



**K18U 2134**

Reg. No. : .....

Name : .....

**I Semester B.A. Degree (CBCSS – Reg./Supple./Improv.) Examination,  
November 2018**

**Complementary Course in Economics**

**1C01ECO – MATHEMATICS FOR ECONOMIC ANALYSIS – I  
(2014 Admn. Onwards)**

Time : 3 Hours

Max. Marks : 40

**PART – A**

Answer **all** questions. **Each** question carries **one** mark.

1. What is graph of function ?
2. What are cost curves ?
3. What is Derivative ?
4. Define Linear function.

**(1×4=4)**

**PART – B**

Answer **any seven** questions. **Each** question carries **2** marks.

5. Evaluate  $\lim_{x \rightarrow a} \frac{\sqrt{x} + \sqrt{a}}{x + a}$ .
6. Show that  $f(x)$  is continuous at  $x = 1$ , if  $f(x) = \frac{x^2 - 1}{x - 1}$  for  $x \neq 1$ ;  $f(x) = 2$  for  $x = 1$ .
7. Distinguish between single valued and multivalued functions.
8. What is partial derivative ?
9. Distinguish between utility function and consumption function.
10. Distinguish between point continuity and interval continuity.
11. Distinguish between increasing function and decreasing function.
12. For the function  $z = ax^2 + 2hxy + by^2$  find  $\frac{\partial z}{\partial x} \cdot \frac{\partial z}{\partial y}$ .

**P.T.O.**



13. Differentiate  $\frac{x^3 + 2x - 7}{x + 5}$ .

14. Explain L'Hospital's rule.

(2×7=14)

### PART – C

Answer **any four** questions. **Each** question carries **3** marks.

15. Explain the Rules of Differentiation.

16. Verify Euler's Theorem for  $z = x^4 + y^4$ .

17. The demand law for chocolate is  $p = 15 - \frac{1}{5}x$ . Find the marginal revenue function. Represent it graphically. When is MR zero ?

18. If  $x^3 + y^3 = 3axy$ , find  $\frac{dy}{dx}$ .

19. Discuss the continuity at  $x = 0$ ,  $x = 1$

If  $f(x) = -x^2$  for  $x \leq 0$ ,  $f(x) = 5x - 4$  for  $0 < x < 1$ ,  $f(x) = 4x^2 - 3x$  for  $1 \leq x \leq 2$ .

20. Show that the Cobb-Douglas production function  $Q = AL^\alpha K^\beta$  a homogeneous function of degree 1. (3×4=12)

### PART – D

Answer **any two** questions. **Each** question carries **5** marks.

21. Explain the application of derivatives in Economics.

22. Explain Constrained Optimization. Maximize utility function  $U = 4xy - y^2$  subject to a constraint  $2x + y - 6 = 0$ .

23. What are maxima and minima functions ? What are the conditions for maxima and minima functions ? Determine the maxima and minima values of  $\frac{1}{3}x^3 - 2x^2 + 3x + 1$ .

24. Explain the price elasticity of demand and supply. If  $R = pq$  show that

$$dR/dq = P \left( 1 - \frac{1}{\eta} \right), \text{ where } \eta \text{ is the elasticity of demand.}$$

(5×2=10)