



INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR  
Mid-Autumn Semester Examination 2023-24

Full Marks: 30

Duration: 2 hrs

Subject No.: HS60247

Subject Name: Advanced Microeconomics

Department/Center/School: Humanities & Social Sciences

Specific charts, graph paper, log book etc., required. No

Special Instruction: All the questions are compulsory. Read the question paper carefully. No queries will be entertained during examination.

1. Argue whether the following statements are true or false giving appropriate reason(s) in favour of your answer. If required, prove or disprove the statement: 3x2 = 6

- a) Backward induction can be used to solve the problem of multiple Nash equilibrium (NE) by eliminating NE based on non-credible threats.
- b) If a strategy profile survives IESDS (Iterated Elimination of Strictly Dominated Strategy) solution method then it is the unique Nash Equilibrium (NE) of the game and vice-versa.

2. (a) What are the criteria for subgame? Define a Subgame Perfect Nash Equilibrium (SPNE) strategy profile.

(c) Suppose two coins are tossed simultaneously and two players announce heads or tails. If the announcements match, Player 1 will receive payoff of one and Player 2 will lose one; the pay-offs will be reversed if the announcements differ. Find out the Nash equilibrium in pure strategy and mixed strategy and draw the best response functions. 3+5

3. "A one-shot game with a unique non-cooperative Nash Equilibrium can have a cooperative SPNE when it is infinitely played." Prove the statement with the Prisoners' Dilemma game when it is played once vis-à-vis played repeatedly. Under what condition will it be possible to sustain collusion? Further, discuss in this context how the outcome of the game will differ if the game is played infinite times vis-à-vis the game played finite times, though over a very long period. 8

4. If there are two Nash equilibria with one Pareto dominating the other, should we conclude that the Pareto efficient one will be the more reasonable outcome? Use Focal Point Theorem and its properties applicable in the given circumstances. Illustrate with suitable examples considering risk averse players. 8