RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College under University of Calcutta)

SECOND YEAR

B.A./B.SC. THIRD SEMESTER (July – December), 2011

Mid-Semester Examination, September, 2011

Date : 12/09/2011 **ECONOMICS (Honours)**

Time : 2 pm – 4 pm Paper : III Full Marks : 50

(Use separate answer scripts for each group)

Group – A

Answer **any five** questions : [5×5 = 25]

1. Prove that x_1 and x_3 cannot be simultaneously considered as the basic variable of the set of equations
   $2x_1 + x_2 - x_3 + 4x_4 = 6$
   $6x_1 + 3x_2 - 3x_3 + x_4 = 10$
   Find one basic solution with x_1 as one basic variable.

2. Consider the following LPP :
   maximize $4x_1 + 7x_2$ such that
   $2x_1 + x_2 \le 1000$
   $x_1 + x_2 \le 600$
   $x_1 + 2x_2 \le 1000, \quad x_1, x_2 \ge 0$
   It is given that the optimal solution to this problem is $x_1^* = 200$, $x_2^* = 400$. Using this information solve the dual problem.

3. Solve graphically
   Maximize $x_1 + 3x_2$
   Such that $x_1 + x_2 \le 5$
   $6x_1 - x_2 \le 30$
   $9x_1 + 2x_2 \ge 24, \; x_1, x_2 \ge 0$

4. Show that for a two person zero sum game
   maximin $a_{ij} \le$ minmax a_{ij}

5. Find all the pure strategy Nash equilibria for the following game :

	B_1	B_2	B_3
A_1	–13, –8	–1, –4	7, –4
A_2	–4, –1	4, –1	4, –4
A_3	1, 2	1, –1	1, –4

6. Solve the following two person zero sum game with the pay-off matrix

	B_1	B_2
A_1	4	2
A_2	1	3

7. Suppose that the utility function of a person is given by $U = 48L + Ly - L^2$
where L stands for leisure, y stands for income of the person. If r is the wage rate of labour. Derive the labour supply function.

8. Given the utility function of an individual as $U = (x + 2)(y + 1)$
with $P_x = 4$, $P_y = 6$, $M = 130$
   a) Form the Lagrangian function and find the optimal levels of purchase of x and y. Verify the second-order conditions.
   b) What is the marginal utility of money at the equilibrium?

Group – B

Answer the following questions :

9. What is low level equilibrium trap? [5]

Or,

Describe briefly the theory of demographic transition.

10. What is Lorenz curve? What is the relation between a Lorenz curve and a Gini coefficient? [5]

Or,

How is Sen's P measure an improvement over traditional measures of poverty?

11. How Human Development Index (HD1) is constructed? [5]

Or,

Briefly explain Amartya Sen's concept of Development as freedom.

12. Show that increasing returns to scale is not a sufficient condition for justification of a "Big push" theory of economic growth. Suppose now a wage differential exists in the market, and then is it possible to have poverty traps in the economy? [5+5=10]

Or,

Derive the competitive equilibrium for the O ring model and show that it is consistent with profit maximizing behavior of producers. [10]