1. Question: What is the purpose of stemming in NLP?

- a) Identifying named entities

**- b) Reducing words to their base or root form**

- c) Classifying text into categories

- d) Tokenizing sentences

2. Question: What is the basic building block of neural networks?

**- a) Neuron**

- b) Weight

- c) Bias

- d) Activation Function

3. Question: In a neural network, what is backpropagation used for?

- a) Forward pass

- b) Weight initialization

**- c) Updating weights based on error**

- d) Activation function selection

4. Question: What is the purpose of the activation function in a neural network?

**- a) To introduce non-linearity**

- b) To initialize weights

- c) To control the learning rate

- d) To add bias to the network

5. Question: Which neural network architecture is suitable for image recognition?

- a) Feedforward Neural Network

- b) Recurrent Neural Network

**- c) Convolutional Neural Network**

- d) Radial Basis Function Network

6. Question: What is the purpose of dropout in neural networks?

- a) Adding noise to the data

**- b) Regularization to prevent overfitting**

- c) Increasing the learning rate

- d) Initializing weights randomly

7. Question: What is the primary operation in a convolutional layer?

- a) Matrix multiplication

- b) Addition

**- c) Convolution**

- d) Pooling

8. Question: What is the purpose of pooling layers in CNNs?

- a) Feature extraction

**- b) Dimensionality reduction**

- c) Non-linearity introduction

- d) Weight initialization

9. Question: Which layer is typically used for handling spatial hierarchies in CNNs?

**- a) Convolutional layer**

- b) Pooling layer

- c) Fully connected layer

- d) Batch normalization layer

10. Question: What does the term "stride" refer to in a convolutional layer?

- a) Learning rate

- b) Filter size

**- c) Step size for the convolution operation**

- d) Activation threshold

11. Question: In CNNs, what is the purpose of the softmax activation function in the output layer?

- a) Introduce non-linearity

**- b) Normalize the output to probabilities**

- c) Apply dropout

- d) Handle vanishing gradients

12. Question: What is the main advantage of RNNs over traditional neural networks in handling sequential data?

- a) Parallel processing

**- b) Memory of previous inputs**

- c) Non-linearity

- d) Weight sharing

13. Question: What is the vanishing gradient problem in RNNs?

- a) Exploding gradients during training

- b) Gradient becoming too large

- c) Difficulty in training deep networks

**- d) Gradient becoming too small**

14. Question: Which RNN architecture addresses the vanishing gradient problem by allowing gradients to flow more easily through the network?

- a) Elman network

- b) Bidirectional RNN

**- c) Long Short-Term Memory (LSTM)**

- d) Gated Recurrent Unit (GRU)

15. Question: What is the purpose of the hidden state in an RNN?

- a) Make predictions

**- b) Store long-term information**

- c) Control the learning rate

- d) Initialize weights

16. Question: In which scenario is an RNN likely to struggle due to its sequential nature?

**- a) Image classification**

- b) Speech recognition

- c) Text generation

- d) Random number generation

17. Question: What is the purpose of Word Embeddings in NLP?

- a) Syntax analysis

**- b) Semantic representation of words**

- c) Document classification

- d) Named Entity Recognition

18. Question: What is the primary objective of sentiment analysis in NLP?

- a) Identifying named entities

**- b) Classifying emotions expressed in text**

- c) Extracting key phrases

- d) Tokenizing sentences

19. Question: What is the role of the learning rate in training a neural network?

**- a) Control the speed of convergence**

- b) Initialize weights

- c) Define the number of layers

- d) Determine the activation function

20. Question: What is the purpose of the bias term in a neural network?

- a) Introduce non-linearity

- b) Regularize the network

**- c) Adjust the output of each neuron**

- d) Initialize weights