Program:	**T.Y.B.Sc CS**	**Semester:**	**V**	**Program Code:**	**UGCS02**
Course:	**DS_Deep Learning**			**Course Code:**	**NUCS512**

Duration: 1 Hour **Examination Pattern:** NEP-Autonomous - External **Max. Marks:** 30

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Draw neat diagrams wherever necessary.
4. CO (Course Outcome), KL (Knowledge Level).

Examination:

REGULAR

Q. 1		**Attempt any TWO of the following.**	[10]	CO's	KL's
	(a)	Define deep learning and list applications of deep learning.		CO1	L1
	(b)	Differentiate between machine learning and deep learning based on their key characteristics.		CO1	L2
	(c)	Apply the concept of an artificial neural network by designing a suitable ann architecture and identify its input, hidden, and output layers.		CO1	L3
	(d)	Describe the steps involved in forward propagation and backpropagation in a neural network.		CO3	L2
Q. 2		**Attempt any TWO of the following.**	[10]	CO's	KL's
	(a)	Define a convolutional neural network and list its main components.		CO2	L1
	(b)	Explain how a convolutional layer processes an input and extracts features in a neural network.		CO2	L2
	(c)	Explain the architecture of an autoencoder with the help of a neat, labeled diagram.		CO4	L2
	(d)	Analyze the role of gradient descent in training a neural network and examine how changes in model parameters affect the minimization of the loss function.		CO3	L4
Q. 3		**Attempt any TWO of the following.**	[10]	CO's	KL's
	(a)	Evaluate the suitability of different activation functions used in deep learning		CO3	L5
	(b)	Analyze the key features, advantages, and limitations of TensorFlow, Keras, and PyTorch, and compare their suitability for different deep learning applications.		CO4	L4
	(c)	Evaluate the effectiveness of support vector machines for classification problems and justify the factors that influence their performance.		CO3	L5
	(d)	Analyze the differences among recurrent neural networks, gated recurrent units, and long short-term memory networks based on their architecture, memory mechanisms, and handling of sequential data.		CO2	L4

- - X - - X - -

6 2 1 3 3 4