BRAINWARE UNIVERSITY

Term End Examination 2024-2025
Programme – B.Tech.(RA)-2021
Course Name – Deep Learning
Course Code - OEC-ECR701B
(Semester VII)

Full Marks : 60   **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A
(Multiple Choice Type Question)   1 x 15=15

1. *Choose the correct alternative from the following :*

(i) State the cause of the necesity of biological neural networks.

a) to solve tasks like machine vision & natural language processing

b) to apply heuristic search methods to find solutions of problem

c) to make smart human interactive & user friendly system

d) all of the mentioned

(ii) State the limitations of deep learning

a) Data labeling

b) Obtain huge training datasets

c) Both A and B

d) None of these

(iii) Select the optionfrom the following would have a constant input in each epoch of training a Deep Learning model.

a) Weight between input and hidden layer

b) Weight between hidden and output layer

c) Biases of all hidden layer neurons

d) Activation function of output layer

(iv) Recall that CNN is best suited for_____

a) Image Classification

b) Natural Language Processing

c) Image Captioning

d) All of these

(v) Identify that how many layers Deep learning algorithms are constructed?

a) 2

b) 3

c) 4

d) 5

(vi) State the correct option from the following statements when you use 1×1 convolutions in a CNN.

a) It can help in dimensionality reduction

b) It suffers less overfitting due to small kernel size

28- 17

c) It can be used for feature pooling   d) All of these

(vii) Determine the auto-association task in neural networks.

     a) find relation between 2 consecutive inputs   b) related to storage & recall task
     c) predicting the future inputs   d) none of the mentioned

(viii) Define the unsupervised learning.

     a) features of group explicitly stated   b) number of groups may be known
     c) contains unlabelled data   d) none of the mentioned

(ix) Select the example of unsupervised feature map:

     a) text recognition   b) voice recognition
     c) image recognition   d) none of the mentioned

(x) Choose which of the following would have a constant input in each epoch of training a Deep Learning model?

     a) Weight between input and hidden layer   b) Weight between hidden and output layer
     c) Biases of all hidden layer neurons   d) Activation function of output layer

(xi) A model of language consists of the categories which does not include _____.

     a) System Unit   b) structural units.
     c) data units   d) empirical units

(xii) State the purpose of Axon?

     a) receptors   b) transmitter
     c) transmission   d) none of the mentioned

(xiii) Identify the process of adjusting the weight

     a) activation   b) synchronisation
     c) learning   d) none of the mentioned

(xiv) Name the type of learning that the Correlation learning law is

     a) supervised   b) unsupervised
     c) either supervised or unsupervised   d) both supervised or unsupervised

(xv) Choose the correct statement, sentiment analysis using Deep Learning is a many-to one prediction task-

     a) True   b) False
     c) Can be true and false   d) can not say

Group-B
(Short Answer Type Questions)   3 x 5=15

2. Explain the method of generating a dataset on multiple cores in real-time that can be fed to the deep learning model.   (3)

3. Discuss the Perceptron training rule.   (3)

4.   (3)

     Explain the difference between Conv1D, Conv2D, and Conv3D.

5. Explain the Restricted Boltzmann Machines (RBM).   (3)

6. Differentiate between Batch Gradient Descent and Stochastic Gradient Descent.   (3)

OR

Analyze the limitations of using a perceptron.   (3)

Group-C
(Long Answer Type Questions)   5 x 6=30

7. Describe Backpropagation.   (5)
8. Explain the Confusion Matrix.   (5)
9. Explain Bias and Variance in a Machine Learning Model.   (5)

10. Illustrate backpropagation in details.   (5)
11.   (5)

    Explain the challenges with gradient descent, and the treatments.

12.   (5)

    Illustrate the importance of *activation functions* in *RNNs*.

OR   (5)

Evaluate how can a Dense Layer of a CNN be converted into a Fully Convolutional Layer.

****