Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – Nov/Dec– 2017**

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| **Code :** | **14EC2058** | **Duration :** | **3hrs** |
| **Sub. Name :** | **NEURAL NETWORKS AND FUZZY SYSTEMS** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Compare and contrast human brain and computer. Show the electrical and chemical process inside the biological neuron. | CO1 | 15 |
| b. | Differentiate single layer and multilayer neural networks. | CO1 | 5 |
| (OR) | | | | |
| 2. | a. | With neat architecture, discuss the functions and training algorithm of Back Propagation neural network. Include mathematical equations wherever necessary. | CO1 | 15 |
| b. | List the merits and demerits of supervised neural networks. | CO1 | 5 |
| 3. | a. | With neat architecture, discuss the operation and training algorithm of perceptron neural network. Include mathematical equations wherever necessary. | CO1 | 10 |
|  | b. | Deduce the training process of Hebb network with mathematical equations. | CO1 | 10 |
| (OR) | | | | |
| 4. | a. | Formulate the training methodology of Learning Vector Quantization (LVQ) neural network with necessary mathematical equations. | CO1 | 10 |
|  | b. | “Hopfield neural networks are more stable than other neural networks”. Justify this statement. | CO1 | 10 |
| 5. | a. | Expand ADALINE. Frame the training algorithm of ADALINE neural network for pattern recognition applications. | CO1 | 10 |
|  | b. | With neat diagrams, discuss the architecture and training algorithm of Self Organizing Maps. | CO1 | 10 |
| (OR) | | | | |
| 6. |  | Point out the significance of “plasticity-stability” problem. Deduce a methodology to solve this problem using Adaptive Resonance Theory neural network. | CO1 | 20 |
| 7. | a. | With neat architecture, explain the architecture and training algorithm of Counter Propagation neural networks with mathematical equations. | CO1 | 10 |
|  | b. | Summarize the various fuzzification methods used in the process of crisp to fuzzy conversion approaches. | CO1 | 10 |
| (OR) | | | | |
| 8. |  | Determine the third relation T for the given fuzzy relations R and S using max-min composition method.  R = and S = | CO1 | 20 |
|  | | **Compulsory**: |  |  |
| 9. |  | Discuss the application of fuzzy logic systems for image processing with neat diagrams and mathematical equations. | CO2 | 20 |

ALL THE BEST