TE SL II Oral Question Bank

1. What is an artificial neural network?
2. What is bias in a neural network?
3. Can you explain the structure of a simple neuron model, the Perceptron?
4. What are activation functions, and why are they important?
5. What is the difference between activation function and threshold function?
6. What is the McCulloch-Pitts rule?
7. What is the McCulloch-Pitts model of logic gates?
8. What are the 7 logic gates?
9. What is the McCulloch Pitt model and function?
10. What is the difference between McCulloch-Pitts and Perceptron?
11. What are the types of McCulloch-Pitts neural model?
12. What is Delta learning rule?
13. What is adaline and madaline?
14. Is CNN a perceptron?
15. What is the difference between perceptron and Adaline?
16. What is Widrow-Hoff's rule?
17. What is the difference between hebb and delta rule?
18. What is ReLU in CNN?
19. What is the Hebbs rule?
20. What is the Hebbian formula?
21. What is an example of linear separability?
22. What is non linear separability in neural network?
23. Why is linear separability important?
24. How to test for linear separability?
25. How does backpropagation work in training neural networks?
26. What is the difference between supervised and unsupervised learning in the context of ANNs?
27. How do you choose the number of hidden layers and neurons in a neural network?
28. What are convolutional neural networks (CNNs) and where are they applied?
29. Explain the concept of pooling in CNNs and its benefits.
30. What is overfitting in CNN?
31. Which is faster CNN or RNN?
32. Which is best CNN or R-CNN?
33. What is a recurrent neural network (RNN) and how does it differ from a CNN?
34. Why is RNN preferred over CNN?
35. Discuss Long Short-Term Memory networks (LSTMs) and their advantages over traditional RNNs.
36. What is the full form of RNN?
37. Why LSTM is better than CNN?
38. What are optimizers in neural network?
39. How do dropout techniques help in preventing overfitting in neural networks?
40. What is the role of the optimizer in neural network training?
41. How does batch size impact the training process of a neural network?
42. What are hyperparameters in a neural network, and how do you optimize them?
43. Explain the use of cross-validation in neural network training.
44. What are autoencoders and what are they used for?

45. Can you describe the use of neural networks in image recognition?
46. How are neural networks applied in natural language processing?
47. . Discuss the use of neural networks in predictive analytics.
48. How do reinforcement learning and neural networks interact?
49. What is the vanishing gradient problem, and how can it be addressed?
50. Explain gradient descent and its variants like SGD, Momentum, and Adam.
51. What is Adam's algorithm?
52. What is the difference between RMSprop and Adam Optimizer?
53. What is the difference between downscaling and upscaling?
54. What are generative adversarial networks (GANs)?
55. How do you assess the performance of a neural network model?
56. What is meant by bidirectional associative memory?
57. What are the different types of BAM?
58. Which activation function is used in BAM?
59. Is BAM supervised or unsupervised?
60. What is the importance of data normalization in training neural networks?
61. Can you describe some common challenges in training neural networks?
62. What are the ethical considerations when implementing neural networks?
63. How do transfer learning and fine-tuning work in the context of deep learning?
64. What tools and libraries are commonly used for building neural networks?
65. Explain the concept of feature extraction in the context of deep learning.
66. How are biases introduced into neural networks?
67. What is the role of weight initialization in neural network performance?
68. Can you explain the concept of momentum in neural network optimization?
69. What is ART in neural networks?
70. What is the difference between ART 1 and ART 2?
71. How does a neural network learn non-linear decision boundaries?
72. What is the importance of learning rate in neural network training?
73. Discuss the impact of architecture choices on the performance of neural networks.
74. What are the differences between deep learning and traditional machine learning?
75. How do attention mechanisms work in neural networks?
76. What is the significance of residual networks (ResNets)?
77. Explain the concept of data augmentation in training neural networks.
78. How do neural networks handle time-series data?
79. What are the limitations of neural networks?
80. How can neural networks be used in recommendation systems?
81. Discuss the role of neural networks in autonomous driving systems.
82. What are the advantages of using neural networks for fraud detection?
83. How are neural networks implemented for speech recognition?
84. Explain the concept of pruning in the context of optimizing neural networks.
85. What are Siamese networks and how are they used?
86. How does batch normalization help in training deep neural networks?
87. Discuss the future trends in neural network research and applications.