

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

Subject Code: 1UEXDLC7041

Subject Name: Neural Networks and Deep Learning

Date: _____

01-06-2023

~~May / June 2023~~

(B.Tech / ~~M.Tech.~~) Electronics and Telecommunication Engineering

Examination: ~~FY/ISY/TY/LY~~ Semester: ~~I/II/III/IV/V/VI/VII/VIII~~

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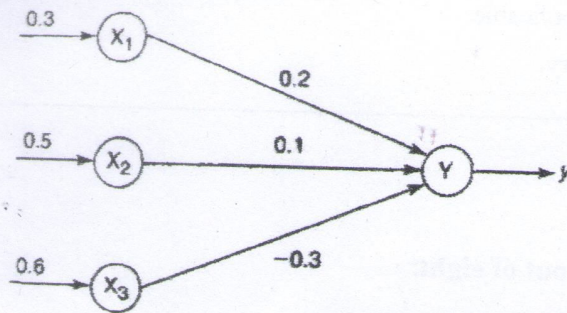
Duration: 2.5 Hours Max. Marks: 60

Instructions:

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

	Max. Marks	CO	BT level
Q 1 Solve any six questions out of eight:	12		
i) What is the difference between biological neurons and artificial neurons?	2	1	U
ii) What are hyperparameters? Why they named as hyperparameters?	2	4	U
iii) What is fully connected layer?	2	5	U
iv) Explain the problem of vanishing gradient.	2	3	U
v) Write application of Neural Network in image processing	2	6	R
vi) What will be the dimensions of the output activation if a convolution filter of dimension 5×5 is applied over an input image of dimension 32×32 with stride = 2 and no padding.	2	5	A
vii) What is classification decision boundary?	2	6	U
viii) State and explain different types of activation functions.	2	2	U
Q.2 Solve any four questions out of six.	16		
i) State and prove perceptron Converge Theorem	4	1	U, AP

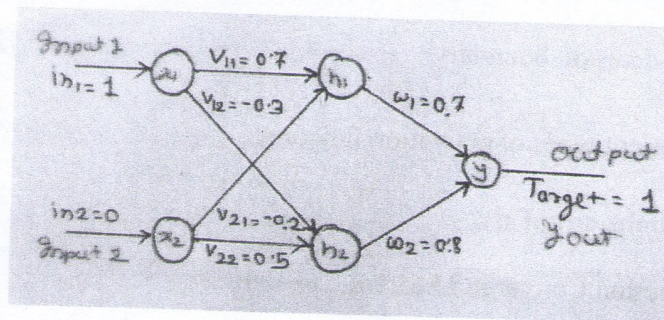
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|---|---|---------|--------|
| ii) What is Regularization? Explain Dropout. | 4 | 3 | U, AP |
| iii) What is the exploding gradient problem while using back propagation technique? | 4 | 4 | U |
| iv) Describe greedy layer-wise training? | 4 | 5 | U |
| v) Find the output of the neuron Y for the network shown in figure below using binary sigmoid activation function | 4 | 2, 4, 5 | AP, AN |



- | | | | |
|-------------------------------------|---|------|---|
| vi) How LSTM is different than RNN? | 4 | 4, 5 | U |
|-------------------------------------|---|------|---|

Q.3 Solve any two questions out of three. 16

- | | | | |
|---|---|---|-------|
| i) Model accuracy or Model performance, which one will you prefer and interpret why? | 8 | 4 | U |
| ii) Distinguish the contrast between Data Augmentation, L1 and L2 Regulation Strategy. | 8 | 2 | U, AN |
| iii) Find New Weights of the network shown in figure below using the Gradient Descent Method for Error calculation. (Solve only one Iteration). | | | |



8 1,2,3 AP

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