RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. FIRST SEMESTER EXAMINATION, MARCH 2022

FIRST YEAR [BATCH 2021-24]

Date : 08/03/2022

ECONOMICS (HONOURS)

Time : 11 am – 1 pm

PAPER : I [CC1]

Full Marks : 50

1. Answer **any three** questions of the following: [3×4]

   a) Manju always gets twice as much utility from an extra ballet ticket as she does from an extra basketball ticket, regardless of how many tickets of either type she has. Draw Manju's income-consumption curve and her Engel curve for ballet tickets.

   b) Upon merging with the West German economy, East German consumers indicated a preference for Mercedes-Benz automobiles over Volkswagens. However, when they converted their savings into deutsche marks, they flocked to Volkswagen dealerships. How can you explain this apparent paradox?

   c) Evaluate the elasticity of substitution for the production function 1 $z= x^a y^{1-a}$, where $0< a <1$.

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

   e) Graphically prove that two indifference curves cannot intersect each other.

   f) Can a set of indifference curves be upward sloping? If so, what would this tell you about the two goods?

2. Answer **any one** question of the following: [1×8]

   a) Suppose the total cost function for an industry is given by the cubic equation —

   $C = aq^3 + bq^2 + cq + d$.

   How should the coefficients a,b,c,d be restricted to make economic sense. (8)

   b) i) 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.

   ii) Show how your diagrammatic representation will change if you consider X to be an inferior good. Do the same exercise considering X as a Giffen good. (4+4)

3. Answer **any two** questions of the following: [2×15]

   a) i) Can constant returns to scale co-exist with diminishing marginal product? Explain your answer using a suitable production function.

   ii) Discuss in detail the construction of long run average cost (LAC) curve from various short run average cost (SACs) curves. (7+8)

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

ii) You manage a plant that mass-produces engines by teams of workers using assembly machines. The technology is summarized by the production function $q = 5\,KL$ where q is the number of engines per week, K is the number of assembly machines, and L is the number of labor teams. Each assembly machine rents for r = \$10,000 per week, and each team costs w = \$5000 per week. Engine costs are given by the cost of labor teams and machines, plus \$2000 per engine for raw materials. Your plant has a fixed installation of 5 assembly machines as part of its design.

What is the cost function for your plant — namely, how much would it cost to produce q engines? What are average and marginal costs for producing q engines? How do average costs vary with output?

How many teams are required to produce 250 engines? What is the average cost per engine? (6+9)

c) i) Satya has a monthly income of \$200 that she allocates among two goods: meat and potatoes. Suppose meat costs \$4 per pound and potatoes \$2 per pound. Draw her budget constraint. Suppose also that her utility function is given by the equation U(M, P) = 2M + P.

His supermarket has a special promotion. If he buys 20 pounds of potatoes (at \$2 per pound), he gets the next 10 pounds for free. This offer applies only to the first 20 pounds he buys. All potatoes in excess of the first 20 pounds (excluding bonus potatoes) are still \$2 per pound. Draw his budget constraint.

An outbreak of potato rot raises the price of potatoes to \$4 per pound. The supermarket ends its promotion. What does her budget constraint look like now? What combination of meat and potatoes maximizes her utility? (4+4)

ii) Shyama has the following utility function:

$U(X,Y) = \sqrt{X} + \sqrt{Y}$

where X is her consumption of candy bars, with price P_X = \$1, and Y is her consumption of espressos, with P_Y = \$3.

Derive Shyama's demand for candy bars and espressos. Assume that her income I = \$100. How many candy bars and how many espressos will Shyama consume? (7)

d) i) Explain the WARP (Weak Axiom of Revealed Preference) in detail.

ii) Consider a production function $Q = L^a K^b$. Under what restrictions on a,b and does the production function exhibit diminishing marginal productivities for both factors? Can you suggest a production function which gives same equilibrium values of L and K when the producer maximises output subject to a given outlay? Explain your answer logically. (7+8)

———— × ————