[This question paper contains 3 printed pages.]

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 ∈ X, [xIy & yPz → xPz] → [xRy & yRz
        → xRz] where P and I respectively stand
        for strict preference relation and indifference
        relation.   (5½)

    (b) Show that WARP ↔ 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 $\leftrightarrow \alpha$ & $\in$.

                                                    (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 $x, y, z \in X$, $x\bar{P}_C y$ & $y\bar{P}_C z \to x\bar{P}_C z$.   (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)