

D 12089

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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 :

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

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)