Enrolment No. _____

AHMEDABAD UNIVERSITY
AMRUT MODY SCHOOL OF MANAGEMENT
UNDERGRADUATE PROGRAMME
2023-2024 MONSOON SEMESTER
MID SEMESTER EXAMINATION
COURSE CODE: ECO300
COURSE NAME: MODELS OF POLITICAL ECONOMY

Date: 21-09-2023 Total Marks:50

Time: 11.00 am – 1.00 pm No. of printed pages: 02

Instructions:

Each question carries 15 marks. All questions comprise a total of 60 marks. Maximum you can score is 50.
Answer as many questions as you can.

1. Consider a society consisting of a large continuum of citizens, with the total population size normalized to unity. The utility function of the i^{th} citizen is given by

$$u_i=c_i+2\sqrt{g}$$

where c_i denotes the individual consumption from personal income and g denotes the per capita spending on a public good (like health, education, roads etc.) by the Government. The public good is financed by taxing each individual's income at a common exogenously given per unit rate t, such that $0 \leq t \leq 1$. The income of ith individual is devoted by y_i which is distributed in the population according to a cumulative distribution function F(.), such that $E(y_i)=y$.

1.1 How does the utility change when you change each of the individual consumption c_i and the public good g? Do they increase at a constant rate, or more, or less? Find each and compare.

1.2 Write the budget constraints of each individual and of the Government.

1.3 Find the most preferred policy of the i^{th} individual. What's its relation with her individual income level?

2. In the above question, in addition assume now of a Downsian electoral competition between two parties A and B, such that the two parties simultaneously and non-cooperatively announce their policies of public good provision (g_A and g_B respectively) in the beginning, following which the voters vote for their most preferred policies, with the winning party implementing its announced policy in the end.

   2.1 Everything else remaining the same, find the optimal policies to be announced by each of the parties, clearly explaining your argument.

   2.2 What can be the socially optimal level of public good g here? Compare the optimal choices of the parties with the socially optimal level of public good provision.

3. In continuation of the above question, now consider an economy with two groups, namely the Men (M) and the Women (W), and there is a Downsian electoral competition between two political parties namely L and R, such that each group J's utility from party K is given by

$$u_J(g_K) = c_J^K + 2\sqrt{g_K} \quad \forall J \in \{M, W\} \,\&\, \forall K \in \{L, R\},$$

   with each group's income denoted by y_J and population size by α_J such that

$$y_W < y_M \text{ and } \alpha_M > \alpha_W$$

   with $y = y_M + y_W$ and $\alpha_M + \alpha_W = 1$. The parties are simultaneously choosing the policies g_K and t_K.

   3.1 Find the budget constraints of each of the parties and the group members.

   3.2 Moreover, assume that the relative ideological preference σ_{ij} of each voter i of group J for R over L is distributed uniformly over the range such that $\sigma_{ij} \sim U[-\frac{1}{2\phi J}, \frac{1}{2\phi J}]$ for $\forall J \in \{M, W\}$ and the relative average popularity of R over L is $\delta \sim U[-\frac{1}{2\psi}, \frac{1}{2\psi}]$.

   Assuming the standard probabilistic voting framework with everything else remaining the same, define all other relevant variables and find the voter who is indifferent between voting L and R.

   3.3 Deduce the vote share for L and calculate L's probability of winning.

   3.4 Finally, find the optimal level of public good provided by each of the parties now.

4. Consider three voters indexed by $i \in \{1, 2, 3\}$, each of who's utility u_i is dependent on a policy q_j, where $q_j \in \{q_1, q_2, q_3\}$ and is selected by the simple majority rule.

   The preferences of the voters are given by:

Voter 1: $u_1(q_1) > u_1(q_3) > u_1(q_2)$
Voter 2: $u_2(q_2) > u_2(q_1) > u_2(q_3)$
Voter 3: $u_3(q_3) > u_3(q_2) > u_3(q_1)$

4.1 Are the preferences of each voter single-peaked? Draw the preferences for each voter.

4.2 What can you say about the Condorcet winner under the simple majority rule?

4.3 Now, if the first voter becomes the agenda setter, and selects two rounds out of the three, find her optimal agenda.