RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. FIRST SEMESTER EXAMINATION, MARCH 2021

FIRST YEAR [BATCH 2020-23]

Date : 24/03/2021

ECONOMICS [HONOURS]

Time : 11 am – 1 pm

PAPER : I [CC1]

Full Marks : 50

Answer **any three** questions from question nos. 1 to 6 : [3×6]

1. Evaluate the elasticity of substitution for the production function $Q = L^aK^{1-a}$ where $0<a<1$. (6)

2. a) A producer produces a good Y with labor (L) and capital (K) using fixed-coefficient technology. Write down the production function and draw the corresponding isoquant map.

   b) A consumer treats commodities X and Y as perfect substitutes. Draw the indifference map of the consumer. (3+3)

3. Suppose the long-run total cost function for an industry is given by the cubic equation — $TC = a+bq+cq^2+dq^3$. Show (using calculus) that total cost function is consistent with a U-shaped average cost curve for at least some values of a, b, c, and d. (6)

4. In the Cobweb model mathematically and graphically demonstrate the cases of convergence and divergence. (6)

5. Suppose there are two goods X and Y, and money income of the consumer is given as M. Using a diagram, show how you split the effect of a fall in price of X into substitution and income effects. (6)

6. How will the market for tea be influenced if the price of coffee falls? Explain using demand and supply curves. How does your argument change if price of sugar falls instead of that of coffee? (4+2)

Answer **any four** questions from question nos. 7 to 13 : [4×8]

7. a) Distinguish between economies of scale and economies of scope. Why can one be present without the other?

   b) A political campaign manager must decide whether to emphasize television advertisements or letters for potential voters in a re-election campaign. Describe the production function for campaign votes. How might information about this function (such as the shape of the isoquants) help the campaign manager to plan strategy? (4+4)

8. State the Weak Axiom of Revealed Preference (WARP). Discuss the issue of consistency of WARP graphically. (2+6)

9. Discuss in detail the construction of long run average cost (LAC) curve from various short run average cost (SACs) curves. (8)

10. Maurice has the following utility function: $U(X,Y) = 20X + 80Y - X^2 - 2Y^2$,where X is his consumption of CDs, with a price of $1, and Y is his consumption of movie videos, with a rental price of $2. He plans to spend $41 on both forms of entertainment. Determine the number of CDs and video rentals that will maximize Maurice's utility. (8)

11. Suppose you are in charge of a toll bridge that costs essentially nothing to operate.
    The demand for bridge crossings Q is given by $P = 15 - (1/2)\,Q$.
    a) Draw the demand curve for bridge crossings.
    b) How many people would cross the bridge if there were no toll?
    c) What is the loss of consumer surplus associated with a bridge toll of $5? (2+3+3)

12. The production function for a product is given by q = 100KL. If the price of capital is $120 per day and the price of labor $30 per day, what is the minimum cost of producing 1000 units of output? (8)

13. Suppose the economy takes a downturn, and that labor costs fall by 50 percent and are expected to stay at that level for a long time. Show graphically how this change in the relative price of labor and capital affects the firm's expansion path. (8)

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