D 112046 **(Pages : 2)** **Name.....**

Reg. No.....

THIRD SEMESTER (CBCSS-UG) DEGREE EXAMINATION, NOVEMBER 2024

Economics

ECO 3B 03—QUANTITATIVE METHODS FOR ECONOMIC ANALYSIS—I

(2019—2023 Admissions)

Time : Two Hours and a Half Maximum : 80 Marks

Section A (Short Answer Questions)

All *questions can be attended.*
Each questions carries 2 *marks.*

1. Gini coefficient.
2. Skewness.
3. Minor and cofactors.
4. Pie diagram.
5. Diagonal and scalar matrix.
6. Standard deviation.
7. Regression.
8. Geometric mean.
9. Quartile deviation.
10. Spearman's rank correlation coefficient.
11. Simultaneous equations.
12. Exponents and logarithms.
13. Intercepts.
14. Transpose of a matrix.
15. Leptokurtic and Platykurtic.

Max. Ceiling : 25 marks

Section B (Short Essay/Paragraph Questions)

All *questions can be attended.*
Each questions carries 5 *marks.*

16. Explain the meaning and use of scatter diagram. Represent differ rent types of correlation using scatter diagrams.
17. Define rank of matrix.

    Find the rank of $\begin{bmatrix} 1 & 2 & 0 & 5 \\ 3 & 1 & 2 & 2 \\ 2 & 4 & 0 & 0 \end{bmatrix}$.
18. Explain the meaning and properties of determinants.
19. What do you mean by Ordinary Least Squares ? Discuss various assumptions of OLS.
20. Explain Spearman's rank correlation.
21. Find the median mode of the following data set of $n = 20$:

    90, 94, 53, 68, 79, 94, 53, 65, 87, 90, 70, 69, 65, 89, 85, 53, 47, 61, 27, 80.

Turn over

22. What do you mean by coefficient of variation ? Calculate the value of mean if SD is 1.2 and coefficient of variation is 25.6.

23. Explain representation of data using frequency polygon, ogives, line, bar, graph and pie diagram.

Max. Ceiling : 35 marks

Section C (Long Essay Questions)

Answer any **two** *questions.*
Each questions carries 10 *marks.*

24. What do you mean by Cramer's rule ? Solve the following simultaneous equations using Cramer's rule :

$$\begin{aligned} 5x - 6y + 4z &= 15 \\ 7x + 4y - 3z &= 19 \\ 2x + y + 6z &= 46. \end{aligned}$$

25. Distinguish between absolute and relative measures of dispersion. Prepare notes on various measures of dispersion.

26. Explain Karl Pearson's coefficient of correlation. Calculate Pearson's coefficient of correlation of the following set of data :

X	:	78	89	96	69	59	79	68	61
Y	:	125	137	156	112	107	136	123	108

27. Explain meaning and types of measures of central tendency. Calcualate Arithmetic mean for the following data :

Items	...	0—10	10—20	20—30	30—40
Frequency	...	2	5	1	3

(2 × 10 = 20 marks)

D 51830 (**Pages : 2**) **Name.....**

Reg. No.....

THIRD SEMESTER (CBCSS–UG) DEGREE EXAMINATION, NOVEMBER 2023

Economics

ECO 3B 03—QUANTITATIVE METHODS FOR ECONOMIC ANALYSIS—1

(2019–2022 Admissions)

Time : Two Hours And A Half Maximum : 80 Marks

Section A (Short Answer Questions)

Maximum marks in this section is 25.

Students can attempt **all** *questions.*

Each question carries a maximum of 2 *marks.*

1. Null Matrix.
2. Frequency tables.
3. Coefficient of variation.
4. Pie diagram.
5. Regression.
6. Spreadsheet.
7. Simple linear regression.
8. Standard deviation.
9. Bar diagram.
10. Simultaneous equations.
11. Scatter diagram.
12. SPSS.
13. Slope and intercept.
14. Kurtosis.
15. Transpose of matrix.

Turn over

Section B (Short Essays/Paragraph Questions)

Maximum marks in this section is 35.

