

# MID TERM SEMESTER EXAMINATION, MARCH-2018

COURSE: M.Tech. (2<sup>nd</sup> Semester)

Course No: PGMTH2E007T

Course Title: Soft Computing Techniques

Time Allowed: Two Hours

Max Marks: 50

## Instructions:

*Section A contains Ten Multiple Choice Questions, and all are compulsory carrying one Mark each.*

*Section B contains five short answer questions of 6 Marks each. Any three questions need to be attempted.*

*Section C contains two long answer questions with internal choice. Each question carries eleven Marks*

## SECTION A

Q1. Write tick the right options given in each of the following multiple-choice questions

I). Biological Neural Network dendrites are comparable with ANN \_\_\_\_\_

- (a) input
- (b) output
- (c) weights
- (d) threshold

II). A network is called \_\_\_\_\_, if the synaptic link carrying the weights, connect to every input medium but not in vice-versa.

- (a) recurrent network
- (b) feed forward
- (c) feed back
- (d) both b and c

III). Bias is \_\_\_\_\_

- (a) to qualify the threshold value
- (b) to calculate the net value
- (c) to improve network performance
- (d) to degrade the network performance

IV). In \_\_\_\_\_ learning input pattern is associated with an output pattern.

- (a) supervised
- (b) unsupervised
- (c) reinforced
- (d) simulated

V). The Hebbian learning rule is \_\_\_\_\_ type of learning.

- (a) supervised
- (b) competitive
- (c) Boltzmann
- (d) reinforcement

VI). In memory-based learning,  $X_{test}$  is applied to the training examples in \_\_\_\_\_

- (a) desired response
- (b) local neighbored
- (c) output
- (d) partial output

VII). Which of the following Search Techniques uses stack data structures?

- (a) breadth-first search (BFS)
- (b) depth-first search (DFS)
- (c) bi-directional search
- (d) Sequential Search

**VIII).** A heuristic is a way of trying

- (a) to discover something or an idea embedded in a program
- (b) to search and measure how far a node in a search tree seems to be from a goal
- (c) to compare two nodes in a search tree to see if one is better than the other is
- (d) all of the mentioned

**IX).** What is Artificial intelligence?

- (a) putting your intelligence into Computer
- (b) programming with your own intelligence
- (c) making a Machine intelligent
- (d) playing a Game

**X).** A\* algorithm is based on

- (a) breadth-First-Search
- (b) depth-First –Search
- (c) best-First-Search
- (d) hill climbing.

### SECTION B

**Q2.** What is soft computing? Differentiate between soft computing and hard computing.

**Q3.** What is uninformed search? Explain Hill Climbing algorithm.

**Q4.** What is Bias, Threshold and Weights? Explain with example.

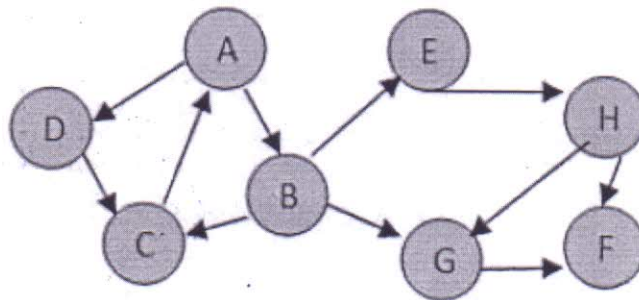
**Q5.** What is Hebbian learning rule? Discuss about k-nearest neighbour classifier.

**Q6.** What is memory-based learning? Discuss with example.

### SECTION C

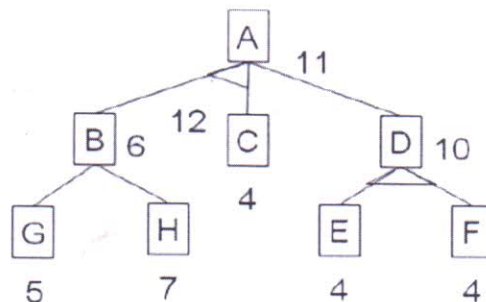
#### UNIT-I

**Q7.** Write DFS algorithm, also execute DFS algorithm for following graph taking starting vertex A.



OR

Differentiate A\* and AO\* algorithm, also execute AO\* algorithm for following graph



## UNIT-II

**Q8.** Explain and depict the various activation functions like identity function, binary step function, bipolar step function, binary sigmoidal function, and ramp function.

**OR**

Implement AND and XOR functions using McCulloch-Pitts neuron (consider binary data)