

K. J. Somaiya Institute of Technology, Sion, Mumbai-22
(Autonomous College Affiliated to University of Mumbai)

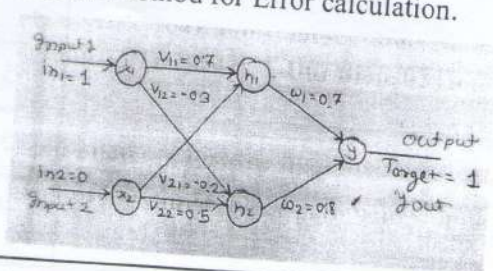
May-June 20__ / Nov - Dec 2024 July-Aug 20__ / Feb- March 20__
(B. Tech / M. Tech.) Program: EXTC Scheme I/II/III/IV IV
Regular/ Supplementary Examination: FY/SY/TY/LY Semester: I/II/III/IV/V/VI/VII/VIII
Course Code: EXDLC7041 and Course Name: Neural Networks and Deep Learning
Date of Exam: 23/11/2024 Duration: 02 Hours 30 min. Max. Marks: 60

Instructions:

- (1) All questions are compulsory.
- (2) Draw neat diagrams wherever applicable.
- (3) Assume suitable data, if necessary.

Q. No.	Question	Max. Marks	CO	BT level
Q 1	Solve any two questions out of three: (05 marks each)	10		
a)	Implement X-OR Function using McCulloch - Pitts neurons (Consider Binary Data)	5	1	U
b)	What is the significance of activation function in neural networks?	5	2	U
c)	Explain overfitting and under fitting with a suitable example.	5	3	U
Q 2	Solve any two questions out of three: (05 marks each)	10		
a)	Explain the Vanishing Gradients Problem. Explain how to manipulate the training algorithm to overcome it.	5	4	U
b)	Explain the use of the FC layer and Pooling Layer in CNN	5	5	U
c)	Explain the over complete and under complete auto encoders also give the difference between them.	5	6	U
Q.3	Solve any two questions out of three. (10 marks each)	20		
a)	Describe Generative Adversarial Network (GAN). Explain its architecture	10	6	U
b)	State and prove perceptron Converge Theorem.	10	1	U

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c)	What are hyper-parameters? List the hyper-parameters of deep. Explain the impact of any three hyper-parameters on the deep neural network.	10	4	U
Q.4	Solve any two questions out of three. (10 marks each)	20		
a)	What is Regularization? Explain Dropout, Data Augmentation, L1 and L2 Regulation Strategy.	10	3	AP
b)	Find the New Weights of the network shown in Figure below using the Gradient Descent Method for Error calculation. 	10	2	AP
c)	What will be the dimensions of the output activation if a convolution filter of dimension 3 x 3 is applied over an input image of dimension 32 x 32 with stride = 2 and no padding?	10	5	AP