Semester: VII	Department of AI & ML	AY: 2026-27
Course Code: BAI701	Course Name: Deep Learning and Reinforcement Learning	

Question Bank

Q.	Module-01	M	L	C
1	Explain the concept of Shallow Learning and Deep Learning. Compare their architectures, working principles and applications.	10	L2	CO1
2	Define Deep Learning. Explain the need for Deep Learning and discuss its advantages over traditional machine learning techniques.	10	L2	CO1
3	Explain the working principles of a Deep Learning model with a neat block diagram.	10	L2	CO1
4	Discuss the major challenges involved in implementing Deep Learning techniques.	8	L2	CO1
5	Explain how learning differs from pure optimization in the context of Deep Learning.	8	L2	CO1
6	Discuss the various challenges encountered during Neural Network Optimization.	8	L2	CO1
7	Explain the evolution of Deep Learning and its significance in solving real-world problems.	8	L2	CO1
8	Compare Shallow Learning and Deep Learning with suitable examples and applications.	10	L2	CO1
9	Explain the different stages involved in training a Deep Learning model.	10	L2	CO1
10	Discuss the limitations and challenges of Deep Learning in practical applications.	10	L2	CO1
	Module-02			
11	Explain the concept of Supervised Deep Learning and discuss its applications.	8	L2	CO2
12	What is a Convolutional Neural Network (CNN)? Explain its architecture with a neat diagram.	10	L2	CO2
13	Explain the evolution of Convolutional Neural Networks and discuss their significance in image processing.	8	L2	CO2
14	Describe the different layers of CNN architecture and explain their functions.	10	L2	CO2
15	Explain the convolution operation in CNN with a suitable example.	10	L2	CO2
16	Explain the role of filters and feature maps in Convolutional Neural Networks.	10	L2	CO2
17	Describe the working of convolution and pooling layers with suitable diagrams.	8	L2	CO2
18	Explain how CNNs perform feature extraction and classification of images.	8	L2	CO2
19	Discuss the advantages and limitations of Convolutional Neural Networks.	8	L2	CO2

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20	Explain the complete working of a CNN-based image classification system with a neat architecture diagram.	8	L2	CO2
	Module-03			
21	Explain the process of training Convolutional Neural Networks in detail.	10	L2	CO3
22	Describe the Gradient Descent optimization technique and explain its working with a suitable example.	10	L2	CO3
23	Discuss the major challenges encountered during the training of Deep Neural Networks.	10	L2	CO3
24	Explain the architecture and working of LeNet-5 with a neat diagram.	10	L2	CO3
25	Compare LeNet-5 and AlexNet architectures based on their layers, features and applications.	10	L2	CO3
26	Explain the role of optimization techniques in improving the performance of Deep Learning networks.	8	L2	CO3
27	Discuss the problems associated with training deep networks and explain suitable approaches to overcome them.	8	L2	CO3
28	Explain the complete training process of a CNN, highlighting optimization techniques and major training challenges.	10	L2	CO3
29	Explain different Gradient Descent-based optimization techniques used for training Deep Learning networks.	10	L2	CO3
30	Explain the architecture and working of AlexNet with a neat diagram.	10	L2	CO3
	Module-04			
31	Explain the concept of Recurrent Neural Networks (RNNs) with a neat architecture diagram.	10	L2	CO4
32	What is an unfolded computational graph? Explain the unfolding of computational graphs in RNNs.	10	L2	CO4
33	Explain the architecture and working of Bidirectional Recurrent Neural Networks.	10	L2	CO4
34	Describe Deep Recurrent Networks and explain their architecture and applications.	10	L2	CO4
35	Differentiate between Recurrent Neural Networks and Recursive Neural Networks.	10	L2	CO4
36	Explain the architecture and working of Long Short-Term Memory (LSTM) networks with a neat diagram.	8	L2	CO4
37	Discuss the different gates used in LSTM networks and explain their functions.	8	L2	CO4
38	Explain Gated Recurrent Networks and discuss their significance in sequence modelling.	10	L2	CO4
39	Compare RNN, Bidirectional RNN and LSTM architectures.	10	L2	CO4
40	Explain the applications of Recurrent and Recursive Neural Networks in Natural Language Processing and time-series prediction.	10	L2	CO4
	Module-05			
41	Define Deep Reinforcement Learning. Explain its basic concepts and applications.	10	L2	CO4

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42	Explain the fundamental framework of Reinforcement Learning with a neat block diagram.	10	L2	CO4
43	Describe the working principle of Multi-Armed Bandit algorithms with a suitable example.	10	L2	CO4
44	Explain the concept of Stateless Algorithms in Reinforcement Learning.	10	L2	CO4
45	Discuss the Multi-Armed Bandit problem and explain its significance in decision-making.	10	L2	CO4
46	Explain the basic framework of Reinforcement Learning, highlighting the roles of agent, environment, action and reward.	8	L2	CO4
47	Differentiate between Supervised Learning and Reinforcement Learning.	8	L2	CO4
48	Explain the exploration and exploitation dilemma in Multi-Armed Bandit algorithms.	10	L2	CO4
49	Discuss the applications of Deep Reinforcement Learning in real-world scenarios.	10	L2	CO4
50	Explain a suitable case study demonstrating the application of Reinforcement Learning, including the problem, approach and outcome.	10	L2	CO4

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