**Suryadatta Education Foundation’s**

**Suryadatta Institutes of Business Management and Technology, Pune**

**MCA Department**

**MCA-I SEM-II**

**Subject: Optimization Techniques Chapter No:5**

**Chapter Name:** **Game Theory**

**Assignment: 1**

Q.1) Apply rule of Dominance to the following matrix

B1 B2 B3

A1 9 8 -7

A2 3 -6 4

A3 6 7 7

Q.2) Let us take the example with reduced matrix given below.

B1 B3

A1 9 -7

A3 6 7

Solve the game for optimal strategy based on probability concept

Q.3) Solve the following game:

|  |  |
| --- | --- |
| A’s Strategy | B’s Strategy |
|  | b1 b2 b3 |
| a1 | 12 -8 -2 |
| a2 | 6 7 3 |
| a3 | -10 -6 2 |

Q.4) Solve the following 2-person zero-sum game

|  |  |  |
| --- | --- | --- |
| 8 | -3 | 7 |
| 6 | -4 | 5 |
| -2 | 2 | -3 |

Player B

Player A

Find the optimum strategies for each of the players and the value of the game.

Q.5). Solve the following pay-off matrix:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Player A** | **Player B** | | | |
| Strategies | I | II | III |
| I | 6 | 8 | 6 |
| II | 4 | 12 | 2 |

Q.6). For the game with payoff matrix

Player B

Player A -1 2 -2

6 4 -6

Determine the best strategies for players A and B and also the value of the game. Is this game (i) fair (ii) strictly determinable

Q.7). Find the range of values of p and q which will render the entry (2,2) a saddle point for the game.

Player B

Player A B1 B2 B3

A1 2 4 5

A2 10 7 q

A3 4 p 6

Q.8). Two player A and B match coins. If the coins match, then A wins two units of value, if the coin do not match, then B win 2 units of value. Determine the optimum strategies for the players and the value of the game.

Q.9). Consider a modified form of " matching biased coins" game problem. The matching player is paid Rs. 8.00 if the two coins turn both heads and Rs. 1.00 if the coins turn both tails. The non-matching player is paid Rs. 3.00 when the two coins do not match. Given the choice of being the matching or non-matching player, which one would you choose and what would be your strategy?

Q.10) Solve the following 2x2 game

Player A

Player B 2 5

7 3