	(ii)	Connections				
	(iii)	Weight matrix				
		(OR)				
	b.	Illustrate the three different networks topologies with example.	10	3	2	1, 2, 12
28.	a.	Explain the various errors that occurs during gradient descent optimization process with a neat sketch.	10	3	3	1,1 2
		(OR)				
	b.	A single layer perception is only capable of representing linearly separable data. Justify with example.	10	3	3	1,1 2
29.	a.	Differentiate the working process of radial basis function network and mutli-layer perceptron network.	10	3	4	1,1 2
		(OR)				
	b.	With a neat sketch, explain the working principle of the following networks: (i) Jordan network (ii) Elman network	10	2	4	1,1 2
30.	a.	Illustrate the top down and bottom up learning process of adaptive resonance theory network with example.	10	2	5	1,1 2
		(OR)				
	b.i.	Define the learning rule of self-organizing maps and describe all the factors involved in it.	5	2	5	1,1 2
	ii.	Illustrate the training process of self – organizing maps.	5	2	5	1,1 2

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Reg. No.														

B.Tech. DEGREE EXAMINATION, NOVEMBER 2022

Sixth/ Seventh Semester

18CSE388T – ARTIFICIAL NEURAL NETWORKS

(For the candidates admitted from the academic year 2018-2019 to 2019-2020)

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** should be answered in answer booklet.

Time: 2½ Hours Max. Marks: 75

PART – A (25 × 1 = 25 Marks)

Answer **ALL** Questions

		Marks	BL	CO	PO
1.	Interbrain is also called as (A) Cerebrum (B) Cerebellum (C) Spinal cord (D) Diencephalon	1	1	1	1,1 2
2.	Fukushima introduces _____ to recognize handwritten characters. (A) Self – organizing maps (B) Neocognitron (C) Quantums (D) Soft computing	1	1	1	1,1 2
3.	The membrane potential of neuron in resting state is _____, (A) – 70 mV (B) 70 mV (C) 85 mV (D) – 85 mV	1	1	1	1,1 2
4.	Information processing in human body (A) Happens only in cerebrum (B) Happens only in cerebellum (C) Happens only in receptors (D) Is entirely decentralized	1	1	1	1,1 2
5.	How is the action potential transmitted along axon? (A) Continuously along axon (B) Jumps from one node of ranvier to the next (C) Jumps from cell body directly to synapse (D) Jumps from synapse to synapse	1	1	1	1,1 2
6.	Connections between neurons within one layer are called _____. (A) Lateral recurrence (B) Direct recurrence (C) Indirect recurrence (D) Horizontal recurrence	1	1	2	1,1 2
7.	An example of completely linked network is _____. (A) Feedforward network (B) Recurrent network (C) Self – organizing map (D) Convolutional network	1	2	2	1,1 2
8.	The other name of bias neuron is _____. (A) Controlling neuron (B) Central neuron (C) Primary neuron (D) On neuron	1	1	2	1,1 2

9.	Fermi function is also called as	1	1	2	1, 12
	(A) Heaviside function (B) Hyperbolic tangent (C) Binary classifier (D) Linear function				
10.	The other name of weight matrix is _____.	1	2	1, 12	
	(A) Symmetric matrix (B) Asymmetric matrix (C) Sparse matrix (D) Hinton diagram				
11.	_____ is an identity neuron.	1	1	3	1,1 2
	(A) Input neuron (B) Output neuron (C) Hidden neuron (D) Convolutional neuron				
12.	The perceptron can learn anything in finite time is called _____.	1	1	3	1,1 2
	(A) Las Vegas algorithm (B) Mote Carlo algorithm (C) Perceptron convergence theorem (D) Gradient descent				
13.	_____ activation functions are used for backpropagation of error.	1	1	3	1,1 2
	(A) Simple unit (B) Semi – linear (C) Constant (D) Increasing				
14.	_____ learning omits the summation in delta rule to learn the patterns	1	1	3	1,1 2
	(A) Streaming (B) Offline (C) Online (D) Distributed				
15.	How is the input to a neuron accumulated?	1	1	3	1,1 2
	(A) Threshold value (B) Propagation function (C) Activation function (D) Output function				
16.	Which among the following are types of activation of neurons?	1	2	4	1,1 2
	(A) Synchronous, asynchronous (B) Symmetric, asymmetric (C) Symbolic, asymbolic (D) Folded, unfolded				
17.	Which is true of the bias neuron?	1	1	4	1,1 2
	(A) Each layer has single bias neuron (B) It is optional (C) Each neuron has separate bias neuron (D) One bias neuron exists for a network				
18.	What is generalization?	1	1	4	1,1 2
	(A) An indication of a good learner (B) Ability to solve unknown problems of same class (C) An important benefit of learning (D) Used for weak learner				
19.	Which among the following is true regarding reinforcement learning?	1	1	4	1,1 2
	(A) Subset of supervised (B) Subset of unsupervised (C) Uses rewards for actions (D) Subset of structure learning				

20.	What is the purpose of pseudo-inverse for RBFNN?	1	1	4	1,1 2
	(A) Compute initial weights, when number of examples is equal to RBF neurons (B) Compute initial weights, when number of example greater than RBF neurons (C) Adjustment of weights (D) Compute initial weights, when number of example lesser than RBF neurons				
21.	Which neural network has one context layer per information processing layer?	1	1	5	1,1 2
	(A) Elman networks (B) Jordan networks (C) Recurrent networks (D) RBF neural networks				
22.	SOM and ART are _____.	1	1	5	1,1 2
	(A) Examples of supervised learning (B) Examples of unsupervised learning (C) Examples of reinforced learning (D) Examples of semi-supervised learning				
23.	What is the main benefit of ART network?	1	1	5	1,1 2
	(A) Unsupervised learning (B) Stable and plasticity (C) Stable without plasticity (D) Unstable with plasticity				
24.	_____ weight matrix is used in ART network for binary pattern recognition.	1	1	5	1,1 2
	(A) Complete (B) Top – down (C) Bottom up (D) Incomplete				
25.	Neural gas is used to realize a	1	1	5	1,1 2
	(A) SOM without grid structure (B) SOM with grid structure (C) SOM with structured neurons (D) SOM without structured neurons				

PART – B (5 × 10 = 50 Marks)

Answer **ALL** Questions

		Marks	BL	CO	PO
26. a.	With a neat sketch of the brain, explain the functionalities of the following parts of the brain: (i) Cerebrum (ii) Cerebellum (iii) Diencephalon (iv) Brain stem	10	2	1	1,1 2
	(OR)				
b.	With a neat sketch, illustrate the electrochemical process in neuron.	10	2	1	1,1 2
27. a.	Summarize the following components of network: (i) Neurons	10	2	2	1, 2, 12