

Date:7-03-2022

Registration number:

ST. JOSEPH’S COLLEGE (AUTONOMOUS), BENGALURU-27

B.A. ECONOMICS - V SEMESTER

SEMESTER EXAMINATION: OCTOBER 2021

(Examination conducted in March 2022)

**ECA DE 5318 – Mathematical Economics**

Time- 2 ½ hrs Max Marks-70

This question paper contains 2 printed pages and 3 parts

**Part – A**

1. **Answer any 10 of the following [3X10 = 30]**
2. If S = - a1 + b1p and D = a – bp, find the equilibrium values of Price and Quantity.
3. For the Total Utility Function U = 20X4 + 7X3 +13X2 +12X + 9, Compute Marginal Utility.
4. Given the Total Production Function, TP = (X +7) (3X +9Y), Find Marginal Production Functions of X and Y.
5. Find η, elasticity of demand, if Price of a commodity is ₹ 40 and MR = ₹ 60
6. If the η ,Elasticity is 2 and AR = 6, find MR
7. If MR = ₹ 50 and elasticity of Demand = 5, find the price of the Commodity.
8. Calculate the compound interest on ₹ 1000 for 2 years at 6% per annum, compounded semiannually.
9. The supply function for a commodity P = x2 – x + 5, where x denotes supply. Find producers surplus when price is ₹11
10. Find out the Marginal Cost Function for the Total Cost Function C = X +7X2 + 2X3 – 9X4
11. Given the Revenue Function R = 300 + 1200Q-Q2, Find out Marginal and Average Revenue Functions.
12. If the Marginal Revenue function MR = 100 – 4Q, Find the Total Revenue Function.
13. If MC = 3 - 2X – X2, Find the Total Cost

**Part – B**

1. **Answer any 2 of the following [5X2 = 10]**
2. Find the elasticity of demand, when the Demand function Q =$ \frac{20}{p+1}$ and p=3.
3. Compute Total, Average and Average variable costs for the marginal cost function C = 4+ 7X – 5 X2, If the total fixed cost is 40.
4. Solve the following Linear equations by using Cramer’s Rule

 2x1 +3x2 = 13

 X1 + 7x2 = 23

Where, X1 and X2 are the prices of 2 different commodities, find the values of X1 and X2.

**Part – C**

1. **Answer any 2 of the following**

 **[15X2 = 30]**

1. A consumer consuming 2 commodities has the following utility function u = f (x, y). the price of 1 unit of x = ₹ 1 and that of y = 2 ₹’s, the total budget = ₹ 100. Using lagrangian multiplier, determine the optimum combination of 2 commodities, which consumer would purchase in order to maximize satisfaction.
2. The Cobb Douglas production function Q = AL0.25 K0.75, If the factors are paid in accordance with the respective Marginal productivities, prove that there is exact adding up, using Euler’s theorem
3. Following are the behavioral equations, S = -100 + 3P and D = 200 – 2P, Find the equilibrium values of P and Q and change in the equilibrium values when a tax of ₹ 2/unit and subsidy of ₹4 /unit is given

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