Reg. No.															

B.Tech. DEGREE EXAMINATION, MAY 2024

Sixth Semester

18MEE495T – ARTIFICIAL NEURAL NETWORK

(For the candidates admitted from the academic year 2018-2019 to 2021-2022)

Note:

(i) **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.

(ii) **Part - B & Part - C** should be answered in answer booklet.

Time: 3 hours | Max. Marks: 100

PART – A (20 × 1 = 20 Marks)

Answer **ALL** Questions

	Marks	BL	CO	PO
1. Neural networks (A) Use black box approach (B) Learn a set of rules (C) Use classic approach (D) Rules are interpretable by human	1	1	1	1
2. Peripheral nervous system (A) Brain and spinal cord (B) Controls inner processes of body (C) Coordinate motor functions (D) Sends command to organ	1	1	1	1
3. Where does the chemical reactions take place in neuron? (A) Dendrites (B) Axon (C) Synapses (D) Nucleus	1	1	1	1
4. Automated vehicle is an example of (A) Supervised learning (B) Unsupervised learning (C) Active learning (D) Reinforced learning	1	1	1	1
5. Back propagation is a learning technique that adjusts weights in the neural network by propagating weight changes (A) Backward from sink to source (B) Forward from source to sink (C) Backward from sink to hidden nodes (D) Forward from source to hidden nodes	1	1	2	1
6. The perceptron convergence theorem is applicable for what kind of data (A) Binary (B) Bipolar (C) Both binary and bipolar (D) Unipolar	1	1	2	1
7. The number of units in hidden layers depends on (A) The number of inputs (B) The number of outputs (C) Both the number of inputs and outputs (D) The overall characteristics of the mapping problem	1	1	2	1

8. XOR problems are _____ 1 1 2 1

(A) Linearly separable (B) Linearly inseperable
(C) Discrete (D) Non linear

9. In a back propagation algorithm, the error in predictions is _____using a gradient based method. 1 1 3 1

(A) Maximized (B) Minimized
(C) Normalized (D) Initially predicted

10. What is generalization? 1 1 3 1

(A) An indication of a good learner (B) Used for weak learner
(C) An important benefit of learning (D) Ability to solve unknown problems of same class

11. In a back propagation algorithm the initial value of weights 1 1 3 1

(A) Can be set to zero (B) Can be set to one
(C) Can be set to 0.5 (D) Can be randomly initialized

12. How many output neurons are present in a multilayer perceptron? 1 1 3 1

(A) As many as the number of classes/ categories (B) As many as the number of inputs
(C) Single only (D) Infinitely many

13. There are (number of) layers in a self organizing map (SOM)/kohonen network. 1 1 4 1

(A) 5 (B) 4
(C) 3 (D) 2

14. Self organizing map (SOM) uses the principle of following operations 1 1 4 1

(A) Competition, cooperation (B) Competition, updating
(C) Cooperation, updating (D) Competition, cooperation, updating

15. To map the higher dimensional data to the lower dimension (s), self organizing map (SOM) uses their 1 1 4 1

(A) Distance information only (B) Topology information only
(C) Both distance and topology information (D) Neither distance nor topology information

16. Which one of the following neural networks is used as a data visualization technique? 1 1 4 1

(A) Jordan network (B) Elman-network
(C) Elman-Jordan network (D) Kohonen network

17. To solve real world problems on-line, human brain uses the principle of 1 1 5 1

(A) Soft computing (B) Hard computing
(C) Neither soft computing nor hard computing (D) Both soft and hard computing

18.	What action to take when if (temperature = warm) and (target = warm) then? (A) Heat (B) No change (C) Cool (D) Change	1	1	5	1
19.	What action to taken when if (temperature = cool) and (target=heat) then? (A) Heat (B) No change (C) Cool (D) Change	1	1	5	1
20.	Which one of the following statements is false regarding Recurrent Neural Network (RNN)? (A) It can be used as a clustering tool (B) It can be used as are regression tool (C) It can capture the dynamics of a highly dynamic process (D) It consists of both feed forward and feedback circuits	1	1	5	1

PART – B (5 × 4 = 20 Marks)
Answer **ANY FIVE** Questions

		Marks	BL	CO	PO
21.	List the advantages of neural networks.	4	2	1	12
22.	Draw the architecture of online learning system.	4	2	1	12
23.	List the applications of linear adaptive filters.	4	2	2	12
24.	Define least mean square (LMS) algorithm. Why is the LMS algorithm used in adaptive neural networks?	4	2	2	12
25.	What do you mean by network pruning techniques? Why pruning is important in neural network?	4	2	3	12
26.	What is contextual map? State the benefits of context mapping.	4	2	4	12
27.	What is Markov decision process in simple terms? State its applications.	4	2	5	12

PART – C (5 × 12 = 60 Marks)
Answer **ALL** Questions

		Marks	BL	CO	PO
28. a.	Discuss about supervised learning with an example.	12	3	1	12
	(OR)				
b.	Explain the architecture of neural network with a functional block diagram.	12	3	1	12
29. a.	Explain briefly about the multi layer perceptron with its architecture.	12	3	2	12
	(OR)				
b.	What kind of operations can be implemented with perceptron? Show that it cannot implement XOR function.	12	3	2	12

30. a.	Discuss about principal component analysis (PCA).	12	3	3	12
	(OR)				
b.	Explain briefly about back propagation neural network.	12	3	3	12
31. a.	Discuss about feature mapping in terms of image processing.	12	3	4	12
	(OR)				
b.	Explain about kohonen map.	12	3	4	12
32. a.	Discuss about recurrent neural network.	12	3	4	12
	(OR)				
b.	Provide the training algorithm for Radial Basis Function Neural Network (RBFNN) with its flowchart.	12	3	5	12

* * * * *