. Distinguish between partial correlation and multiple correlation.

11. Explain the properties of correlation coefficient.

12. What is simple linear regression ?

13. Distinguish between weighted and unweighted index numbers.

14. Why Fisher's index number is called ideal index number ? **(7×2=14)**

PART – C

(Answer **any four** questions. **Each** question carries **3** marks.)

15. Find the inverse of the matrix A = $\begin{bmatrix} 24 & 15 \\ 8 & 7 \end{bmatrix}$.

16. Explain the properties of determinants.

17. Find the MR functions for the demand function Q = 36 – 2P and evaluate them at Q = 4 and Q = 10.

18. Find the rank correlation coefficient given :

Rank of X	1	2	7	9	8	6	4	3	10	5
Rank of Y	7	5	8	10	9	4	1	6	3	2

19. Find Laspeyre's and Paasche's index numbers :

Commodity	Base Year Price	Base Year Quantity	Current Year Price	Current Year Quantity
A	3	25	4.25	35
B	2.5	4	3	6
C	10.25	11	10	15
D	25	3	27.75	4
E	30	5	32.25	6
F	4.3	12	5.1	14

20. Explain the time reversal test and factor reversal test with the help of an example. **(4×3=12)**

PART – D

(Answer **any two** questions. **Each** question carries **5** marks.)

21. Use Cramer's rule to solve for the unknowns in the following :

    $5x_1 - 2x_2 + 3x_3 = 16$

    $2x_1 + 3x_2 - 5x_3 = 2$

    $4x_1 - 5x_2 + 6x_3 = 7$

22. From the total cost functions $TC = Q^3 - 5Q^2 + 60Q$, find the average cost AC function, the critical value at which AC is minimized, and the minimum average cost.

23. Explain the OLS method of estimating simple linear regression line.

24. The following are the annual profits in thousands of rupees in a certain business :

Year	1951	1952	1953	1954	1955	1956	1957
Profits	63	72	75	65	80	85	95

Use the method of least squares to fit a straight-line trend. **(2×5=10)**

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