Roll.No. | 23PCSCT3009

SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)
(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai - 600 044.
M.Sc.Computer Science - END SEMESTER EXAMINATIONS - NOVEMBER 2025
SEMESTER - III

23PCSCT3009 - Deep Learning Techniques

Total Duration : 2 Hrs. 30 Mins. Total Marks : 60

Section B

Answer any **SIX** questions $(6 \times 5 = 30$ Marks)

1. What is data augmentation and why is it important in training deep learning models?
2. Explain the vanishing gradient problem. How does it impact the training of deep networks.
3. Briefly describe the difference between traditional machine learning and deep learning.
4. List three types of activation functions used in neural networks and mention their typical use cases.
5. Define and distinguish between supervised and unsupervised deep learning tasks.
6. What is dropout in deep learning.? How does it help prevent over fitting?
7. Explain the difference between training loss and validation loss in model evaluation.
8. Explain BiDirectional Associate Memory.

Section C

I - Answer any **TWO** questions $(2 \times 10 = 20$ Marks)

9. Discuss the architecture, working principle and applications of Convolutional Neural Networks (CNNs).
10. Provide an overview of Recurrent Neural Networks (RNNs) and explain how they are used in time series prediction or language modelling.
11. Explain the main regularization techniques used in deep learning (such as L1/L2 regularization, dropout, early stopping), providing mathematical expressions and example use cases.
12. Describe the learning process in neural networks, including forward pass, loss computation, back propagation and optimization.

Contd...

Roll.No. | | **23PCSCT3009**

SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)
(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai - 600 044.
M.Sc.Computer Science - END SEMESTER EXAMINATIONS - NOVEMBER 2025
SEMESTER - III
23PCSCT3009 - Deep Learning Techniques

Total Duration : 2 Hrs. 30 Mins. Total Marks : 60

Section B

Answer any **SIX** questions $(6 \times 5 = 30$ Marks)

1. What is data augmentation and why is it important in training deep learning models?
2. Explain the vanishing gradient problem. How does it impact the training of deep networks.
3. Briefly describe the difference between traditional machine learning and deep learning.
4. List three types of activation functions used in neural networks and mention their typical use cases.
5. Define and distinguish between supervised and unsupervised deep learning tasks.
6. What is dropout in deep learning.? How does it help prevent over fitting?
7. Explain the difference between training loss and validation loss in model evaluation.
8. Explain BiDirectional Associate Memory.

Section C

I - Answer any **TWO** questions $(2 \times 10 = 20$ Marks)

9. Discuss the architecture, working principle and applications of Convolutional Neural Networks (CNNs).
10. Provide an overview of Recurrent Neural Networks (RNNs) and explain how they are used in time series prediction or language modelling.
11. Explain the main regularization techniques used in deep learning (such as L1/L2 regularization, dropout, early stopping), providing mathematical expressions and example use cases.
12. Describe the learning process in neural networks, including forward pass, loss computation, back propagation and optimization.

Contd...