30. a.	Describe about Back Propagation Neural Network.	12	3	3	3
	(OR)				
b.	Discuss about Principal Component Analysis with an example.	12	3	4	2,3
31. a.	Explain briefly about Self Organizing Maps.	12	3	4	2,3
	(OR)				
b.	Discuss about feature Mapping in Terms of Image processing.	12	3	4	2,3
32. a.	Provide the Training Algorithm for Radial Basis function Neural Network with it's Flowchart.	12	4	5	2,3
	(OR)				
b.	Discuss about Recurrent Neural Network with an example.	12	3	5	2,3

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Reg. No.															

B.Tech. DEGREE EXAMINATION, MAY 2023
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) Send Commands to Organ	1	1	1	1
3.	Output function of Neuron (A) Transforms Net Input to Activation (B) Transforms output of other Neurons to NET input (C) Often Identity Function (D) Often Constant Function	1	1	1	1
4.	What order of activation is used in a feed forward Neural Network? (A) Random Order (B) Topological Order (C) Random Permutation (D) Synchronous	1	1	1	1
5.	A learning curve usually follows a (A) Normal Distribution (B) Poisson Distribution (C) Hyper Geometric Distribution (D) Negative Exponential Distribution	1	1	2	1
6.	A learning curve describes (A) The rate at which an organization acquires new information (B) The amount of production time per unit as the total number of units produced increases (C) The increase in number of units produced per unit time as the total number of units produced increases (D) The increase in production time as the total number of units produced increases	1	1	2	1
7.	The role of sigmoid function in Neural Network is _____ (A) Activation Function (B) Membership Function (C) Both A and B (D) Bias Function	1	1	2	1

8. XOR problems are 1 1 2 1
   (A) Linearly Separable (B) Linearly Inseparable
   (C) Discrete (D) Both A and C

9. Which parameter should be set while using back propagation? 1 1 3 1
   (A) Number of Inputs (B) Number of Outputs
   (C) Number of Gradients (D) Number of Intermediate Stages

10. Back Propagation work with _____ Neural Networks 1 1 3 1
   (A) Single Layered (B) Multi Layered
   (C) Fixed Layered (D) Dynamic Layered

11. What is back propagation? 1 1 3 1
   (A) It is another name given to the curvy function in the perception (B) It is the transmission of error back through the network to adjust the inputs
   (C) It is the transmission of error back through the Network to allow weights to be adjusted so that the Network can Learn (D) It is the transmission of error by adjusting output

12. Why is the XOR problem exceptionally Interesting to Neural Network Researchers? 1 1 3 1
   (A) Because it can be expressed in a way that allows you to use a Neural Network. (B) Because it is complex Binary Operation that cannot be solved using Neural Networks
   (C) Because it can be solved by a single layer perceptron (D) Because it is the simplest Linear Inseparable problem that exists

13. There are _____ number of layers in a Self-Organizing Map (SOM) 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 higher dimensional data to the lower dimensions, self-organizing map 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. In a recurrent Neural Network, the information is processed in 1 1 5 1
   (A) Forward Direction only (B) Backward Direction only
   (C) Cycle (D) Both A and B

18. Which one of the following statements is false regarding recurrent Neural Network? 1 1 5 1
   (A) It can be used as clustering tool (B) It can be used as regression tool
   (C) It can capture the dynamics of highly dynamic process (D) It consists of both feed forward and feedback circuits

19. Which one of the following is not a Radial Basis Function (RBF)? 1 1 5 1
   (A) Gaussian Function (B) Multi Quadratic Function
   (C) Inverse Multi – Quadratic Function (D) A straight Line Parallel to X-Axis

20. Feedback circuit is used in 1 1 5 1
   (A) Multi Layered Feed Forward Neural Network (MLFFNN) (B) Radial Basis Function Network (RBFN)
   (C) Both MLFFNN and RBFN (D) Neither MLFFNN nor RBFN

PART – B (5 × 4 = 20 Marks)

Answer **ANY FIVE** Questions

		Marks	BL	CO	PO
21.	Define: Artificial Neural Network and Static its Application.	4	1	1	1
22.	Write the Mathematical Equation for different types of activation function.	4	2	1	2
23.	What is the difference between Single Layer Perception and Multi-Layer Perceptron?	4	2	2	2
24.	Discuss about Adaptive Filtering in Neural Networks.	4	1	2	1
25.	Steps involved in Principal Component Analysis.	4	2	3	1
26.	What are the five stages in Self Organizing map Utilization?	4	2	4	1
27.	Discuss about Convolutional Neural Network with an example.	4	2	5	1

PART – C (5 × 12 = 60 Marks)

Answer **ALL** Questions

		Marks	BL	CO	PO
28. a.	Discuss about different types of Learning with an example.	12	3	1	2,3
	(OR)				
b.	Explain the Architecture of Neural Network with a Functional Block Diagram.	12	3	1	2,3
29. a.	Write about the Multi-Layer perceptron. Draw the structure of Multi-Layer Perceptron Network with inputs and outputs Layer.	12	3	2	2,3
	(OR)				
b.	What kind operations can be implemented with perceptron? Show that it cannot implement XOR Function.	12	8	2	2,3