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SARDAR PATEL UNIVERSITY

M.Sc. Electronics & Communication Semester –IV Examinations, April 2018

PS04EELC02 – Artificial Neural Network

Date: 19th April, 2018 **Time: 2:00 p.m. to 5:00 p.m.** **Max Marks: 70**

Q1. Choose the most appropriate option for each question. [8]

i. **An Artificial Neural Network documents its knowledge in _____.**
   A) Cell body
   B) Connections
   C) Nucleus
   D) None of these

ii. **_____ is an example of activation function.**
   A) Threshold
   B) Neuron
   C) Weight
   D) None of these

iii. **_____ is characteristic of neural network.**
   A) Self learning
   B) Learning from data
   C) Fault toleration
   D) All of the above

iv. **_____ is not a type of training/learning of an ANN.**
   A) Supervised
   B) Reinforcement
   C) Cumulative
   D) Unsupervised

v. **_____ is an example of linearly separable problem.**
   A) AND
   B) XNOR
   C) XOR
   D) None of these

vi. **_____ type of ANNs allow signals to travel one way only: from input to output, without allowing any feedback.**
   A) Recurrent
   B) SOM
   C) Feed forward
   D) None of these

vii. **SOM types of networks utilize _____.**
   A) Competitive learning
   B) Active learning
   C) Feed forward learning
   D) None of these

viii. **A _____ is a recurrent, one-layer network that uses competition to determine which of its nodes has the greatest initial input value.**
   A) Avgnet
   B) Maxnet
   C) Minnet
   D) None of these

(P.T.O.)

Q2. **Answer the following questions (Any Seven):** [14]

a. Draw biological neuron and explain its elements in one line.

b. Define artificial neural network.

c. List uses of a single artificial neuron.

d. What is learning rate in supervised learning?

e. Differentiate supervised learning and unsupervised learning paradigm.

f. Draw structure of multi layer feed forward ANN.

g. Explain recurrent neural network.

h. Explain winner takes all approach of ANN in brief.

i. What is Hamming network? Where is it used?

Q3. **Answer the following questions:**

a. Compare biological neural network with artificial neural network on various aspects. [6]

b. Discuss structure and working of single artificial neuron in detail. [6]

OR

b. Define and discuss various activation functions in ANN. [6]

Q4. **Answer the following questions:**

a. Write a short note on application areas of artificial neural networks. [6]

b. Discuss pattern recognition via ANN in detail. [6]

OR

b. Discuss use of ANN for forecasting with suitable example. [6]

Q5. **Answer the following questions:**

a. Define and discuss in brief: (i) Adaptive multilayer network architecture, (ii)Radial basis function network. [6]

b. Explain how a typical multilayer feed forward network works in detail. [6]

OR

b. Give an example of non-linearly separable problem. How such problems can be solved? Explain in detail. [6]

Q6. **Answer the following questions:**

a. Explain Kohonen's self-organizing maps in detail. [6]

b. Write a short note on unsupervised learning and its applications. [6]

OR

b. Write a short note on adaptive resonance theory. [6]

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