



K24U 0103

Reg. No. : .....

Name : .....

**Sixth Semester B.A. Degree (C.B.C.S.S.-OBE – Regular/Supplementary/Improvement) Examination, April 2024  
(2019 to 2021 Admissions)**

**CORE COURSE IN ECONOMICS/DEVELOPMENT ECONOMICS  
6B12ECO/DEV ECO : 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 non-singular matrix ?
2. State the meaning of derivative.
3. Define limit of a function.
4. What is meant by regressor ?
5. Define trend.
6. What do you mean by price index ? (6×1=6)

**PART – B**

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

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

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

prove that  $(A + B) + C = A + (B + C)$ .

9. Find  $\frac{\partial z}{\partial x}$  and  $\frac{\partial z}{\partial y}$  given  $z = 7x^3 + 13x^2y + 19xy$ .

P.T.O.





10. Given the total cost function  $C = 35 + 5Q - 2Q^2 + 2Q^3$ , find the marginal cost and evaluate it at  $Q = 3$ .
11. Explain the rank correlation coefficient.
12. What is simple linear regression?
13. Distinguish between seasonal variations and cyclical variations.
14. What is meant by time reversal test? (6×2=12)

## PART - C

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

15. Find the determinant of the matrix  $A = \begin{bmatrix} 3 & 6 & 5 \\ 2 & 1 & 8 \\ 7 & 9 & 1 \end{bmatrix}$
16. Given the total cost function  $C = Q^3 - 5Q^2 + 60Q$ , find the critical value at which AC is minimized.
17. Find the marginal productivity of labour and capital given the production function  $Q = 0.5 K^2 + 2KL + L^2$  and evaluate the marginal productivities at  $K = 2$  and  $L = 4$ .
18. Find Pearson's correlation coefficient given:

X	1	2	3	4	5	6	7	8	9	10
Y	2	4	8	7	10	5	14	16	2	20

19. Find Fisher's index number.

Commodity	Base Year Price	Base Year Quantity	Current Year Price	Current Year Quantity
A	15	15	22	12
B	20	5	27	4
C	4	10	7	5

20. Explain the moving average method of measuring trend. (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 :

$$2x_1 + 4x_2 - x_3 = 52$$

$$-x_1 + 5x_2 + 3x_3 = 72$$

$$3x_1 - 7x_2 + 2x_3 = 10$$

22. Given the revenue function  $R = 1400Q - 6Q^2$  and the total cost function  $C = 1500 + 80Q$ , find the critical value at which profit is maximized, and the maximized profit.

23. Find the least square regression line of Y on X :

X	65	63	67	64	68	62	70	66	68	67	69	71
Y	68	66	68	65	69	66	68	65	71	67	68	70

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.

(2x5=10)

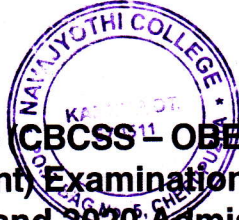




K23U 0362

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**VI Semester B.A. Degree (CBCSS – OBE-Regular/Supplementary/  
Improvement) Examination, April 2023  
(2019 and 2020 Admissions)  
CORE COURSE IN ECONOMICS/DEVELOPMENT ECONOMICS  
6B12ECO/DEV ECO : Basic Tools for Economic Analysis – II**

Time : 3 Hours

Max. Marks : 40

**PART – A**

Answer **all** questions. **Each** question carries **1** mark.

1. Define Index Numbers.
2. Define limit of a function.
3. What is order of a matrix ?
4. Describe elasticity of demand.
5. What is a scatter diagram ?
6. Give a short description on seasonal variations.

(1×6=6)

**PART – B**

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

7. Compare correlation and regression.
8. Given production function,  $Q = 36KL - 2K^2 - 3L^2$ , find  $MP_L$  and  $MP_K$ .

9. Find the determinant of  $\begin{bmatrix} 5 & 2 & 1 \\ 3 & 0 & 2 \\ 8 & 1 & 3 \end{bmatrix}$ .

P.T.O.



10. Find  $\lim_{x \rightarrow 3} [x^3(2x+5)]$ .

11. Examine consumption function with an example.

12. Explain weighted index numbers.

13. Find the transpose of a matrix  $A = \begin{bmatrix} 1 & 3 & 6 \\ 2 & 4 & 7 \\ 3 & 5 & 8 \end{bmatrix}$ .

14. Explain positive and negative correlation.

(2×6=12)

**PART - C**

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

15. Find the adjoint of the matrix  $A = \begin{bmatrix} 0 & 1 & 2 \\ 1 & 2 & 3 \\ 3 & 1 & 1 \end{bmatrix}$ .

16. Calculate Karl Pearson's correlation coefficient for the following data :

X : 6      8      10

Y : 12    10    20

17. If  $y = 3x^4 + 6x^2 + 2x + 1$ , find  $\frac{d^2y}{dx^2}$  at  $x = 2$ .

18. Suppose revenue function of a multi-product firm is  $Z = 3x^2 + 2xy + 5y^2$ . Calculate the marginal revenues of  $x$  and  $y$  at  $x = 5$  and  $y = 3$ .

