JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2024

B.Tech-VII Semester (CSE/IT/ECE)

COURSE CODE (CREDITS): 19B1WCI738(3)　　　　　　MAX. MARKS: 25
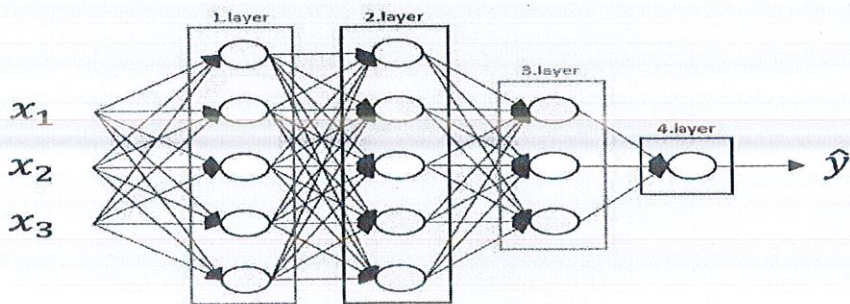
COURSE NAME: Introduction to Deep Learning

COURSE INSTRUCTORS: VKS, KLK　　　　　　MAX. TIME: 1 Hour 30 Minutes

Note: (a) *All questions are compulsory.*

(b) *The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems.*

Q.No	Question	CO	Marks
Q1.	a) Suppose an input image has been converted into a matrix of size 256 x 256 and a kernel/filter of size 3X3 with a stride of 1 and padding of 0 is convolved over this image. What will be the size of the convoluted matrix?	CO-2	[2.5]
	b) Suppose in a layer you have an input volume of size 32x32x3, 10 5x5 kernels with a stride of 1 and padding of 2. Find out the number of parameters in this layer?		[2.5]
Q2.	Give mathematical equations of Adam optimizer. Explain parameters in it, and also explain awhy bias correction is required?	CO-4	[5]
Q3.	a) Describe the following about a ReLU function. 1: Mathematical expression 2: domain 3: range 4: graph 5: derivative and its graph.	CO-3	[2.5]
	b) Show that with a single neuron XOR problem cannot be solved?		[2.5]
Q4.	Given an ANN below, Allocate weights to the connections of layer 1 & layer 2 as per HE uniform distribution based weight initialization. Show the mean and variance of your allocated weights.	CO-2	[5]

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Q5.	For the network given above, find out the total number of trainable and non trainable parameters in each of the layers, if batch normalization is used. What is the purpose of non trainable parameters and how they are obtained from the data?	CO-5	[5]