| PRN: | | Course Code: | U71PE101 |
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First Year **M. Tech** Semester End Examination Winter 2024 000447

# Intelligence Systems

Day and Date: Fri 06 DEC 2024 Max Marks: **50**

Time : 10:30AM To 12:30PM Duration: **02** hrs

Instructions:

1. All questions are compulsory.
2. Assume suitable data wherever necessary and mention it clearly.

| | | | Marks | Bloom's Level | CO |
|---|---|---|---|---|---|
| **Q.1** | | **Attempt any two the following Question.** | | | |
| | a) | Write a note on History and evolution of Artificial Neural Network. | 5 | L2 | 1 |
| | b) | Illustrate in detail the basic structure of a Neuron/Perceptron. | 5 | L2 | 1 |
| | c) | Elaborate with a schematic XOR problem with a single perceptron. | 5 | L2 | 1 |
| **Q.2** | | **Attempt the following Question.** | | | |
| | a) | Describe the concept of multilayer feed forward network with neat schematic diagram | 10 | L3 | 2 |
| | | OR | | | |
| | b) | List all and describe in detail any one perceptron learning rule. | 10 | L3 | 2 |
| **Q.3** | | **Attempt the following Question.** | | | |
| | a) | Illustrate back propagation algorithm in detail with an example. | 10 | L3 | 3 |
| | | OR | | | |
| | b) | Explain Boltzmann's training algorithm in neural networks. | 10 | L3 | 3 |
| **Q.4** | | **Attempt the following Question.** | | | |
| | a) | Describe Hopfield network with suitable diagram. | 10 | L4 | 4 |
| | | OR | | | |
| | b) | Illustrate Adaptive resonance theory (ART) in detail. | 10 | L4 | 4 |
| **Q.5** | | **Attempt the following Question.** | | | |
| | a) | Write short notes on<br>i) Classical Set Theory (Crisp set theory) ii) Fuzzy set theory. | 10 | L4 | 4 |
| | | OR | | | |
| | b) | Describe Fuzzy Control Systems (Fuzzy controller) with a neat diagram. | 10 | L4 | 4 |

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