2-Mark Questions:

1. What is Principal Component Analysis (PCA)?
2. What is the main difference between PCA and Linear Discriminant Analysis (LDA)?
3. What is a manifold in machine learning?
4. Define metric learning.
5. What is the purpose of an autoencoder in machine learning?
6. How do autoencoders help in dimensionality reduction?
7. What is the significance of the latent space in autoencoders?
8. What is a convolutional neural network (ConvNet)?
9. Describe the AlexNet architecture.
10. What is the VGG architecture known for?
11. How does the Inception architecture differ from traditional CNNs?
12. What is the ResNet architecture and its key advantage?
13. Why is weight initialization important in training ConvNets?
14. What is batch normalization and how does it help in training ConvNets?
15. What are hyperparameters in ConvNet training, and why are they important?
16. What is the role of convolutional layers in a ConvNet?
17. What is the role of pooling layers in a ConvNet?
18. What are fully connected layers in a ConvNet?
19. What is the difference between softmax and sigmoid activation functions?
20. Explain how data augmentation helps in ConvNet training.

10-Mark Questions:

1. Discuss the concept of PCA (Principal Component Analysis) and its application in dimensionality reduction.
2. Compare and contrast PCA and LDA (Linear Discriminant Analysis).
3. Explain the architecture and key features of AlexNet.
4. Describe the architecture of the VGG network and its impact on deep learning.
5. Discuss the significance of residual connections in ResNet architecture.
6. Explain how batch normalization works and its advantages in ConvNet training.
7. What are the challenges of training deep neural networks and how can they be overcome?
8. Discuss the process of weight initialization in ConvNet training.
9. How does hyperparameter optimization impact ConvNet performance?
10. Explain the advantages and disadvantages of using Inception architecture.