Hall Ticket Number:

Code No. : 17654 (A) N/O

VASAVI COLLEGE OF ENGINEERING *(AUTONOMOUS)*, HYDERABAD

Accredited by NAAC with A++ Grade

B.E. (I.T.) VII-Semester Main & Backlog Examinations, Dec.-23/Jan.-24

Neural Networks and Deep Learning (PE-III)

Time: **3 hours** Max. Marks: **60**

*Note: Answer all questions from **Part-A** and any **FIVE** from **Part-B***

Part-A (10 × 2 = 20 Marks)

Q. No.	Stem of the question	M	L	CO	PO
1.	Define mathematical model of artificial neuron.	2	1	1	1
2.	What is the significance of bias in activation function?	2	1	1	1
3.	Differentiate bagging and boosting approach.	2	2	2	1
4.	What are loss functions used in neural network training?	2	1	2	1
5.	What is padding? Why do we need padding?	2	1	3	1
6.	Explain depth wise convolution operation.	2	2	3	1
7.	What are limitations of Recurrent Neural Networks?	2	1	4	1
8.	Draw the block diagram of LSTM.	2	1	4	1
9.	What are the important packages for Deep learning implementation using Python?	2	1	5	1
10.	Define the dense layer using PyTorch library.	2	1	5	1
	Part-B (5 × 8 = 40 Marks)				
11. a)	Explain the steps in back propagation algorithm for a 3 layer neural network.	4	2	1	1
b)	Explain the properties of loss function used in back propagation algorithm.	4	2	1	1
12. a)	Explain the SGD algorithm.	4	2	2	1
b)	Explain the main idea behind boosting in ensemble learning.	4	2	2	1
13. a)	Analyze AlexNet and GoogleNet CNN architectures.	5	3	3	1
b)	What is the need of Softmax layer in NNs? Explain.	3	4	3	1
14. a)	Explain the variants of RNNs.	4	2	4	1
b)	What are the advantages of GRUs over LSTM?	4	2	4	1

Contd... 2

15. a)	Write a program for binary classification problem using CNN model with 3 convolution layers with 3*3 filter, 3 pooling layers with 2*2 filter, 3 Relu layers followed by two stacked fully connected layers?	5	3	5	1
b)	Computer the total number of trainable parameters in above model. [given in 15 (a)]	3	3	5	1
16. a)	Analyze the design issues of feed forward neural architectures?	4	3	1	1
b)	How does random forests handle feature selection and reduce overfitting?	4	3	2	2
17.	Answer any ***two*** of the following:				
a)	Evaluate the size of a feature map, given that the image size is 32x32, filter size is 5x5, stride is 1 and 2 respectively with no padding.	4	3	3	1
b)	Explain the encoder and decoder architectures with any two applications.	4	3	4	2
c)	Explain the Transfer learning and its advantages neatly?	4	2	5	2

M : Marks; L: Bloom's Taxonomy Level; CO; Course Outcome; PO: Programme Outcome

i)	Blooms Taxonomy Level – 1	20%
ii)	Blooms Taxonomy Level – 2	40%
iii)	Blooms Taxonomy Level – 3 & 4	40%

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