

RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College under University of Calcutta)

SECOND YEAR

B.A./B.SC. FOURTH SEMESTER (January – June) 2013

Mid-Semester Examination, March 2013

Date : 04/03/2013

Time : 2 pm – 4 pm

ECONOMICS (Honours)

Paper : IV

Full Marks : 50

[Use separate answer scripts for each group]

Group – A

1. Answer **any two** questions from the following :- [2×5]
 - a) Let a two – product firm have the cost function $C = 2Q_1^2 + Q_1Q_2 + 2Q_2^2$ and let the prices be given at P_{10} and P_{20} . Find the profit-maximising output levels of the firm. Check the second-order conditions. [5]
 - b) Let the utility function of a consumer be $u = Ly + al$ where L =leisure, y =income with S =Labour supplied, and W =rate of wage, find the Labour Supply function. [5]
 - c) Consider a production function $q = f(K, L)$ and derive the condition for convexity of the isoquant corresponding to this production function. [5]
 - d) Find the optimum commodity purchased for a consumer whose utility function and budget constraint are $u = q_1^{1.5}q_2$ and $3q_1 + 4q_2 = 100$ respectively. [5]
2. Answer **any one** question from the following :- [10]
 - a) Suppose that the following constraints have been provided for a linear programming model:
$$\begin{aligned} -x_1 + 3x_2 &\leq 30 \\ -3x_1 + x_2 &\leq 30 \\ x_1, x_2 &\geq 0 \end{aligned}$$
 - i) Explain the characteristics of the feasible region obtained from this set of constraints. [2]
 - ii) If the objective function is to Maximize $Z = -x_1 + x_2$, does the model have an optimal solution? If yes, find it. If not, explain why not. [3]
 - iii) Suppose the objective function is now changed to Maximize $Z = x_1 - x_2$, what changes can you observe in the nature of the solution of the problem? [3]
 - iv) For objective functions where this model has no optimal solution, does this mean that there are no good solutions according to this model? Explain. What probably went wrong in formulating the model? [2]
 - b)
 - i) What are the main assumptions of a Linear Programming Model? [4]
 - ii) A furniture manufacturer wishes to determine the number of tables and chairs to be made by him in order to optimise the use of available resources. These products utilise two different types of timber and he has on hand 1500 board feet of the first type and 1000 board feet of the second type. He has 800 man-hours available for the total job. Each table and chair requires 5 and 1 board feet respectively of the first type of timber, and 2 and 3 board feet of the second type. 3 man-hours are required to make a table and 2 man-hours are required to make a chair. The manufacturer makes a profit of Rs.12 on a table and Rs.5 on a chair. [6]

3. Answer **any one** questions from the following :-

[5]

- a) Define dominant and dominated strategies. Find out the equilibrium strategy (if any) of the following payoff matrix through the process of iterated elimination of strictly dominated strategies :

		Player 2		
Player 1		0, 1	1, 0	3, 3
		-1, 2	0, -1	2, 0

- b) i) Define Nash Equilibrium.

[2+3]

- ii) Consider the following game :

Munna and Munni are playing a hide-and-seek game. Their payoffs are represented as follows:

		Munni	
		Upstairs	Downstairs
Munna	Upstairs	1, 0	0, 1
	Downstairs	0, 1	1, 0

Find out whether the game has any Nash-equilibrium or not.

Group – B

4. Write short notes on **any five** from the following :-

[5×5]

- Growth and development.
- Basic Needs approach.
- Goulet's three core values of development.
- Development as freedom according to Amartya Sen.
- Capability approach.
- Human Development Index.
- PQLI.

