

Question Paper

Exam Date & Time: 13-May-2023 (09:30 AM - 12:30 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

INTERNATIONAL CENTRE FOR APPLIED SCIENCES END SEMESTER THEORY EXAMINATION-MAY 2023 IV SEMESTER B.Sc.(APPLIED SCIENCES) IN ENGG.

ARTIFICIAL NEURAL NETWORK [ICS 246]

Marks: 50

Duration: 180 mins.

Answer all the questions.

Missing data, if any, may be suitably assumed.

- 1) With a neat sketch, explain feed-forward neural networks and recurrent neural networks. (5)
 - a)
 - b) Differentiate feed-forward neural networks and recurrent neural networks. (5)
- 2) Differentiate the working principles of supervised and unsupervised learning. (5)
 - a)
 - b) Explain with example learning rule for each type of learning. (5)
- 3) Distinguish between linearly separable and nonlinearly separable problems. (2)
 - a)
 - b) Solve a non-linearly separable problem with the Radial basis function using four receptors. (8)
- 4) Explain the main essential processes in Self-Organizing Maps in detail. (5)
 - a)
 - b) Suppose, for instance, that the 2-dimensional input vector X is presented to the three-neuron Kohonen network. Calculate the weight changes during the first cycle through the data, taking training vectors in the given order. (5)

$$X = \begin{bmatrix} 0.52 \\ 0.12 \end{bmatrix}$$

learning rate = 0.1