

END SEMESTER EXAMINATION – MARCH 2025**SEMESTER 8 : INTEGRATED M. Sc. PROGRAMME IN COMPUTER SCIENCE – DATA SCIENCE****COURSE: 21UP8CRMCP25 - ADVANCED DEEP LEARNING TECHNIQUES***(For Regular 2021 Admission)*

Time: Three Hours

Max. Weightage: 30

PART A**Answer any 8**

1. State the purpose of convolution layer in CNN. List the minimum number of layers required to implement a classification task by CNN. (A)
2. List any five applications of Restricted Boltzmann Machine. (An)
3. Define the term negative transfer. State the conditions for negative transfer to occur. (U)
4. Define the function to calculate the forward and backward hidden states of a BiRNN. (A)
5. Differentiate between high-level features and low-level features (of images) with an example for each. (U)
6. List any five deep learning-based image segmentation models. (U)
7. State the use of GAN. Define the loss functions of the generator and discriminator models. (A)
8. Define width and depth of a neural network with a sample architecture. (U)
9. Draw the unfolding architectural diagram of a recurrent neural network. (Cr)
10. List any five features of AlexNet model. (U)

(1 x 8 = 8 Weight)**PART B****Answer any 6**

11. List and explain any 10 cases where transfer learning is used in various industries. (An)
12. Create a neural network model using CNN for image classification. (Cr)
13. Define image classification. Explain, with implementation, any one model for image classification. (Cr)
14. Discuss briefly, the working approach in transfer learning. (An)
15. Define artificial neural network. Explain the various types of neural networks. (R)
16. With a numerical example, explain sequence learning using GRU networks. (E)
17. Create a neural network that implements transfer learning. (Cr)
18. Explain the steps involved in sequence learning by a Recurrent Neural Network model. (An)

(2 x 6 = 12 Weight)

PART C

Answer any 2

19. Create a model that attempts to reconstruct images using undercomplete autoencoder. (Cr)
20. Prepare a detailed note on Long-Short Term Memory model. Create a model that implements the same.
21. Prepare a detailed note on contractive autoencoders. (An)
22. Differentiate between RNN and BiRNN. Explain with an implementation of both the models.
(5 x 2 = 10 Weight)