R22 Regulation *Subject code: 4P6FC*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech VI Semester Regular/Supplementary Examinations, April 2026

SOFT COMPUTING

(IT)

Maximum Marks: 60 Date:21.04.2026 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 10 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10X1M=10 Marks)		Marks	CO	Bloom Tx
1.a)	List any two characteristics of Soft Computing.	1M	CO1	BL1
b)	What are heuristic methods?	1M	CO1	BL1
c)	Define Fuzzy Relation.	1M	CO2	BL1
d)	What is defuzzification?	1M	CO2	BL2
e)	What is Particle Swarm Optimization (PSO)?	1M	CO3	BL1
f)	Define fitness value.	1M	CO3	BL1
g)	What is selection operator?	1M	CO4	BL1
h)	What is chromosome?	1M	CO4	BL1
i)	What is knowledge discovery in rough sets?	1M	CO5	BL1
j)	Define rough set theory.	1M	CO5	BL1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	Bloom Tx
2	a) Discuss heuristic approaches used in Soft Computing.	5M	CO1	BL3
	b) Explain the role of Soft Computing in solving real-world problems.	5M	CO1	BL3
	OR			
3	a) Analyze the advantages of Soft Computing over traditional computing methods.	5M	CO1	BL4
	b) Explain various applications of Soft Computing in engineering.	5M	CO1	BL3
4	a) Explain Sugeno fuzzy model.	5M	CO2	BL3
	b) Explain the architecture of a Fuzzy Rule-Based System.	5M	CO2	BL2
	OR			
5	a) Explain membership functions used in fuzzy systems.	5M	CO2	BL2
	b) Explain the concept of Fuzzy Sets with examples.	5M	CO2	BL2
6	a) Explain fuzzy decision-making process.	5M	CO3	BL3
	b) Compare PSO with Genetic Algorithms.	5M	CO3	BL4

	OR			
7	a) Explain limitations of PSO. b) Describe the working principle of Particle Swarm Optimization.	5M 5M	CO3 CO3	BL2 BL2
8	a) Explain the genetic algorithm cycle. b) Analyze the impact of population size in GA	5M 5M	CO4 CO4	BL3 BL4
	OR			
9	a) Explain crossover operation and its characteristics with example. b) Explain mutation operation in GA.	5M 5M	CO4 CO4	BL2 BL2
10	a) Explain hybrid models using fuzzy logic and rough sets. b) Explain lower and upper approximations with Examples.	5M 5M	CO5 CO5	BL3 BL3
	OR			
11	a) Explain rough set theory with example. b) Explain discernibility matrix.	5M 5M	CO5 CO5	BL3 BL2

136