Reg. No. : ....

Name : ....

I Semester B.A. Degree (CBCSS – Supplementary/One Time Mercy Chance) Examination, November 2023
(2014 to 2018 Admissions)
COMPLEMENTARY COURSE IN ECONOMICS/DEV. ECONOMICS
1C01ECO : Mathematics for Economic Analysis – I

Time : 3 Hours

Max. Marks : 40

PART – A

(4×1=4)

Answer **all** the **4** questions. **Each** carries **1** mark.

1. Explain exponential function with example.

2. Differentiate the function $f(x) = mx + b$.

3. Find the second order derivative of the function $f(x) = x^5 + 5x + 10$.

4. Define a linear equation.

PART – B

(7×2=14)

Answer **any 7** questions. **Each** carries **2** marks.

5. Find the limit of the rational function $\dfrac{x+8}{x^2 - 64}$.

6. Find the derivative of the function $f(x) = \sqrt[10]{x}$.

7. Find the partial derivative of the function $Z = 21x^2 + 3xy + 13y^3$.

8. Find the derivative of the function $f(x) = 5x^2 + 2x + 30$ and evaluate it at $x = 10$.

9. Find MR function from the following TR function.
   $TR = 18Q - 0.5Q^2$

10. Find the total differential for the function $Z = 7x^2y^3$.

P.T.O.

11. Differentiate single variable and multivariable function.

12. What is meant by continuity of a function ?

13. Given, $f(x) = \dfrac{g(x)}{h(x)}$, find f'x.

14. Find the limit of the function $\displaystyle\lim_{x \to 3}(x + 6)(x - 2)$.

PART – C

Answer **any 4** questions. **Each** carries **3** marks. (4×3=12)

15. Use product rule to find first order partials for the function Z = (6x − 3y) (12x + 3y).

16. Graph the equation 2x + 6y = 18.

17. Find x from the linear equation 26 − 2x = 8x − 44.

18. Find the derivative of the function $Y = (12x^3 + 9)^4$.

19. Find the second order derivative and evaluation it at x = 2.
    $Z = x^7 + 6x^5 + 8x^2 + 12x + 3$.

20. What is a function ? State whether the equation $y^2 = x$ is a function or not. Why ?

PART – D

Answer **any 2** questions. **Each** carries **5** marks. (2×5=10)

21. Explain the application of derivatives in Economics.

22. Use quotient rule to find the first order partial derivatives of the function
    $Z = \dfrac{2x + 12y}{6x + 3y}$.

23. Find the Marginal cost of a firm for different products when total cost function
    is $C = 2x^2 + 4x + 1.5\,xy + 7y + 2y^2$.

24. Explain constrained optimisation with Lagrange Multiplier and its significance.

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