Students can attempt **all** *questions.*

Each question carries a maximum of 5 *marks.*

16. Differentiate between minor and cofactor of a matrix. Give suitable example.
17. Solve the following simultaneous equations using Crammers' s rule :

    $5x - 6y + 4z = 15$

    $7x + 4y - 3z = 19$

    $2x + y + 6z = 46$
18. Define Correlation. Explains various methods of measuring correlation.
19. Explain the concept of Lorenz curve and crime coefficients with graphical representation.
20. Distinguish between range and coefficient of range. Find the range and coefficient of range of the following data :

    25, 67, 48, 53, 18, 39, 44.
21. What do you mean by inverse of a matrix ? Give numerical example.
22. Find the standard deviation and variance for the following data :

    57, 64, 43, 67, 49, 59, 44, 47, 61, 59.
23. Explain Skewness. Differentiate between positively skewed and negatively skewed distribution.

Section C (Long Essay Questions)

Answer any **two** *questions.*

Each question carries a maximum of 10 *marks.*

24. Find the coefficient of correlation for the following data. Interpret the result :

    X – 35 40 60 79 83 95

    Y – 17 28 30 32 38 49
25. What do you mean by regression lines ? Explain simple linear regression with examples.
26. Illustrate various methods of representation of data graphically. Using numerical example represent each of them.
27. Explain the properties of determinants. Find out determinant of the following matrix :

$$A = \begin{bmatrix} 1 & 2 & 1 \\ 2 & 3 & 1 \\ 1 & 1 & 2 \end{bmatrix}$$

D 31883 (Pages : 3) Name.....

Reg. No.....

THIRD SEMESTER (CBCSS—UG) DEGREE EXAMINATION NOVEMBER 2022

Economics

ECO 3B 03—QUANTITATIVE METHODS FOR ECONOMIC ANALYSIS—I

(2019 Admission onwards)

Time : Two Hours and a Half Maximum : 80 Marks

Section A (Short Answer Questions)

Maximum marks in this section is 25.
Students can attempt **all** *questions.*
Each question carries a maximum of 2 *marks.*

1. Find the range of the set 6, 8, 12, 18, 1,5,9, 11, 15.
2. What is Spearman's Rank correlation ?
3. Explain the concept of Adjoint of a matrix.
4. Define Variables and Constants.
5. Find the number of digits in 2^{35}.
6. What are the important properties of Matrix multiplication ?
7. The grades of a student in six examinations were 84, 91, 72, 68, 87 and 78. Find the Arithmetic mean of the grades.
8. What is Rectangular hyperbola ?
9. What is a Determinant ?
10. Point out the merits and demerits of Mode.
11. Write a short on Graphical Presentation of Data.
12. What is scatter diagram ?
13. Explain the concept of Identity matrix.

Turn over

14. Find A + B for $A = \begin{bmatrix} 2 & 1 \\ 2 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & 1 \\ 2 & 4 \end{bmatrix}$.

15. Define : (i) Skewness ; and (ii) Kurtosis.

Section B (Short Essay Questions)

Maximum marks in this section is 35.
Students can attempt **all** *questions.*
Each question carries a maximum of 5 *marks.*

16. Briefly explain different types of correlation.

17. Find (i) $(5a^2b) \times 7a^3b^4$; and (ii) $36x^7y^4 \div 4x^6y$.

18. Write a short note on Measures of Dispersion.

19. What is meant by Inverse of the Matrix and point out important properties of an Inverse of a matrix ?

20. Evaluate the following determinants :

(a) $\begin{vmatrix} 4 & 0 & 2 \\ 6 & 0 & 3 \\ 8 & 2 & 3 \end{vmatrix}$.

(b) $\begin{vmatrix} 8 & 1 & 3 \\ 4 & 0 & 1 \\ 6 & 0 & 3 \end{vmatrix}$.

21. Calculate Correlation Co-efficient between X and Y for the following data :

X :	1	2	3	4	5	6	7	8	9
Y :	9	8	10	12	11	13	14	16	15

22. Calcuate the Median from the following data :

Weight In gms.	410 – 419	420 – 429	430 – 439	440 – 449	450 – 459	460 – 469	470 – 479
No.of Apples	14	20	42	54	45	18	7

23. Distinguish between Correlation analysis and Regression analysis.

Section C (Long Essay Questions)

Answer any **two** *questions.*
Each question carries a maximum of 10 *marks.*

24. Define Linear Regression ? Briefly explain the estimation procedure of Principle of Ordinary Least Squares.

25. The scores of two batsman A and B in ten innings during a certain season are :

A	:	28	47	63	71	39	10	60	96	14
B	:	31	48	53	67	90	10	62	40	80

Find (using Co-efficient of Variation) which of the two batsmen A or B is more consistent in scoring.

