M.E. First Semester (Computer Science & Infor. Tech.) (New - CGS)

# 13183 : Elective - I : Expert System Design & Intelligent System : 1 RNME 5

P. Pages : 2 **AU - 3434**

Time : Three Hours * 0 7 2 3 * Max. Marks : 80

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Notes : 1. Assume suitable data wherever necessary.
2. Illustrate your answer necessary with the help of neat sketches.
3. Use of pen Blue/Black ink/refill only for writing the answer book.

**1.** a) What is state space search? Developed state space search for missionaries and cannibals problem consider 3 missionaries, 3 – cannibals and a boat on left bank of river, you must travel all 6 persons to the right bank of river using boat. Boat carriers only 2 – persons at a time ℓ at least one person must bring the boat back. (Note : Cannibals must not but number missionaries on either bank). **7**

b) Define expert system. What are characteristics of expert system? **7**

**OR**

**2.** a) What are various knowledge representation schemes? Explain each. **7**

b) Explain the difference between monotonic and Non-monotonic revision. **7**

**3.** a) Explain frame system for representing real world knowledge. **7**

b) State and explain A* algorithm for best first search. **6**

**OR**

**4.** a) Explain object oriented analysis & design for expert system. **7**

b) Briefly explain the tools for building expert system. **6**

**5.** a) Differentiate between probability distribution and possibility distribution. **7**

b) Name the three strengths and weaknesses of fuzzy expert system. **6**

**OR**

**6.** a) Draw and explain the basic structure of fuzzy controller. **7**

b) What are various fuzzy sets? State and explain each. **6**

## SECTION – B

**7.** a) Explain Elman back propagation neural network. **7**

b) Explain the procedure to calculate weights for hidden layers in ANN. **7**

**OR**

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| **8.** | a) | Explain supervised and Non-supervised learning in neural network with an example. | **7** |
| | b) | Explain cascade correlation neural network in detail. | **7** |
| **9.** | a) | Explain machine learning classifier system with block diagram. | **7** |
| | b) | Explain procedure of Genetic Algorithm with the help of its flowchart. | **6** |

**OR**

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|---|---|---|---|
| **10.** | a) | What are different types of binary Cross-over operation. Explain with an example. | **7** |
| | b) | Explain working of GA with suitable example. | **6** |
| **11.** | a) | With reference to ACO describe –<br>i) Evaporation. ii) Visibility | **7** |
| | b) | Explain various principles in swarm intelligence. | **6** |

**OR**

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|---|---|---|---|
| **12.** | a) | Explain following terms.<br>i) Ant colony optimization. ii) Particle swarm optimization. | **7** |
| | b) | What are different ways of pheromone trail updating? Why it is necessary. | **6** |

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