RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. FIRST SEMESTER EXAMINATION, DECEMBER 2017

FIRST YEAR (BATCH 2017-20)

Date : 12/12/2017 **ECONOMICS (Honours)**

Time : 11.00 am – 3.00 pm Paper : I Full Marks : 100

[Use a separate Answer Book for <u>each group</u>]

<u>Group – A</u>

Answer <u>any three</u> questions from <u>Question Nos. 1 to 6</u> : [3×6]

1. Define a CES production function. Find out the elasticity of substitution for the CES production function. [1+5]

2. Define a fixed proportion production function. What will be the shapes of TP, AP and MP curves in this case? Does fixed proportion function necessarily imply CRS? [2+3+1]

3. a) Comment on the relationship between short run MC, AVC and AC curves using graphical exposition. [3]
   b) A firm has a fixed production cost of Rs. 5000 and a constant marginal cost of production equal to Rs. 500 per unit produced. What is the firm's cost function? Average cost? [3]

4. Income scheme A pays Rs. 100 in period 1 and Rs. 200 in period 2, while another income scheme B pays nothing in the first period but pays Rs. 310 in period 2. Which investment will you prefer if the rate of interest is 20%? Does your answer change if the interest rate is 30%? [6]

5. 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]

6. Check if WARP is satisfied in each of the following cases, by comparing the choices in each situation:
   a) M = 20, $(p_1, p_2) = (1,1)$, choice = (5,15); with M = 20, $(p_1, p_2) = (2, 0{\cdot}50)$, choice = (8,8);
   b) M = 5, $(p_1, p_2) = (1,2)$, choice = (1,2); with M = 5, $(p_1, p_2) = (2, 1)$, choice = (2,1) [6]

Answer <u>any four</u> questions from <u>Question Nos. 7 to 13</u> : [4×8]

7. a) Suppose that a consumer in a two good world has an indifference curve with slope = $-\frac{1}{2}$ everywhere. Find out his equilibrium consumption of two goods when price is Re 1 for both goods and income is Rs. 1000. [5]
   b) In a two good world, a fall in price of X leaves the consumption of Y unchanged. What is the price elasticity of demand for X? [3]

8. a) Distinguish between economies of scale and economies of scope. Why can one be present without the other? [4]
   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]

9. a) Consider a production function $Q = L^{\alpha}K^{\beta}$. Under what restrictions on α and β, 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.

b) Consider a cost function $C = Q^2 + 1$. Draw the AVC, AC and MC curves. [2+3+3]

10. a) Ram earns a monthly income of M which he spends on buying soaps (x) and perfumes (y). His utility function is given by $U = \min\{x, y\}$. Perfume is a numeraire commodity. Suppose soaps can either be bought at a fixed price of Rs. 2 per unit from local store; or it can be bought at a reduced price of Rs. (2 – P) per unit from a distant shopping mall, while paying for an auto fare of Rs.T. Express the value of P in terms of T and M so that the consumer is indifferent between buying soaps from the local store and the shopping mall (meaning Ram pays the same price, net of transportation costs, no matter where he buys soaps from). [4]

b) Swaprakash allocates his lunch budget between comic books and text books. (i) Illustrate Swaprakash's optimal bundle on a graph with comics on the horizontal axis. (ii) Suppose now that comics is taxed, causing its price to increase by 20 percent. Illustrate Swaprakash's new optimal bundle. (iii) Suppose instead that comic books are rationed at a quantity less than Swaprakash's desired quantity. Illustrate Swaprakash's new optimal bundle. [4]

11. a) Using Calculus, show that the price consumption path with respect to change in p_1 is horizontal for the utility function $U = x_2 + \log x_1$ (i.e. amount of x_2 consumed is independent of price of good 1). Draw a diagram and show the same. [6]

b) Using a diagram, explain the Income Consumption Curve when one of the goods is inferior, for typical downward sloping strictly convex indifference curves. [2]

12. Let an individual lives for only two periods and earns Rs. 1000 in period 1 and Rs. 1200 in period 2. His only way of saving for future is investment in Infrastructure bonds (and earning an interest) while the only way he can borrow in period 1 is by taking loan from Mr. Mahajan (and pay him back with interest). Let the individual chooses to consume his endowment (i.e. neither invests nor borrows) if rate of interest for both lending and borrowing is 15%. Explain what happens to his lending or borrowing when the bonds pay 5% and Mr. Mahajan charges 30% interest. Please mention equation of the budget line and also draw necessary diagrams to answer the question. [8]

13. Consider an agent who values consumption in periods 0 and 1 according to the utility function $U(C_0, C_1) = C_0 C_1^{\delta}$ where $\delta \in (0,1)$. His budget constraint is given by $C_0 + \frac{C_1}{1+r} = \omega$ where ω is his wealth in period 0 and r is the rate of interest on saving.

a) Find equilibrium values of C_0, C_1 and check what happens to them if interest rate rises. [5]

b) What relationship should hold between ω and r so that the equilibrium consumption levels are constant across periods? [3]

Group – B

Answer <u>any three</u> questions from <u>Question Nos. 14 to 18</u> : [3×4]

14. Suppose you bought a new chair with Rs. 5000 in exchange of an old chair having a market value of Rs. 2000. How would such activity alter the level of National Income of a country?

15. Suppose initially investment function in a Keynesian cross structure was autonomous. For some reasons investment now becomes a function of the level of income. What will be its effect on the autonomous expenditure multiplier of the economy?

16. How does the real wage rigidity lead to job rationing?

17. Discuss Tobin's model of investment.

18. Justify the shape of Aggregate Supply curve in the short run.

Answer <u>any one</u> question from <u>Question Nos. 19 to 20</u> : [2×8]

19. Describe how the existence of stickiness of wages can generate a positively sloped AS curve.

20. Derive an investment function. What will be the impact of change in marginal product of capital on investment? What are the factors which determine investment? [3+2+3]

Answer <u>any two</u> questions from <u>Question Nos. 21 to 24</u> : [2×15]

21. What is crowding out effect? State the cases where Fiscal Policy leads to (i) Full Crowding out and (ii) No Crowding out. [5+(5+5)]

22. How can you derive the Aggregate Demand Curve from the IS-LM framework? Show how the shape of the AS curve influences the effectiveness of fiscal and monetary policies. [6+9]

23. Explain the Neo-Classical model of investment. What, according to the theory will be the impact of: i) Introduction of Advanced Technology?
    ii) Rise in the rate of interest? [9+(3+3)]

24. a) Draw a Keynesian consumption function and show how this consumption function exhibits the three properties as depicted by Keynes. [5]
    b) Illustrate the fact that people experience random and temporary changes in their incomes from year to year in the light of Permanent Income Hypothesis of Milton Friedman. [10]

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