Exam. Code: 0919
Sub. Code: 6431

2063
B.E. (Computer Science and Engineering)
Seventh Semester
Elective - III
CS-705B: Neural Networks

Time allowed: 3 Hours **Max. Marks: 50**

NOTE: Attempt five questions in all, including Question No. 1 (Section-A) which is compulsory and selecting two questions each from Section B-C.

x-x-x

	Section-A	
Q1.	a) Compare the performance of a computer and that of a biological network in terms of speed of processing, size and complexity, and storage mechanism for a sample problem. b) How does the learning rate affect the performance of Gradient Descent algorithm? c) Define Principal Component Analysis, its assumptions and equations. d) What kind of problems does backpropagation solve? e) How are weight vectors adjusted in basic competitive learning?	10
	Section-B	
Q2.	a) How will you apply artificial Neural Networks in Pattern Classification for following i)Recognition of Olympic symbols ii) Recognition of printed characters b) Determine 3-input NAND gate and 3-input NOR gate realizations using McCulloch Pitts model.	5 5
Q3.	Write short note on following types of learning mechanism: i) Hebbian Learning ii) Competitive learning iii) Boltzman Leaning	10
Q4.	a) Derive the equation for weight change in the output and hidden layers of back- propagation network. b) With neat sketch, differentiate multilayer feed forward networks and single-layer feed forward neural networks.	6 4
	Section-C	
Q5.	a) Differentiate between auto and hetro auto-associative memory. b) Explain bi-direction Associative memory networks. Design a bi-directional Associative Memory network to encode the following pattern: A1=100001 B1=11000 A2= 011000 B2=10100 A3= 001011 B3=01110 Check its working for A3.	4 6
Q6	a) Discuss learning mechanism in RBF. b) What is universal approximation theorem? Explain approximation properties of Radial Basis Function networks.	5 5
Q7.	a) Give the Architecture of Kohenen self-organizing maps and explain how it is used to cluster the input vectors. b) Explain the architecture and components of Competitive Learning Neural Network with neat diagram	7 3

x-x-x