Reg. No ..... Name **26U602**

B. A. DEGREE END SEMESTER EXAMINATION - MARCH 2026

SEMESTER 6 : ECONOMICS

COURSE : **19U6CRECO11 - QUANTITATIVE METHODS FOR ECONOMIC ANALYSIS**

(For Regular 2023 Admission and Supplementary 2022/2021/2020/2019 Admissions)

Time : Three Hours Max. Marks: 75

PART A

Answer All (1 mark each)

1. What is an irrational number?
2. What is a monotone function?
3. Write down matrices of order (i) 3x2 (ii) 2x3.
4. State an example of a mutually exclusive event.
5. What is meant by order of a matrix?
6. Define minima.
7. Find the integral of x^{-3}
8. Define Cost of Living index.
9. What are Index numbers.
10. If A and B are two mutually exclusive events and P(A)= .45 and P(B) = .35, find P (AUB).

(1 x 10 = 10)

PART B

Answer any 8 (2 marks each)

11. Distinguish between First order and Second order conditions for maxima and minima.
12. Distinguish between a rectangular and square matrix.
13. The first term of an Arithmetic Progression is 15 and the last term is 85. If the sum of all terms is 750, what is the 6th term?
14. A card is drawn at random from an ordinary pack of 52 cards, find the probability that the card drawn is either spade or diamond.
15. What is 'a priori' approach to probability?
16. Find the elasticity of demand from the following functions: i)X= 100-4P ii) $X=80-2P-P^2$
17. What are the important methods used for the construction of unweighted index numbers?
18. Find the adjoint and inverse of the matrix A= $\begin{bmatrix} 2 & 3 \\ 1 & 4 \end{bmatrix}$.
19. If A = { a, b } and B = { 3, 4 }. What is the Cartesian Product of Two Sets AxB and Bx A. Verify whether they are equal or not?
20. Calculate simple index number by average relative method.

Items	Price in base year	Price in Current year
1	5	7
2	10	12
3	15	25
4	20	18
5	8	9

(2 x 8 = 16)

PART C

Answer any 5 (5 marks each)

21. Distinguish between explicit and implicit functions.

22. Construct Laspeyre's and Paasche's index numbers for 2000.

Items	Quantity consumed (1999)	Price (1999)	Quantity consumed (2000)	Price (2000)
Wheat	3.00	2.00	2.75	4.00
Gram	0.50	4.00	0.50	6.00
Vegetables	1.00	2.00	1.25	4.00
Meat	0.50	12.00	0.75	16.00
Fish	0.50	4.00	0.50	6.00

23. Determine the maxima and minima of values of the functon, $y=x^3-2x^2+4$

24. Demand function of a firm's product is given as p = 800- 3x. Draw the total revenue curve and also find the total revenue when the firm sells 100 units.

25. The per acre yield of crop in a particular area is observed to follow a normal distribution with mean 15 quintals and S.D of 5 quintals. Find (i) the proportion of the area yielding at least 25 quintals (ii) what extent of the land under the crop can yield between 10 and 20 quintals if the total land under crop is 782 acres?

26. Prove that the Fisher's index number satisfies both the time reversal test and factor reversal test.

27. If $A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & 4 \\ -1 & 1 & 2 \end{bmatrix}$ $and\ B = \begin{bmatrix} 0 & 2 & -1 \\ 1 & 3 & 4 \\ 0 & -2 & -3 \end{bmatrix}$ Find the product AB and BA. Show that AB ≠ BA

(5 x 5 = 25)

PART D

Answer any 2 (12 marks each)

28. Elucidate elementary set theory.

29. The weekly wages of 1000 workmen are normally distributed around mean of Rs. 70 and with a standard deviation of Rs.5. Estimate the number of workers whose weekly wages will be (i) between Rs. 70 and Rs.72 (ii) Between Rs.69 and 72 (iii) more than Rs.75 (iv) less than Rs.63

30. Solve the following equation using matrices;
(i) 2x-3y+5z =11
5x+2y-7z = -12
-4x+3y+z = 5

31. Using the data given below calculate price index numbers for the year 2002 by (i) Laspeyre's method (ii) Paasche's method (iii) Fisher's formula and (iv) Marshall Edgeworth formula.

Commodity	Price (Rs) in 1999	Price (Rs) in 2002	Quantity (kg) in 1999	Quantity (kg) in 2002
Rice	9.3	4.5	100	90
Wheat	6.4	3.7	11	13
Pulses	5.1	2.6	5	3

(12 x 2 = 24)