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CBCS SCHEME

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BCS714A

Seventh Semester B.E./B.Tech. Degree Examination, June/July 2026
Deep Learning

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	Explain the basic principles of biological and machine vision and how they differ in Deep Learning.	10	L2	CO1
	b.	Interpret the concept of feature engineering and describe its importance in traditional machine learning approach.	10	L3	CO1
		OR			
Q.2	a.	Explain how deep learning is used in natural language processing application.	10	L2	CO1
	b.	Explain how deep learning models reduce the need for manual feature extraction methods like one-hot encoding in NLP.	10	L2	CO1
		Module – 2			
Q.3	a.	Describe the purpose of regularization and explain how L2 regularization works compared to L1.	10	L2	CO2
	b.	Describe the concept of early stopping in model training and explain how it works using an algorithm approaches.	10	L2	CO2
		OR			
Q.4	a.	Explain the concept of stochastic Gradient – Descent and how it differs from traditional Gradient Descent.	10	L2	CO2
	b.	Explain how AdaGrad and RMSprop adjust the learning rate during training and describe the key difference between their approaches.	10	L2	CO2
		Module – 3			
Q.5	a.	Describe how the convolution operation works in a convolution Neural Network and explain its purpose in feature extraction.	10	L2	CO3

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	b.	Apply your understanding of sparse interactions, parameter sharing, and equivariant representations to explain how convolution improves the performance of image recognition models.	10	L3	CO
		OR			
Q.6	a.	Describe the main components of a CNN layer and explain how each one contributes to processing input data.	10	L2	CO3
	b.	Apply your understanding of CNNs to identify and handle different input data formats in a real – world application.	10	L3	CO3
		Module – 4			
Q.7	a.	Explain the concept of a Bidirectional Recurrent Neural Network and describe how it processes sequential data differently from a standard RNN.	10	L2	CO4
	b.	Explain how deep recurrent network can be used to capture complex temporal dependencies compared to shallow RNNs.	10	L2	CO4
		OR			
Q.8	a.	Apply your understanding of Recursive Neural Networks to design model relationship in tree structural data.	10	L3	CO4
	b.	Explain the components of an LSTM recurrent network and describe how data flows through the networks.	10	L2	CO4
		Module – 5			
Q.9	a.	Explain the common steps involved in preprocessing natural language data.	10	L3	CO5
	b.	How would you use word embedding methods on a cleaned text corpus, and why is it important to carefully select optional parameters during the embedding.	10	L2	CO5
		OR			
Q.10	a.	Summarize the significance of the Area under the ROC curve in model evaluation.	10	L2	CO5
	b.	Apply your knowledge of sequential neural networks to design solutions using two different architectures, explaining their strengths in handling sequence data.	10	L3	CO5

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