19. Explain the components of time series.

20. Describe the method of OLS.

(3×4=12)





PART – D

Answer any two questions. Each question carries 5 marks.

21. Calculate Laspeyre's and Paasche's index numbers for the following data.

Commodity	Price		Quantity	
	2000	2010	2000	2010
A	12	14	18	16
B	15	16	20	15
C	14	15	24	20
D	12	12	29	23

22. Solve the following simultaneous equations using Cramer's rule.

$$2x + 3y + 4z = 20$$

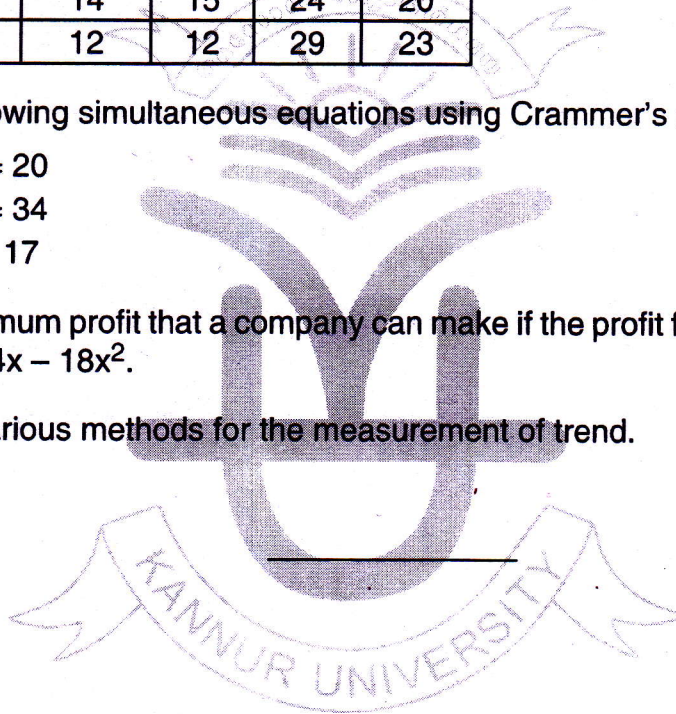
$$3x + 5y + 7z = 34$$

$$x + 2y + 4z = 17$$

23. Find the maximum profit that a company can make if the profit function is given by  $Z = 41 - 24x - 18x^2$ .

24. Explain the various methods for the measurement of trend.

(5×2=10)





K22U 0262

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6B12 ECO/DEV. ECO : Basic Tools For Economic Analysis – II**

Time : 3 Hours

Max. Marks : 40

**PART – A**

Answer **all** questions. **Each** carries **one** mark :

1. Define limit.
2. What is slope ?
3. What is correlation ?
4. Define regression.
5. What is meant by trend ?
6. What is marginal cost ? (1×6=6)

**PART – B**

Answer **any six** questions. **Each** carries **two** marks :

7. What do you mean by production function ?
8. Find the rank of the matrix A from its echelon matrix and comment on the question of on singularity

$$A = \begin{vmatrix} 1 & 5 & 1 \\ 0 & 3 & 9 \\ -1 & 0 & 0 \end{vmatrix}$$

P.T.O.



9. What is scatter diagram ?
10. What is saving function ?
11. Define moving average.
12. What do you mean by index number ?
13. What is inverse of a matrix ?
14. What do you mean by time series data ? (2×6=12)

PART – C

Answer **any four** questions. **Each** carries **three** marks :

15. What is elasticity of demand? Explain various types of elasticity.
16. Describe the relation between correlation and regression coefficients.
17. Explain simple linear regression model.
18. Explain the idea of time reversal and factor reversal tests.
19. Given the total cost function  $TC = 3Q^2 + 7Q + 12$ , Find MC and AC.
20. From the following data fit a regression line of X on Y :

X	12	10	8	6	4	2
Y	10	8	6	5	4	1

(4×3=12)

PART – D

Answer **any two** questions. **Each** carries **five** marks :

21. What is Cobb-Douglas production function ? Explain the properties of Cobb-Douglas production function.





22. Using Cramers rule, solve

$$11p_1 - p_2 - p_3 = 31$$

$$-p_1 + 6p_2 - 2p_3 = 26$$

$$-p_1 - 2p_2 + 7p_3 = 24.$$

23. Calculate Karl Pearson's correlation coefficient for the following data :

X	22	20	18	14	10	7	6	4	1
Y	10	12	16	17	19	21	24	26	27

24. Explain various types of Index numbers. Differentiate between Laspyer's and Paasche's index number. (5x2 =10)