BACHELOR OF TECHNOLOGY (CBCS) (2021-COURSE)
B. Tech. Sem - VII Computer Science & Engineering : WINTER : 2024
SUBJECT: DEEP LEARNING

Day : Monday
Date : 09/12/2024

W-25605-2024

Time : 02:30 PM-05:30 PM
Max. Marks : 60

N.B.

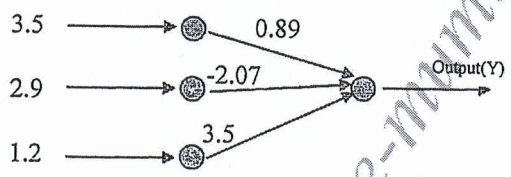
1) All questions are **COMPULSORY.**
2) Figures to the right indicate **FULL** marks.
3) Use of non-programmable calculator is allowed.

Q.1 Draw and explain the architecture of Thresholding Logic. Also, explain how weights are adjusted in Thresholding logic. **(10)**

OR

Compute output of following neuron if activation function is:

i) Sigmoid function
ii) Tanh function
iii) ReLU function (assume same bias 0.5 for each node)



Q.2 Define Gradient Descent. Also list and explain types of Gradient Descent. **(10)**

OR

Describe the term weight initialization and hyper-parameter training with respect of deep learning model.

Q.3 With the help of diagram explain basic building blocks of Convolutional Neural Network architecture. **(10)**

OR

Describe the use of pooling layer in Convolutional Neural Network. Solve the given example. Two images shown in figure below need to be convolved with stride = 2. Compute the resultant image pixels.

2	4	3	7	6	2	1
6	6	8	9	7	4	3
3	4	7	8	3	7	9
7	8	3	2	1	4	3
4	2	1	8	3	4	6
3	2	1	0	2	3	2
0	1	4	7	8	9	3

Stride = 2

×

3	4	4
1	0	2
-1	0	3

P.T.O.

Q.4 Write short note on auto-encoder. How variational auto-encoder (VAE) is differ from basic auto-encoder. **(10)**

OR

Define term Recurrent Neural Network? Also, describe the term GRU with respect to RNN.

Q.5 What are second order optimization methods and why are they computationaliy expensive for Deep Neural Network? Briefly mention one approximate second order method and explain its advantages. **(10)**

OR

Explain in detail optimization in deep learning.

Q.6 Compare and contrast the VGG-16 and ResNet-50 architectures in terms of their design, performances and uses in computer vision tasks. **(10)**

OR

Describe process of generation image caption using pre-trained model like image caption models. How do these models combine computer vision and natural language generation?

* * * * *