**K24U 0262**

Reg. No. : ..................................

Name : ..................................

**Sixth Semester B.A. Degree (C.B.C.S.S.-Supplementary/One Time
Mercy Chance) Examination, April 2024**
**(2014 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 square matrix ?

2. What is meant by limit of a function ?

3. Define regression.

4. What do you mean by trend ?                                    (4×1=4)

### PART – B

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

5. Given $A = \begin{bmatrix} 9 & 11 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} 2 \\ 6 \\ 7 \end{bmatrix}$, find AB.

6. Given $A = \begin{bmatrix} 7 & 3 & 2 \\ 1 & 4 & 6 \\ 2 & 5 & 4 \end{bmatrix}$, $B = \begin{bmatrix} 2 & 0 & 5 \\ 3 & 4 & 1 \\ 7 & 9 & 6 \end{bmatrix}$ and $C = \begin{bmatrix} 4 & 5 & 1 \\ 2 & 3 & 4 \\ 7 & 3 & 2 \end{bmatrix}$

    Prove A + (B + C) = (A + B) + C.

7. Find $\lim\limits_{x \to 2} \sqrt{6x^3 + 1}$.

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8. Find $\dfrac{dy}{dx}$ given $y = 5x^4 (3x - 7)$.

9. What do you mean by a continuous function ?

10. Distinguish between positive correlation and negative correlation.

11. Explain the relationship between correlation coefficient and regression coefficients.

12. What is simple linear regression ?

13. Explain the principle of least squares.

14. Define Fisher's index number.                                (7×2=14)

### PART – C

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

15. Find the inverse of the matrix $A = \begin{bmatrix} 7 & 9 \\ 6 & 12 \end{bmatrix}$.

16. Explain the properties of determinants.

17. Find the marginal productivities of x and y given the production function :
    $Q = 20 + 8x + 3x^2 - 0.25x^3 + 5y + 2y^2 - 0.5y^3$.

18. Find the correlation coefficient given :

| X | 5 | 7 | 8 | 4 | 9 | 3 | 2 | 5 | 4 | 3 |
|---|---|---|---|---|---|---|---|---|---|---|
| Y | 2 | 4 | 5 | 5 | 6 | 5 | 4 | 4 | 3 | 2 |

19. Find Marshal-Edgeworth index number :

| 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. Prove that Fisher's index number satisfies both time reversal test and factor reversal test.                                      (4×3=12)

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### PART – D

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

21. Use matrix inversion method to solve for the unknowns in the following :
    $4x_1 + 3x_2 = 28$
    $2x_1 + 5x_2 + 42$

22. Prove the following properties of Cobb-Douglas production function by using derivative : (1) it satisfies Euler's theorem ; (2) Isoquant is downward sloping ; (3) elasticity of substitution is equal to one ; (4) Marginal products of factors are constant proportions of average products.

23. Explain different methods of estimating trend.

24. Determine the regression (linear) of y on x for the data given below :

| x | 10 | 8 | 5 | 4 | 2 | 1 |
|---|----|----|----|----|----|----|
| y | 4 | 6 | 5 | 6 | 8 | 9 |

                                                                    (2×5=10)

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