PAPER ID-410666

Subject Code: KCA042

Roll No: | | | | | | | | | | | | | |

MCA
(SEM IV) THEORY EXAMINATION 2023-24
NEURAL NETWORK

TIME: 3 HRS **M.MARKS: 100**

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief.

a.	Mention the basic parts of biological neuron.	2
b.	List out the different activation functions used in artificial neuron model.	2
c.	List any four activation functions.	2
d.	If the net input to an output neuron is 0.54, compute its output when the activation function is binary sigmoidal.	2
e.	List any two applications of back propagation network (BPN).	2
f.	What do you mean by local minima?	2
g.	What are the properties of feature map?	2
h.	What is recurrent network?	2
i.	What is support vector machine?	2
j.	What do mean by hard computing?	2

SECTION B

2. Attempt any *three* of the following:

a.	How artificial neuron is inspired from the biological neuron? Explain.	10
b.	Explain the basic architecture of McCulloch – Pitts neuron model.	10
c.	What do you mean by back propagation network (BPN)? How is error back propagated in a BPN?	10
d.	What are self-organizing feature maps (SOM)? Explain the architecture of popular self-organizing maps.	10
e.	Explain support vector machine and when SVM technique is required?	10

SECTION C

3. Attempt any *one* part of the following:

a.	Explain how supervised learning happens in neural networks.	10
b.	What is perceptron? Differentiate between single layer perceptron (SLP) and multilayer perceptron (MLP).	10

4. Attempt any *one* part of the following:

a.	Draw the architecture of a multilayer perceptron (MLP). Explain its advantages and disadvantages.	10
b.	Explain the architecture of learning vector quantization.	10

5. Attempt any *one* part of the following:

a.	Design the support vector machine for classification problem. Explain various mathematical functions used behind it.	10
b.	What is ANN? Explain characteristics of Artificial neural network.	10

6. Attempt any *one* part of the following:

a.	Calculate the output of the following neuron Y with the activation function as: i. Binary sigmoid ii. Tanh	10

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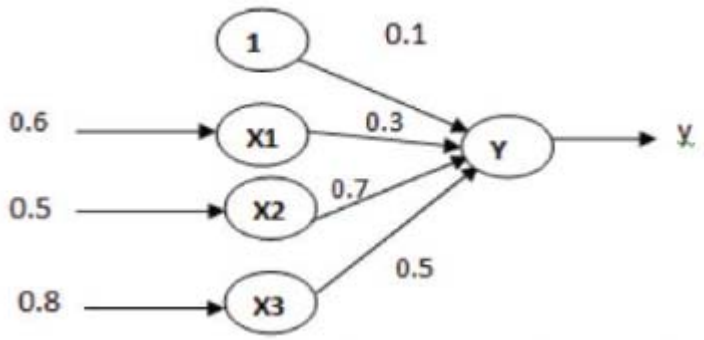
	iii. ReLU 	
b.	Compare radial basis function (RBF) network with multilayer perceptron.	10

7. Attempt any *one* part of the following:

a.	Explain the architecture and training of Kohonen's self-organizing network.	10
b.	Explain the difference between complex valued NN and complex valued BP.	10