26. Explain different types of functions and its applications in Economic analysis.

27. (i) Find the Inverse of a matrix :

$$\begin{bmatrix} 1 & 2 & 3 \\ 1 & 3 & 5 \\ 1 & 5 & 12 \end{bmatrix}.$$

(ii) Solve using Crammer's rule :

$5x + y = 2$

$2x - 3y = 23$

(2 × 10 = 20 marks)

D 12089 **(Pages : 3)** **Name.....**

Reg. No.....

THIRD SEMESTER (CBCSS—UG) DEGREE EXAMINATION
NOVEMBER 2021

Economics

ECO 3B 03—QUANTITATIVE METHODS FOR ECONOMIC ANALYSIS—I

(2019—2020 Admissions)

Time : Two Hours and a Half Maximum : 80 Marks

Section A (Short Answer Questions)

Answer at least **ten** *questions.*
Each question carries 3 *marks.*
All questions can be attended.
Overall Ceiling 30.

1. What is Rectangular hyperbola ?
2. Define the concept of : (i) Zero Exponent ; and (ii) Negative Exponent.
3. Find the number of digits in 6^{10}.
4. What is Rank of a Matrix ?
5. Find A + B for $A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & -1 & 2 \\ 0 & 3 & -5 \end{bmatrix}$.
6. Define Determinant.
7. Briefly explain the two graphic representations of frequency distributions.
8. Find $\begin{pmatrix} 1 & 6 \\ -3 & 5 \end{pmatrix}\begin{pmatrix} 2 \\ -7 \end{pmatrix}$.
9. What is Gini Co-efficient ?
10. Find the range of the set 5, 3, 8, 4, 7, 6, 12, 4, 3.
11. What is Karl Pearson's Co-efficient of Correlation ?
12. What are the important properties of Arithmetic mean ?

Turn over

13. Explain the concept of Co-efficient of Variation.

14. Distinguish between Univariate and Bivariate analysis.

15. Find the standard deviation of the set 3, 6, 2, 1, 7, 5.

(10 × 3 = 30 marks)

Section B (Short Essay Questions)

Answer at least **five** *questions.*
Each question carries 6 *marks.*
All questions can be attended.
Overall Ceiling 30.

16. Given $\log 2 = x$, $\log 3 = y$, $\log 5 = z$. Express the following of x, y and z. (i) $\log 12$ (ii) $\log(0.0675)$.

17. Write a short note on Measures of Central Tendency.

18. Briefly explain the inverse of the matrix and its properties.

19. Evaluate the following determinants :

(a) $\begin{vmatrix} 8 & 1 & 3 \\ 4 & 0 & 1 \\ 6 & 0 & 3 \end{vmatrix}$; and (b) $\begin{vmatrix} 4 & 0 & 2 \\ 6 & 0 & 3 \\ 8 & 2 & 3 \end{vmatrix}$.

20. Briefly explain the different methods used for graphical representation of data.

21. The following table gives the heights of students in a class. Find out the Quartile Deviation :

Height (In inches)	No. of Students
50–53	2
53–56	7
56–59	24
59–62	27
62–65	13
65–68	3

22. The ranks of the same 16 students in Economics and Statistics are as follows. Two numbers within brackets denote the ranks if the students in Economics and Statistics. (1, 1) (2, 10) (3, 3) (4, 4) (5, 5)(6, 7) (7, 2) (8, 6) (9, 8) (10, 11) (11, 15) (12, 9) (13, 14) (14, 12) (15, 16) (16, 13). Calculate the rank correlation co-efficient for proficiencies of this group in Economics and Statistics.

23. The following table gives the aptitude test scores and productivity indices of 10 workers selected at random :

Aptitude Index (X)	:	60	62	65	70	72	48	53	73	65	82
Productivity Index (Y)	:	68	60	62	80	85	40	52	62	60	81

Calculate the two regression equations and estimate the productivity index of a worker whose test score is 92.

(5 × 6 = 30 marks)

Section C (Long Essay Questions)

Answer any **two** *questions.*
Each question carries 10 *marks.*

24. Briefly explain different types of functions and its applications in Economic analysis.

25. Solve the following system of linear equations using matrix inversion method :

$$2x + 3y - z = 9$$
$$x + y + z = 6$$
$$3x - y - z = -1.$$

26. Calculate the Mean and Standard Deviation from the following data :

Value	Frequency
90–99	2
80–89	12
70–79	22
60–69	20
50–59	14
40–49	4
30–39	1

27. What is Linear Regression ? Explain in detail the estimation procedure of Principle of Ordinary Least Squares.

(2 × 10 = 20 marks)