**POORNIMA UNIVERSITY, JAIPUR**

**END SEMESTER EXAMINATION, November 2022**

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|  | **3BT5174** | Roll No. | Total Printed Pages: 2 |
| **3BT5174** |  |
| B. Tech. III Year V-Semester (Main/Back) End Semester Examination, November 2022  **(AI / DS)** | |
| **BAI05101 / BDS05109 : Artificial Neural Networks** | | | |

# Time: **3** Hours. Total Marks: **60**

Min. Passing Marks: **21**

Attempt **five** questions selecting one question from each Unit. There is internal choice from Unit I to Unit V. Marks of each question or its parts are indicated against each question / parts. Draw neat sketches wherever necessary to illustrate the answer. Assume missing data suitably (if any) and clearly indicate the same in the answer.

Use of following supporting material is permitted during examination for this subject.

# **1.--------------------------Nil--------------------** **2.------------------Nil-----------------------**

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|  |  | **UNIT-I (CO1)** | **Marks** | **Bloom Level** |
| **Q.1** | **(a)** | Explain learning through the adaptation process. | **(6)** | **Apply** |
|  |  |  |  |  |
|  | **(b)** | How the approximation is used for learning. | **(6)** | **Knowledge** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
|  |  |  |  |  |
| **Q.2** | **(a)** | What is the Hebb rule of learning? Explain through relevant functions. | **(6)** | **Understand** |
|  |  |  |  |  |
|  | **(b)** | How Hebb rule can be performed with a recurrent network. Explain through example. | **(6)** | **Analyze** |
|  |  |  |  |  |
|  |  | **UNIT-II (CO2)** |  |  |
|  |  |  |  |  |
| **Q.3** | **(a)** | Write down a short description about TLU with its definition and figure. Draw a diagram of a 2-layer network prepared with TLU. | **(6)** | **Knowledge** |
|  |  |  |  |  |
|  | **(b)** | The network consists of 3 inputs, 4 intermediate outputs, and 1 final output. Write down the relevant functions for all the outputs. Prepare the network with an activation function of your choice and mention it. | **(6)** | **Evaluate** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
|  |  |  |  |  |
| **Q.4** | **(a)** | Write down the difference between supervised and unsupervised learning. | **(6)** | **Knowledge** |
|  |  |  |  |  |
|  | **(b)** | Explain with a relevant example of network. | **(6)** | **Understand** |
|  |  |  |  |  |
|  |  | **UNIT-III (CO3)** |  |  |
|  |  |  |  |  |
| **Q.5** | **(a)** | What is learning in ANN? What are the different Neural Network learning rules? | **(6)** | **Analyze** |
|  |  |  |  |  |
|  | **(b)** | Describe Delta Learning Rule Widrow-Hoff Rule with Mathematical formulation. | **(6)** | **Knowledge** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
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| **Q.6** | **(a)** | What are the different types of Perceptron Models? Describe a Single Layer Perceptron Model. | **(6)** | **Create** |
|  |  |  |  |  |
|  | **(b)** | Define Decision Tree Classification Algorithm. Show with a diagram general structure of a decision tree. | **(6)** | **Analyze** |
|  |  |  |  |  |
|  |  | **UNIT-IV (CO4)** |  |  |
|  |  |  |  |  |
| **Q.7** | **(a)** | What is Associate Memory Network? Write the name of their types. | **(6)** | **Create** |
|  |  |  |  |  |
|  | **(b)** | Explain Auto Associative Memory Network architecture with a figure. | **(6)** | **Create** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
|  |  |  |  |  |
| **Q.8** | **(a)** | Define Bidirectional Associative Memory in ANN. Why BAM is required? | **(6)** | **Analyze** |
|  |  |  |  |  |
|  | **(b)** | Describe Bidirectional Associative Memory Architecture with figures. | **(6)** | **Knowledge** |
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|  |  | **UNIT V (CO5)** |  |  |
|  |  |  |  |  |
| **Q.9** | **(a)** | Define a hyperplane and SVM classifier. | **(6)** | **Analyze** |
|  |  |  |  |  |
|  | **(b)** | Classify a non-linearly separable dataset using a SVM–a linear classifier. | **(6)** | **Create** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
|  |  |  |  |  |
| **Q.10** | **(a)** | What is Gradient Descent or Steepest Descent? | **(6)** | **Evaluate** |
|  |  |  |  |  |
|  | **(b)** | What is Cost-function? | **(6)** | **Understand** |