2016

M.A./M.Sc. 1st Semester Examination

ECONOMICS

PAPER—ECO-103

Full Marks : 40

Time : 2 Hours

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Use separate Answer-scripts for Group-A & Group-B

Group—A

1. Answer any *two* questions from the following : 2×2

   (a) "Is non-linear programming problem an improvement over linear programming" ? Justify the statement.

   (b) Write the Kuhn-Tucker condition for the following non-linear programming problem :

Max $Z = xy$

subject to $P_x x + P_y y \leq M$

$x \leq 40$

and $x_1, x_2 \geq 0$

(c) Define bijective function.

(d) What do you mean by cusp ?

2. Answer any *one* question from the following : 1×6

(a) Derive the Kuhn-Tucker condition for a maximization problem.

(b) Explain, with the help of suitable examples, the prevalence of non-linearing in economics.

3. Answer any *one* question from the following : 1×10

(a) What is indirect objective function ? Derive the envelope theorem for an unconstrained optimization problem. 3+7

(b) What is constraint qualification ?
Compare between the sufficiency theorems put forward by Kuhn-Tucker and Arrow-Enthoven. 2+8

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Group—B

4. Answer any *two* questions from the following : 2×2

(a) What is functional ?

(b) What are the different types of terminal points in dynamic optimisation ?

(c) Why do we study the theory of game ?

(d) Which kind of Nash equilibrium can be climinated by the backward induction method ?

5. Answer any *one* question from the following : 6×1

(a) What are the different types of steady status in systems of two linear differential equations.
Draw the phase diagram for a Walrasian price adjustment model with entry. 2+4

(b) What is trigger strategy ? In case of infinitely repeated game, show by using the following example, how is this kind of strategy useful in achieving the Pareto-optimum outcome.

		Player-2	
		C	D
Player-1	A	1, 1	5, 0
	B	0, 5	4, 4

6. Answer any *one* question from the following : 10×1

(a) Write the general form of dynamic optimisation problem stating the variables. Write the necessary conditions to find the solutions for dynamic optimisation problem.

Solve the following dynamic optimisation problem :

$$\text{Max.} \int_0^T \left(k - ak^2 - I^2\right) dt$$

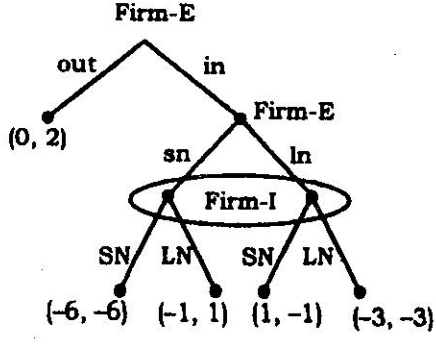
subject to $\dot{k} = I - \delta k$

$k(0) = k_0$ 1+3+6

(b) Differentiate between Normal-form and Extensive-form game.

Differentiate between simulteneous move and dynamic game.

Solve the following game and comment on the outcome :



2+2+4+2