Reg. No..... Name.....

M.A. DEGREE END SEMESTER EXAMINATION NOVEMBER 2016

SEMESTER **– 1: ECONOMICS**

COURSE: **16P1ECOT05 : QUANTITATIVE TOOLS FOR ECONOMIC ANALYSIS - 1**

Time: Three Hours Max.Marks:75

PART A

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

1. Define (i) square matrix (ii) Singular matrix.

2. Prove that $(A + B)^T = A^T + B^T$ with the help of an example.

3. What is rank of a matrix?

4. Find $\frac{dy}{dx}$,if $y=7x^4 +5x^3-10x^2+23$.

5. Differentiate $(x^2 +5x+1)/(x^3+5)$ with respect to x.

6. Describe the applications of differentiation.

7. State Euler's theorem.

8. Define price elasticity of demand.

9. How do you determine Maximum value of a function f(x)?

10. What is the objective function in a linear programming problem (LPP)?

11. What you mean by unbounded solution in LPP?

12. State the fundamental duality theorem. (2 x 8 = 16)

PART B

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

13. Solve the following system of equations using Cramer's rule,

$2x + 5y - z = 9$

$3x - 3y + 2z = 7$

$2x - 4y + 3z = 1$

14. Evaluate determinant of the matrix, $\begin{bmatrix} -1 & 6 & -2 \\ 2 & 1 & 1 \\ 4 & 1 & -3 \end{bmatrix}$

15. Find maximum and minimum value of a function, $2x^3 -3x^2 -12x +4$

16. Determine $\frac{\partial^2 u}{\partial x^2}$, $\frac{\partial^2 u}{\partial y^2}$ and $\frac{\partial^2 u}{\partial y \partial x}$ if, $u = x^2 y + x y^2$

17. If the total cost is $C=25q^2 +10q +50$, find the average cost and marginal cost when q= 1.5 .

18. How do you estimate 'Consumer's Surplus'.

19. Find $\int (4x^3+1/\sqrt{x}¿-8)dx¿$.

20. Describe input /output analysis. What are its important uses?

21. Describe graphical method of solving linear programming problem.

22. What is the significance of a dual LPP? (5 x 7 = 35)

PART C

*Answer **any Two** questions. Each question carries **12** marks.*

23. Solve the following system of equations using matrix inverse method,
$-2x-4y-4z = -10$, $x+3y-3z = 1$, $x+y+3z = 5$.

24. The marginal revenue function of a product MR =20 – q. Find the price of the product when q = 10. Also find how much price will change when q increase to 20.

25. The marginal revenue function is given by MR = 50 -4Q. Compute point elasticity of demand when Q = 10.

26. Solve the following LP problem by the simplex method,
Maximise $z = 3x+2y$ subjected to $x+y \leq 4$, $x-y \leq 2$; x , $y \geq 0$

(12 x 2 = 24)