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Reg. No.....

THIRD SEMESTER B.A. DEGREE EXAMINATION, NOVEMBER 2015

(CUCBCSS—UG)

Core Course—Economics

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

Time : Three Hours Maximum : 80 Marks

Section A

Answer **all** *questions.*
½ marks each.

1. If $\log_2 x = 5$, then $x =$

   (a) 16. (b) 32.

   (c) 8. (d) 25.

2. The number of elements of a 3 × 3 matrix :

   (a) 3. (b) 6.

   (c) 9. (d) 3.

3. The value of determinant is :

   (a) Real number. (b) A matrix.

   (c) A symmetric matrix. (d) Zero matrix.

4. The equation of a straight line which cuts both axes at a distance of 2 units from the origin is :

   (a) $x + y = 2$. (b) $x - y = 2$.

   (c) $-x + y = 2$. (d) $-x - y = 2$.

5. Which of the following is not one to one function in R :

   (a) $|x|$. (b) $2x$.

   (c) $2x + 3$. (d) x.

6. If two rows of a determinant are identical, then its value :

   (a) 1. (b) 0.

   (c) –1. (d) None of these.

7. Gini coefficient is associated with :

   (a) Income. (b) Price.

   (c) Wage. (d) Labour.

Turn over

8. Lack of symmetry means :
   (a) Positive skewness. (b) Negative skewness.
   (c) Skewness. (d) Kurtosis.
9. Points of inflexion of ogives correspond to :
   (a) Mode. (b) Median.
   (c) Mean. (d) Geometric mean.
10. Rank correlation is associated to :
   (a) Any data. (b) Qualitative data.
   (c) Quantitative data. (d) Discrete data.
11. The maximum value of correlation coefficient is :
   (a) 1. (b) 0.
   (c) 2. (d) 10.
12. The Minister of Statistics and Programme Implementation is :
   (a) Dr.V.K. Singh. (b) Rahul Gandhi.
   (c) Rajnadh Singh. (d) Vasan.

(12 × ½ = 6 marks)

Section B (Very Short Answer Questions)

Answer any **ten** *questions.*
Each carries 2 marks.

13. Solve the quadratic equation $10x^2 - 9x - 1 = 0$.
14. Solve $\log_2 (x^2 - 4) = 5$.
15. State any four laws of exponents.
16. Define rank of a matrix.
17. If $A = \begin{bmatrix} 1 & 5 \\ 2 & 8 \end{bmatrix}$ and $B = \begin{bmatrix} 3 & 6 \\ 7 & 0 \end{bmatrix}$, find 2A + 3B.
18. Distinguish between one to one function and many one function.
19. Find the cofactor of the element 2 in $A = \begin{bmatrix} 1 & 4 & 8 \\ 0 & 3 & 7 \\ 5 & 2 & 9 \end{bmatrix}$.
20. Define parallel lines with examples.
21. The number of elements of a matrix is 12. What is the possible orders of the matrix ?

22. State any two limitations of Statistics.

23. What are deciles ?

24. Mention any two methods for measuring correlation.

(10 × 2 = 20 marks)

Section C (Short Essay/Problem Type)

Answer any **six** *questions.*
Each carries 5 *marks.*

25. Define the following with examples.

(i) Transpose of a matrix ; (ii) Inverse of a matrix.

26. Explain the construction of a Pie diagram.

27. Solve the following system of linear equations using Cramer's Rule :

$x + 2y + z = 8 ; 2x - y + 2z = 6 ; 3x + 4y + z = 14.$

28. Define Geometric mean (G) and Harmonic mean (H). Compute G and H for 10, 20, 20 and 40.

29. Explain the Principle of least squares.

30. Distinguish between Regression and Correlation.

31. Define determinant of a matrix and state any four properties.

32. Obtain the equation of a straight line which passes through (1, 2) and (3, 4). Also find slope and intercept.

(6 × 5 = 30 marks)

Section D (Essay Questions)

Answer any **two** *questions.*
Each carries 12 *marks.*

33. (i) Find the inverse of the following matrix : $\begin{pmatrix} 1 & 5 & 9 \\ 2 & 6 & 8 \\ 3 & 7 & 5 \end{pmatrix}$.

(ii) Evaluate the determinant $\begin{vmatrix} 1 & a & bc \\ 1 & b & ca \\ 1 & c & ab \end{vmatrix}$.

34. Explain any four measures of central tendency.

35. Calculate equation of regression lines, regression coefficients and correlation coefficient from the following data :

Purchase	62	72	98	76	81	56	76	92	88	49
Sale	112	124	131	117	132	96	120	136	97	85

36. (i) Compute mean deviation from the mean for the following data :

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No. of students	6	5	8	15	7	6	3

(ii) Find the variance of first 10 natural numbers.

(2 × 12 = 24 marks)