

ST. JOSEPH'S COLLEGE (AUTONOMOUS), BANGALORE-27
B.A .ECONOMICS -V SEMESTER
MID-SEMESTER TEST – AUGUST 2019
ECADE 5318: MATHEMATICAL METHODS FOR ECONOMICS

Time: 1.00 hour

Max. Marks: 30

This question paper has 1 printed page and 2 parts.

Part – A

I Answer any 5 of the following

[5x 3 = 15]

1. Verify Euler's theorem $X \frac{df}{dx} + Y \frac{df}{dy} = 3f$

For the production function $f(x, y) = X^3 + 3Y^3 - X^2Y$

2. Find the equilibrium values for $s = -12 + 6p$ & $d = 36 - 2p$

3. If $TC = \frac{q^2}{10} + 5q + 200$ find AC & MC

4. Find the marginal product for $Y = (X^3 + 3)(2X^2 - 3X^3)$

5. Bring out the mathematical relationship between TR, AR, MR and Elasticity of demand

6. If $Y = \frac{x^2 + 1}{x^2 - 1}$ is a total utility function find the marginal utility

Part – B

II Answer any 1 of the following

[1x 15 = 15]

7. A discriminative Monopoly has the following demand functions in 2 sub markets $P_1 = 12 - Q_1$ and $P_2 = 20 - 3Q_2$ and TC is given as $C = [3 + 2(Q_1 + Q_2)]$ Determine Price, MR, Quantity in 2 sub markets, and total profit and elasticity of demand under the regime of price discrimination and when price discrimination is banned.

8. Optimize the following cobb-Douglas production function subject to the Given constraints by forming the Lagrangian function & finding critical Values for

[a] $Q = K^{0.3} L^{0.5}$ subject to $6K + 2L = 384$

[b] $Q = 10K^{0.7} L^{0.1}$. Given $P_K = 28$, $P_L = 10$ & $B = 4000$