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Course Code

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Eighth Semester B.E. Degree Examinations, May 2026

SOFT COMPUTING

Duration: 3 hrs

Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
 2. Missing data, if any, may be suitably assumed

<u>Q. No</u>	<u>Question</u>	<u>Marks</u>	<u>(RBTL:CO: PI)</u>
<u>Module-1</u>			
1.	a. What is soft computing? Explain basics with an example.	06	(2 :1: 1.2.1)
	b. Compare hard computing vs soft computing	06	(2 :1: 1.2.1)
	c. Explain components of soft computing with suitable examples.	08	(3 :1: 1.2.1)
(OR)			
2.	a. Describe history of soft computing.	06	(2 :1: 1.2.1)
	b. Explain fuzzy computing with diagram (XYZ courier example).	06	(2 :1: 1.2.1)
	c. Compare crisp sets vs fuzzy sets with examples.	08	(3 :1: 1.2.1)
<u>Module-2</u>			
3.	a. Explain fuzzy logic and propositions with examples.	06	(2 :2: 2.2.1)
	b. Describe fuzzy connectives in detail.	06	(2 :2: 2.2.1)
	c. Explain fuzzy inference and apply fuzzy modus ponens.	08	(3 :2: 2.2.1)
(OR)			
4.	a. What is defuzzification? Explain its methods.	06	(2 :2: 2.2.1)
	b. Explain centroid method with example.	06	(3 :2: 2.2.1)
	c. Describe fuzzy rule-based system with diagram.	08	(3 :2: 2.2.1)
<u>Module-3</u>			
5.	a. Summarize the history of genetic algorithms.	06	(2 :3: 4.2.1)
	b. Explain working principle of genetic algorithms.	06	(2 :3: 4.2.1)
	c. Explain encoding types with examples.	08	(3 :3: 4.2.1)
(OR)			
6.	a. Explain fitness function and its role in genetic algorithms.	06	(2 :3: 4.2.1)
	b. Explain roulette wheel selection mechanism.	06	(2 :3: 4.2.1)

Note: (RBTL - Revised Bloom's Taxonomy Level: CO - Course Outcome: PI- Performance Indicator)

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| c. | Solve knapsack problem using genetic algorithms fitness function. | 08 | (3 :3: 4.2.1) |
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Module-4

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| 7. | a. | Summarize crossover and mutation operators in genetic algorithms. | 06 | (2 :4: 3.2.1) |
| | b. | Explain single-point crossover with an example. | 06 | (2 :4: 3.2.1) |
| | c. | Explain two-point crossover with an example. | 08 | (3 :4: 3.2.1) |

(OR)

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| 8. | a. | Explain mutation and its importance in genetic algorithms. | 06 | (2 :4: 3.2.1) |
| | b. | Discuss convergence criteria and schema concept. | 06 | (2 :4: 3.2.1) |
| | c. | Solve proportional selection problem. | 08 | (3 :4: 4.2.1) |

Module-5

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| 9. | a. | Summarize hybrid systems & its classification as per Gray & Kilgour. | 06 | (2 :5: 4.2.1) |
| | b. | Explain sequential hybrid systems with an example. | 06 | (2 :5: 4.2.1) |
| | c. | Describe embedded hybrid systems with structure. | 08 | (3 :5: 4.2.1) |

(OR)

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|-----|----|---|-----------|----------------------|
| 10. | a. | Explain auxiliary hybrid systems. | 06 | (2 :5: 4.2.1) |
| | b. | Compare sequential and embedded hybrid systems. | 06 | (2 :5: 4.2.1) |
| | c. | Explain neuro-genetic system as hybrid system. | 08 | (3 :5: 4.2.1) |

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