(6 pages)

Reg. No. :

Code No.: 10113 E Sub. Code: SECS 6 C/ AECS 63

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023.

Sixth Semester

Computer Science

Major Elective -- NEURAL NETWORKS

(For those who joined in July 2017-2020 onwards)

Time: Three hours

Maximum: 75 marks

PART $A \leftarrow (10 \times 1 = 10 \text{ marks})$

Answer ALL questions.

Choose the correct answer:

- Neural networks can be used in different fields. Such as
 - (a) Classification
 - (b) Data processing
 - (c) Compression
 - (d) All of the above

- Function of dendrites is?
 - (a) Receptors
 - (b) Transmitter
 - (c) Both receptor and transmitter
 - (d) None of the mentioned
- 3. What is perceptron?
 - (a) single layer feed-forward neural network with pre-processing
 - (b) auto-associative neural network
 - (c) double layer auto-associative neural network
 - (d) a neural network that contains feedback
- The network that involves backward links from output to the input and hidden layers is called
 - (a) Self-organizing maps
 - (b) Perceptrons
 - (c) Recurrent neural network
 - (d) Multi layered perceptron
- 5. What is an auto-associative network?
 - . (a) a neural network that contains no loops
 - (b) a neural network that contains feedback
 - (c) a neural network that has only one loop
 - (d) a single layer feed-forward neural network with pre-processing

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- What is synchronous update in hopfield model?
- (a) all units are updated simultaneously
- (b) a unit is selected at random and its new state is computed
- a predefined unit is selected and its new state is computed
- (d) none of the mentioned

In self organizing network, how is layer connected to output layer?

- (a) some are connected
- (b) all are one to one connected
- (c) each input unit is connected to each output unit
- (d) none of the mentioned

Pattern recall takes more time for?

- (a) MLFNN
- (b) Basis function
- (c) Equal for both MLFNN and basis function
- (d) None of the mentioned

Multilayer Perceptron (MLP), Convolutional Neural Network (CNN) and Recurrent Neural Networks (RNN) are used for

- (a) knowledge extraction
- (b) healthcare
- (c) weather forecasting
- (d) none of the above

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- 10. What are the major components of the intrusion detection system?
 - (a) Analysis Engine
 - (b) Event provider
 - (c) Alert Database
 - (d) All of the mentioned

PART B — $(5 \times 5 = 25 \text{ marks})$

Answer ALL questions by choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Write note on artificial neural network.

Or

- (b) Write note on any two artificial network terminologies.
- 12. (a) Derive Hebbian and perceptron-learning rule.

Or

- (b) Explain about multilayer perceptron.
- 13. (a) Explain Continuous Hopfield net.

Or

(b) Write note on local minima and Global minima.

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14. (a) What is counter propagation network?

Or

- (b) Explain the application procedure for full CPN.
- 15. (a) Write note on protein folding.

Or

(b) Describe about forecasting the application of neural network.

PART C — $(5 \times 8 = 40 \text{ marks})$

Answer ALL questions by choosing either (a) or (b).

Each answer should not exceed 600 words.

(a) Describe biological neural network.

Or

- (b) Explain in detail about network architecture of basic building blocks of artificial neural networks.
- 17. (a) Write in detail about Mc-Culloch-Pits neuron-model

Or

(b) Illustrate single layer perceptron.

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18. (a) Write about Discrete Hopfield network training algorithm.

Or

- (b) Explain Back propagation network.
- 19. (a) Elaborate Kohonen self-organizing feature maps.

Or

- (b) Express about Forward only propagation network.
- 20. (a) Explain about clinical diagnosis in health care application of neural network.

Or

(b) Describe about intrusion-detection algorithm.

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