B.E Sem VII AIDS Nov – Dec 23 R- 2019 1/11/24

Time: 3 hours Max. Marks: 80

N.B. (1) Question No. 1 is compulsory.
(2) Attempt any three questions from remaining five questions.
(3) All questions carry equal marks.
(4) Assume suitable data, if required and state it clearly.

Q1. Attempt any four. 20

a. List and describe the essential elements of a game in the context of game theory
b. Compare non-cooperative games with cooperative games.
c. Explain the significance of the discount factor in the context of repeated games. How does it affect the players' strategies and outcomes over multiple rounds?
d. Define what is meant by "mechanism design" in the context of aggregating preferences.
e. What do you mean by bargaining in context of game theory.

Q2.a) Write two real-world applications of game theory and explain how it has been used to analyze strategic decision-making in those contexts. 20

b) Explain in detail the prisoner's dilemma (PD) with payoff matrix and with suitable examples.

Q3.a) Define Bayesian Nash Equilibrium and find the value of p according to BNE in below given payoff matrices. 20

a type = p

	Left	Right
Up	3, 4	1, 0
Down	4, 3	2, 0

b type = 1-p

	Left	Right
Up	6, 2	0, 4
Down	5, 1	-1, 4

b) Refer the below payoff matrix and identify the strategic game involved in it and describe it in brief.

	Head	*Tail*
Head	1, −1	−1, 1
Tail	−1, 1	1, −1

Q4 a) Explain zero sum games in non-cooperative games

b) Discuss the concept of optimality and concept of Pareto efficiency in the context of game theory. 2

Q5.a) Explain subgame perfect Nash equilibrium in game theory

b) What do you mean games with Perfect Information and games with imperfect information. Explain with examples. 2

Q6. Write short note on any **two** 2

a) VCG mechanisms.

b) Repeated Games

c) Computing Solution Concepts of Normal – Form Games

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