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2238

Your Roll No.

M.A. Winter Semester A

ECONOMICS – Course 108

Social Choice Theory

(Admissions of 1999 and onwards)

Time : 2½ Hours

Maximum Marks : 70

*(Write your Roll No. on the top immediately
on receipt of this question paper.)*

Answer any four questions.

1. (a) Suppose R stands for a weak preference relation defined over X . Let R be complete. Then examine the validity of the following statement: For all $x, y, z \in X$, $[xIy \& yPz \rightarrow xPz] \rightarrow [xRy \& yRz \rightarrow xRz]$ where P and I respectively stand for strict preference relation and indifference relation. (5½)

- (b) Show that $WARP \leftrightarrow ACC$ if the choice function has unrestricted domain. How does the result change if domain is restricted? Also show that with restricted domain, Arrow consistency condition does not rule out irrational choice functions. (6+3+3)

P.T.O.

2. (a) Consider the following choice function defined over $X = \{x, y, z\}$: $C(\{x, y\}) = \{x\}$, $C(\{y, z\}) = \{y, z\}$, $C(\{x, z\}) = \{z\}$, $C(\{x, y, z\}) = \{z\}$. Does this choice function satisfy Path Independence? Is this choice function rational? Also, check if it satisfies quasitransitive rationality and transitive rationality. (2+3+4)
- (b) Show that Path Independence $\leftrightarrow \alpha$ & ϵ . (8½)
3. (a) Construct a collective choice rule satisfying monotonicity but violating strong monotonicity. (6)
- (b) Construct a Social Welfare Function satisfying unrestricted domain, weak Pareto and Non-Dictatorship. (6)
- (c) Construct a Social Welfare Function satisfying unrestricted domain, weak Pareto and Non-Dictatorship. (5½)
4. (a) Suppose number of alternatives is greater than number of individuals. Show that any Social Decision Function satisfying Neutrality, Monotonicity and Independence will give some one veto power. What happens if the assumption on number of alternatives is violated? (9)

- (b) Show that any decisive collective choice rule satisfying Neutrality, Independence, Strict Monotonicity and Anonymity must be the simple majority rule. (8½)
5. (a) Let C be a choice function defined over X satisfying properties α & β . Let \bar{R}_C be defined as: For all $x, y \in X$, $x\bar{R}_C y$ iff $x \in C(\{x, y\})$. Then show that for all $x, y, z \in X$, $x\bar{P}_C y$ & $y\bar{P}_C z \rightarrow x\bar{P}_C z$. (5½)
- (b) Develop a framework of "Rights" and define Sen's minimal libertarianism condition. Prove the theorem known as "Liberal Paradox". Why does Sen think that modification of weak Pareto principle is necessary to solve this impossibility?

(3+5+4)