

QP CODE
C1084

Enrollment Number:

Name:

B.A. DEGREE EXAMINATIONS, AUGUST 2025
Second Semester
B.A. Economics
B21EC02DC – Mathematics for Economics
(2023 January & 2024 July admissions)
(Regular & Supplementary/Improvement)

Time: 3 Hours

Max Marks: 70

Section A

Answer any ten of the following questions in a word or sentence each. Each question carries 1 mark.

1. Any number which can be expressed in the form p/q where p and q are integers is called.....
2. The square root of 729 is.....
3. numbers can be positive, negative, or zero.
4. The process of converting the irrational denominator to a rational number by a suitable number is called.....
5. is the reciprocal of itself.
6. is a mathematical expression that represents a number as an infinite sequence of fractions.
7. is a fraction where the numerator is less than the denominator.
8. An equation of the form $ax + b = 0$ is called a
9. A matrix may be a lower triangular matrix or an upper triangular matrix.
10. The roots of the characteristic equation is
11. The economic method of "input-output analysis," first suggested by.....
12. Differential of a constant equals
13. is used when the function has more than one independent variables.
14. Slope of the indifference curve is.....
15. are the actual out-of-pocket expenditure of the firm to purchase or hire the inputs it requires in production.

(1X10=10)

Section B

Answer any ten of the following questions in two or three sentences each. Each question carries 2 marks.

16. Simplify $10^3 \times 10^4$

17. What do you understand by continuity of a function?
18. Name two methods to find the limits.
19. Represent Total Revenue mathematically.
20. Find $\int 2^{4x}$
21. Find $\int x e^x dx$
22. If the total utility function is q^3 then the marginal utility
23. Marginal Revenue is given by $MR = dTR/dQ = 45 + 3Q - 2Q^2$. Find (a) The TR function
24. Define Consumers surplus.
25. If MR is 40 and the elasticity of demand with respect to price is $1/2$, find average revenue.
26. Define MRTS.
27. Evaluate $\lim_{x \rightarrow 0} (2+x)^2 - 4 / x$
28. What are the two conditions for Maxima?
29. If $y = x^2 e^x$ Find dy/dx
30. What is a null matrix?

(2X10=20)

Section C

Answer any five of the following questions in a paragraph each. Each question carries 4 marks.

31. Explain the relation between marginal cost and average cost.
32. Given the production function $Q = 2x^2 + xy^2 + 2y$ for a firm which uses two inputs x and y in the production process, find the marginal products of two inputs.
33. Discuss different types of elasticity.
34. Integrate $\int (x^5 + 5)^{1/2} x dx$
35. Given the utility function $u = x^3 + y^2$, find MU_x and MU_y .
36. The cost for a monopolist firm producing X radios per week is given to be $4x^2 - 80x + 500$ rupees. To have a minimum cost, how many units should be produced per week?
37. Discuss the application of matrix in input-output analysis.
38. Write any four properties of determinants.
39. Define cost function. Discuss the different types of cost.
40. Find the determinant $\begin{vmatrix} 3 & 5 & 7 \\ 2 & -3 & 1 \\ 1 & 1 & 2 \end{vmatrix}$

(4X5=20)

Section D

Answer any two of the following questions in two pages each. Each question carries 10 marks.

41. Discuss the economic application of calculus in Economics.
42. Define and explain the concept of an increasing function and a decreasing function in the context of economics.

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43. For a certain establishment the total revenue function R and the total cost function C is given by $R = 83x - 4x^2 - 21$ and $C = x^3 - 12x^2 + 48x + 11$ where X is equal to output obtain the output for which profit is maximum.

44. Find the rank of the matrix $\begin{bmatrix} 1 & 2 & 0 & 5 \\ 3 & 1 & 2 & 2 \\ 2 & 4 & 0 & 10 \end{bmatrix}$.

(10X2=20)