



**Unit-I**

**1. A Neural Network is inspired by the structure of the:**

- A) Computer
- B) Human Brain
- C) Database
- D) Internet

**Answer:** B) Human Brain

**2. The basic processing unit of a neural network is called:**

- A) Register
- B) Processor
- C) Neuron
- D) Sensor

**Answer:** C) Neuron

**3. In a biological neuron, signals are received through:**

- A) Axon
- B) Soma
- C) Dendrites
- D) Synapse

**Answer:** C) Dendrites

**4. The connection strength between neurons is represented by:**

- A) Threshold
- B) Weight
- C) Bias
- D) Activation

**Answer:** B) Weight



**5. The mathematical model of a neuron computes:**

- A) Weighted sum of inputs
- B) Average of outputs
- C) Product of outputs
- D) Random value

**Answer:** A) Weighted sum of inputs

**6. Which of the following is an activation function?**

- A) Sigmoid
- B) Compiler
- C) Cache
- D) Register

**Answer:** A) Sigmoid

**7. A neural network can be represented as a:**

- A) Tree
- B) Matrix
- C) Directed Graph
- D) Table

**Answer:** C) Directed Graph

**8. Which network architecture has no hidden layer?**

- A) Recurrent Network
- B) Multi-layer Network
- C) Single-layer Feedforward Network
- D) SOM Network

**Answer:** C) Single-layer Feedforward Network

**9. Information in a feedforward network flows:**

- A) Backward only
- B) Forward only
- C) Randomly
- D) Circularly

**Answer:** B) Forward only

**10. Which network contains feedback connections?**

- A) Feedforward Network
- B) Single Layer Network
- C) Recurrent Network
- D) Perceptron

**Answer:** C) Recurrent Network

**11. Knowledge stored across many neurons is called:**

- A) Local Representation
- B) Distributed Representation
- C) Direct Representation
- D) Linear Representation

**Answer:** B) Distributed Representation

**12. Neural Networks are a major branch of:**

- A) Operating Systems
- B) Computer Networks
- C) Artificial Intelligence
- D) Database Systems

**Answer:** C) Artificial Intelligence

**13. Error correction learning aims to:**

- A) Increase error
- B) Minimize error
- C) Ignore error
- D) Store error

**Answer:** B) Minimize error

**14. The difference between desired and actual output is:**

- A) Weight
- B) Bias
- C) Error
- D) Threshold

**Answer:** C) Error

**15. Hebbian learning is based on the principle:**

- A) Divide and Conquer
- B) Winner Takes All
- C) Fire Together, Wire Together
- D) Backtracking

**Answer:** C) Fire Together, Wire Together

**16. Competitive learning follows:**

- A) Multiple Winners
- B) Winner-Takes-All
- C) No Winner
- D) Random Selection

**Answer:** B) Winner-Takes-All

**17. Competitive learning is mainly used for:**

- A) Clustering
- B) Sorting
- C) Compression
- D) Encryption

**Answer:** A) Clustering

**18. Boltzmann learning is based on:**

- A) Energy Minimization
- B) Compilation
- C) Database Search
- D) Packet Routing

**Answer:** A) Energy Minimization

**19. Credit Assignment Problem deals with:**

- A) Memory Allocation
- B) Error Responsibility
- C) Data Storage
- D) Data Compression

**Answer:** B) Error Responsibility

**20. Backpropagation is used to solve:**

- A) Memory Problem
- B) Clustering Problem
- C) Credit Assignment Problem
- D) Routing Problem

**Answer:** C) Credit Assignment Problem

**21. The ability of a network to adjust to environmental changes is:**

- A) Adaptation
- B) Compilation
- C) Classification
- D) Optimization

**Answer:** A) Adaptation

**22. Learning from noisy and uncertain data reflects the:**

- A) Structural Nature
- B) Statistical Nature
- C) Mechanical Nature
- D) Physical Nature

**Answer:** B) Statistical Nature

**23. The learning rate is usually represented by:**

- A)  $\beta$
- B)  $\lambda$
- C)  $\eta$
- D)  $\alpha$

**Answer:** C)  $\eta$

**24. Which memory stores learned information permanently?**

- A) Cache Memory
- B) Short-Term Memory
- C) Long-Term Memory
- D) Virtual Memory

**Answer:** C) Long-Term Memory

## 25. Which of the following is NOT a learning rule?

- A) Hebbian Learning
- B) Competitive Learning
- C) Boltzmann Learning
- D) Binary Search Learning

**Answer:** D) Binary Search Learning

### Fill in the Blanks

1. Neural Networks are inspired by the \_\_\_\_\_ brain.  
**Answer:** Human
2. The basic unit of a neural network is called a \_\_\_\_\_.  
**Answer:** Neuron
3. Signals are received through \_\_\_\_\_ in a biological neuron.  
**Answer:** Dendrites
4. The output carrying part of a neuron is called the \_\_\_\_\_.  
**Answer:** Axon
5. Connections between neurons are known as \_\_\_\_\_.  
**Answer:** Synapses
6. The strength of a connection is represented by a \_\_\_\_\_.  
**Answer:** Weight
7. A neural network can be viewed as a \_\_\_\_\_ graph.  
**Answer:** Directed
8. A feedforward network allows information to move only \_\_\_\_\_.  
**Answer:** Forward
9. A network with feedback connections is called a \_\_\_\_\_ network.  
**Answer:** Recurrent
10. Knowledge distributed among many neurons is called \_\_\_\_\_ representation.  
**Answer:** Distributed
11. Artificial Neural Networks are a branch of \_\_\_\_\_ Intelligence.  
**Answer:** Artificial
12. Error correction learning tries to minimize the \_\_\_\_\_.  
**Answer:** Error
13. In Hebbian learning, neurons that fire together \_\_\_\_\_ together.  
**Answer:** Wire
14. Competitive learning uses a \_\_\_\_\_ takes all strategy.  
**Answer:** Winner
15. Boltzmann learning is based on \_\_\_\_\_ minimization.  
**Answer:** Energy
16. The parameter  $\eta$  represents the \_\_\_\_\_ rate.  
**Answer:** Learning
17. The Credit Assignment Problem identifies the source of \_\_\_\_\_.  
**Answer:** Errors
18. Backpropagation distributes \_\_\_\_\_ throughout the network.  
**Answer:** Error



19. Temporary storage of information is called \_\_\_\_\_ memory.  
**Answer:** Short-Term
20. Permanent storage of learned information is called \_\_\_\_\_ memory.  
**Answer:** Long-Term
21. The ability to adjust to environmental changes is called \_\_\_\_\_.  
**Answer:** Adaptation
22. Learning from data involves a \_\_\_\_\_ process.  
**Answer:** Statistical
23. Generalization means performing well on \_\_\_\_\_ data.  
**Answer:** Unseen
24. The sigmoid function is a type of \_\_\_\_\_ function.  
**Answer:** Activation
25. The weighted sum of inputs is called the \_\_\_\_\_ input.  
**Answer:** Net