Reg. No.. Name...

M. A. DEGREE END SEMESTER EXAMINATION - NOVEMBER 2016

SEMESTER **– 1: ECONOMICS**

COURSE: **P1ECOT05–: QUANTITATIVE METHODS FOR ECONOMIC ANALYSIS - I**

(Common for Supplementary/Improvement 2014 & 2015 Admission)

Time: Three Hours Max.Marks:75

PART A

*Answer **all;** each question carries 2 marks.*

1. Define (i) Diagonal matrix. (ii) Singular matrix.
2. State Euler's theorem.
3. Define the definite integral of a function.
4. Define feasible solution of a linear programming problem.
5. What are slack and surplus variables?

PART B

*Each question carries **5 marks**. Maximum marks from this part is 35.*

6. If A = $\begin{pmatrix} -2 & 3 & 0 \\ 4 & 6 & 2 \\ 7 & 9 & 3 \end{pmatrix}$ and B= $\begin{pmatrix} 5 & -3 & 0 \\ 2 & -2 & 4 \\ 3 & 2 & 5 \end{pmatrix}$ then show that $(AB)^T = B^T A^T$

7. Evaluate $\begin{vmatrix} 5 & 15 & -25 \\ 7 & 21 & 30 \\ 8 & 24 & 42 \end{vmatrix} = 0$

8. Explain briefly input/output models and their uses.
9. What are the advantages of linear programming problem?
10. Verify Euler's Theorem in the following,
    Z $= x^2 + xy + y^2$
11. Explain application of partial derivatives in Economics
12. Find the total differential dy of the function $y = 3x_1x_2 + x_1^2 + 3x_2^2$

13. Integrate the following
    i) $x^3 \log x$ ii) $\frac{1}{\sqrt{x+7}}$
14. Find the dual of the following problem
    Maximise Z = $4x_1 + 2x_2$
    subject to $-x_1 - x_2 \leq -3$
    $-x_1 + x_2 \geq -2$

$$3x_1+2x_2 \geq 4$$
$$x_1, x_2 \geq 0$$

15. Explain the Big M method for solving linear programming problem.

PART C

*Each question carries **15 marks**. Maximum marks from this part is 30**.***

16. Solve the following system of equations using matrix inverse method

$$x - y + z = 4$$
$$2x + y - 3z = 0$$
$$x + y + z = 2$$

17. If D=250-50P and S=25P+25 are demand and surplus functions.Calculate equilibrium price. Find consumer's and producer's surplus.

18. Solve the following LP problem by the simplex method

Maximise Z = $6x + 4y$

subject to $-2x + y \leq 2$

$x - y \leq 2$

$3x + 2y \leq 9$

$x \geq 0 \quad y \geq 0$

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