

QP CODE: 26801744



Reg No :

Name :

INTEGRATED M.Sc. DEGREE EXAMINATION, APRIL 2026

Eight Semester

CORE - ICSC8CR1 - ADVANCED DEEP LEARNING TECHNIQUES

INTEGRATED M.Sc. COMPUTER SCIENCE-ARTIFICIAL INTELLIGENCE AND MACHINE
LEARNING, INTEGRATED M.Sc. COMPUTER SCIENCE-DATA SCIENCE

2020 Admission Onwards

B0D4BC28

Time: 3 Hours

Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

Weight 1 each.

1. Define the Rectified Linear Unit (ReLU) activation function.
2. Describe the Exponential ReLU (EReLU) activation function and its benefits.
3. Compare and contrast unsupervised and supervised learning methods.
4. What is the role of padding in convolutional layers of a CNN? How does it affect the size of the output feature maps?
5. How does batch size impact the training process of Convolutional Neural Networks (CNNs)?
6. Explain the concept of domain adaptation in transfer learning.
7. Explain the concept of frozen layers in fine-tuning deep learning models.
8. How does the forget gate in an LSTM cell contribute to the model's ability to retain or discard information over time?
9. Describe the mechanism of relative position embeddings in transformers and their benefits.
10. Explain the concept of mode collapse in GANs and its implications.

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

Weight 2 each.

11. Describe autoencoders as a method for unsupervised learning. How are they trained?
12. Describe the use of CNNs in satellite imagery analysis and remote sensing applications.





13. What is transfer learning in the context of deep learning? Explain its significance in model training.
14. Explain the concept of dense connectivity in DenseNet. How does it facilitate feature reuse and gradient flow?
15. Discuss the concept of Contractive Autoencoders. How do they enforce robust representations in the latent space?
16. Explain the concept of teacher forcing in sequence-to-sequence learning.
17. Explain the architecture of Long Short-Term Memory (LSTM) networks and their advantage over traditional recurrent neural networks.
18. Describe the difference between object detection and image classification tasks.

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

Weight 5 each.

19. Compare and contrast generative adversarial networks (GANs) and variational autoencoders (VAEs) in terms of their architecture, training objectives, and applications.
20. Evaluate the advantages and limitations of PixelNet compared to other state-of-the-art segmentation models (e.g., U-Net, Mask R-CNN).
21. Illustrate the application of RNNs in time series prediction. Provide a detailed example including data preprocessing, model architecture selection, and evaluation metrics.
22. Evaluate the interpretability of predictions made by LSTM classifiers compared to other deep learning models.

(2×5=10 weightage)

