Reg. No. : ....

Name : ....

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 $\lim_{x \to 3} \left[x^3 (2x + 5) \right]$.

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 $\dfrac{d^2y}{dx^2}$ 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

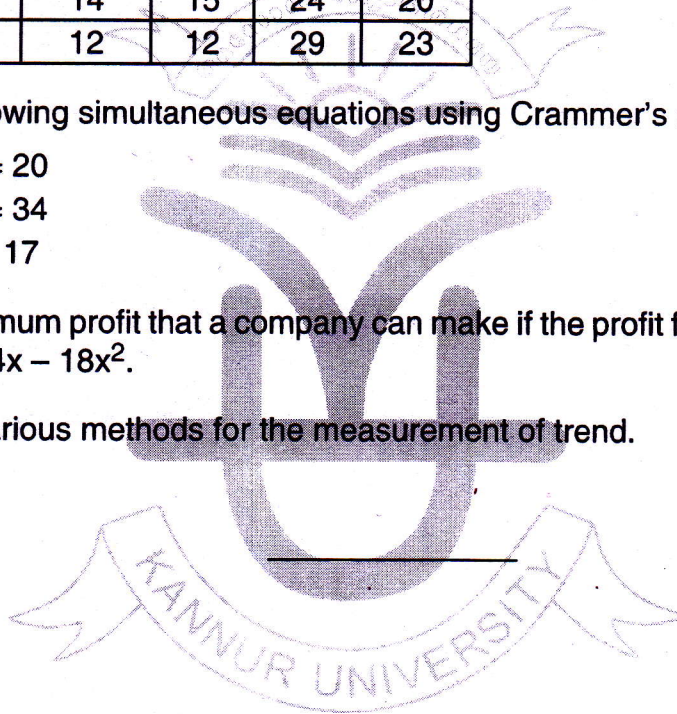22. Solve the following simultaneous equations using Crammer's rule.

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

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

$x + 2y + 4z = 17$

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)**

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CORE COURSE IN ECONOMICS/DEVELOPMENT ECONOMICS
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

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

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. **(5×2 =10)**

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