

1. In a Deep Learning Network in order to get the correct value of weight and bias for each neuron we must search every possible combination of weights and biases till we get the best result. False
2. CNN is mostly used when there is an unstructured data
3. Which neural network has only one hidden layer between the input and output Shallow neural network
4. Input layer in which we give input to our model.
5. The input from Input layer is then feed into the hidden layer
6. Max pooling is a pooling operation that selects the maximum element from the region of the feature map covered by the filter.
7. RNN Stands for Recurrent Neural Network
8. The main and most important feature of RNN is Hidden state
9. Exploding Gradients occurs when the gradients become too large due to back-propagation
10. Vanishing Gradients occurs when the gradients become very small and tend towards zero.
11. In RNN Each unit has an internal state which is called the Hidden state of the unit.
12. The network that involves backward links from output to the input and hidden layers is called Recurrent neural network
13. A recurrent neural network (RNN) is a type of artificial neural network which uses sequential data or time series data.
14. Convolution Layer computes the output volume by computing dot product between all filters and image patch
15. An autoencoder is an unsupervised learning technique for neural networks that learns efficient data representations (encoding) by training the network to ignore signal “noise.”
16. Autoencoders are trained without supervision. True
17. Autoencoders cannot be used for Dimensionality Reduction.  
False
18. Autoencoders are trained using Back Propagation
19. How many layers are there in Autoencoder 3
20. Which deep learning technique is used for unsupervised feature learning Autoencoders
21. What is the primary purpose of a Convolutional Neural Network (CNN)?  
a) Natural language processing  
b) Image classification and computer vision  
c) Speech recognition  
d) Stock market prediction  
Answer: b) Image classification and computer vision
22. In a CNN, what is a convolutional layer responsible for?  
a) Fully connecting neurons  
b) Applying convolutional filters to input data  
c) Pooling and subsampling  
d) Activation functions  
Answer: b) Applying convolutional filters to input data
23. Which layer in a CNN is used for reducing the spatial dimensions of the feature maps?

- a) Convolutional layer
- b) Activation layer
- c) Pooling layer
- d) Fully connected layer

Answer: c) Pooling layer

24. What is the purpose of padding in convolutional layers?

- a) Enhancing the image resolution
- b) Preventing overfitting
- c) Maintaining the spatial dimensions of the input
- d) Increasing the number of filters

Answer: c) Maintaining the spatial dimensions of the input

25. Which activation function is commonly used in CNNs to introduce non-linearity?

- a) Sigmoid
- b) ReLU (Rectified Linear Unit)
- c) Tanh (Hyperbolic Tangent)
- d) Leaky ReLU

Answer: b) ReLU (Rectified Linear Unit)

26. What is a typical use case for a CNN with multiple convolutional layers?

- a) Image classification with complex patterns
- b) Sentiment analysis
- c) Speech synthesis
- d) Time series prediction

Answer: a) Image classification with complex patterns

27. What is the purpose of the fully connected layers in a CNN?

- a) Applying convolutional filters
- b) Feature extraction
- c) Generating predictions or classifications
- d) Pooling and subsampling

Answer: c) Generating predictions or classifications

28. What is the primary advantage of using Recurrent Neural Networks (RNNs) in deep learning?

- A. Parallel processing of input sequences
- B. Ability to handle variable-length sequences
- C. Extremely fast training times
- D. Better performance on image classification tasks

Answer: B

29. Which problem is often associated with traditional vanilla RNNs, making it challenging to capture long-term dependencies?

- A. Overfitting
- B. Vanishing gradient problem
- C. Exploding gradient problem
- D. Underfitting

Answer: B

30. What is LSTM short for in the context of RNNs?

- A. Long Short-Term Memory
- B. Limited Sequential Time Memory
- C. Linear Short-Term Memory
- D. Long Sequential Time Memory

Answer: A

31. Which operation is performed at each time step in an RNN to update the hidden state and make predictions?

- A. Convolution
- B. Element-wise multiplication
- C. Matrix multiplication
- D. Pooling

Answer: C

32. In which type of tasks are RNNs commonly used?

- A. Image classification
- B. Natural language processing (NLP)
- C. Audio signal processing
- D. All of the above

Answer: B

33. What is the primary purpose of an autoencoder in deep learning?

- a) Classification
- b) Dimensionality reduction
- c) Reinforcement learning
- d) Data augmentation

Answer: b) Dimensionality reduction

34. Which layer of an autoencoder is responsible for encoding the input data into a lower-dimensional representation?

- a) Input layer
- b) Output layer

- c) Hidden layer
- d) Bottleneck layer

Answer: c) Hidden layer

35. In an autoencoder, what is the typical activation function used in the bottleneck (hidden) layer?

- a) ReLU (Rectified Linear Unit)
- b) Sigmoid
- c) Tanh (Hyperbolic Tangent)
- d) Softmax

Answer: a) ReLU (Rectified Linear Unit)

36. What is the purpose of the decoder in an autoencoder?

- a) To reduce model complexity
- b) To increase the number of hidden layers
- c) To map the encoded representation back to the original input space
- d) To compute the loss function

Answer: c) To map the encoded representation back to the original input space

37. Which type of autoencoder is specifically designed to handle image data and is capable of image generation?

- a) Denoising Autoencoder
- b) Variational Autoencoder (VAE)
- c) Sparse Autoencoder
- d) Contractive Autoencoder

Answer: b) Variational Autoencoder (VAE)

38. What technique can be used to prevent autoencoders from simply learning to copy the input to the output without compression?

- a) Adding more hidden layers
- b) Using a smaller bottleneck layer
- c) Applying dropout regularization
- d) Using batch normalization

Answer: c) Applying dropout regularization

39. Which loss function is commonly used for training autoencoders that are designed for real-valued data?

- a) Cross-entropy loss
- b) Mean Absolute Error (MAE) loss
- c) Mean Squared Error (MSE) loss
- d) KL-Divergence loss

Answer: c) Mean Squared Error (MSE) loss

40. In the context of autoencoders, what is the term "latent space" referring to?

- a) The space where data is stored before encoding
- b) The space where the decoder generates new data
- c) The high-dimensional space of the input data
- d) The lower-dimensional space where encoded representations are located

Answer: d) The lower-dimensional space where encoded representations are located