K21U 6509

Reg. No. : .....

Name : .....

I Semester B.A. Degree (CBCSS – Supplementary) Examination, November 2021
(2015 – 2018 Admissions)
COMPLEMENTARY COURSE IN ECONOMICS/DEVELOPMENT ECONOMICS
1C01ECO : Mathematics for Economic Analysis – I

Time : 3 Hours

Max. Marks : 40

PART – A

Answer **all** questions (**Each** question carries **1** mark).

1. If $C = x^3 - 2x$, find the marginal cost.

2. Find the derivative of $\frac{7}{x^7}$.

3. When a market demand curve is given by $D = 50 - 5p$, find the amount demanded when the commodity is a free good.

4. Find $\lim_{x \to 2} (x^2 + 1)(x^3 + 1)$.

(4×1=4)

PART – B

Answer **any 7** questions (**Each** question carries **2** marks).

5. State the conditions for maxima of a function.

6. Define exponential function with a suitable example.

7. Find $\frac{d^2y}{dx^2}$ if $y = (x + 2)^2$.

8. Define continuity of a function at a point.

9. Differentiate between increasing and decreasing functions.

P.T.O.

10. State the Euler's theorem.

11. Differentiate 3^x.

12. What is constrained optimization ?

13. Find $\frac{dz}{dx}$ for the function $z = (x+ y)^2$. **(7×2=14)**

14. Define Marginal Revenue.

PART – C

Answer **any 4** questions (**Each** question carries **3** marks).

15. If $y = x^{10} + 3x^8 + 4x^2 - 7x + 8$, find d^4y/dx^4.

16. Draw the graph for the function $y^2 = 4x$.

17. What are the properties of continuous functions ?

18. Find the differential coefficient of $x^3 + y^3 = 3axy$.

19. Using L 'Hospitals Rule', evaluate $\lim_{x \to 2} (x^2 - 3x + 2) / (x^2 - 5x + 6)$.

20. Find the first order partial derivatives for $z = 2w^2 + 8wxy - x^2 + y^3$. **(4×3=12**

PART – D

Answer **any 2** questions (**Each** question carries **5** marks).

21. Explain the application of Derivatives in Economic Analysis.

22. Verify Euler's theorem for the function $u = ax^2 + 2hxy + by^2$.

23. Define Elasticity. Find the elasticity of demand if the quantity demanded is 4 units and if the demand law is $p = \frac{10}{(q+1)^2}$.

24. Optimize the utility function $U = 48 - (x-5)^2 - 3(y-4)^2$ subject to the constraint $x + 3y - 9 = 0$ and find the maximum utility. **(2×5=**