

SECOND SEMESTER UG DEGREE EXAMINATION, APRIL 2026

(FYUGP)

(Regular/Supplementary/Improvement)

CC24UECO2CJ101 - ANALYTICAL TOOLS FOR ECONOMICS - I

(Economics - Major Course)

(2025 Admission onwards)

Time: 2.0 Hours

Maximum: 70 Marks

Credit: 4

Part A (Short answer questions)Answer *all* questions. Each question carries 3 marks.

1. Define Marginal Productivity and Marginal Utility. [Level:2] [CO2]
2. Explain the concept of graphs and its uses. [Level:2] [CO1]
3. Give the two conditions for the equality of two matrices. [Level:2] [CO4]
4. Find the derivative of $y = x^3 + 2x$ [Level:3] [CO2]
5. State First Fundamental Theorem of Calculus. [Level:2] [CO3]
6. Find y'' where $y = x^3$ [Level:3] [CO2]
7. Derive the total revenue function given the marginal revenue function is $100 - 0.5x$. [Level:5] [CO3]
8. Define the order of a determinant with an example. [Level:2] [CO4]
9. Explain Linear functions. [Level:2] [CO1]
10. Find $(A + B)^T$ if $A = \begin{bmatrix} 2 & 3 \\ 3 & 7 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & 3 \\ 3 & 5 \end{bmatrix}$. [Level:5] [CO4]

(Ceiling: 24 Marks)**Part B** (Paragraph questions/Problem)Answer *all* questions. Each question carries 6 marks.

11. In a class of 32 students, each of whose must take English or Hindi, 20 take English, 9 take both English and Hindi. How many takes Hindi? Use Venn diagram. [Level:5] [CO1]
12. Solve using the matrix method. [Level:3] [CO4]
$$2x - 3y = 3$$
$$4x - y = 11$$

13. if $w = xy + yz + zx$ find, $\frac{\partial w}{\partial x}$, $\frac{\partial w}{\partial y}$, and $\frac{\partial w}{\partial z}$ [Level:3] [CO2]
14. How is a production function used to analyze the relationship between inputs and output? [Level:3] [CO1]
15. Evaluate $\lim_{x \rightarrow 3} \frac{4x^2 + 2}{x^3 + 10}$ [Level:3] [CO2]
16. Evaluate the integral $\int_0^2 (x^2 + x + 1) dx$ [Level:5] [CO3]
17. Use method of substitution to evaluate the integral $\int_1^2 \frac{2x}{x^2 + 1} dx$ [Level:3] [CO3]
18. Find the slope of the curve at (2,4) whose equation is $y = x^2 + 2x - 1$ [Level:3] [CO2]
- (Ceiling: 36 Marks)**

Part C (Essay questions)

Answer any **one** question. The question carries 10 marks.

19. Differentiate the following functions [Level:3] [CO2]
- a) $y = (x + 1)e^x$
- b) $y = \frac{x^2 + x + 3}{x^3 - 3}$
20. Discuss the Major types of functions with suitable examples. [Level:2] [CO1]
- (1 × 10 = 10 Marks)**
