INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad - 500 043

B.Tech VII SEMESTER CIE - I MAKEUP EXAMINATIONS, JANUARY – 2024

Regulation: UG-20

DEEP NEURAL NETWORKS

Time: 2 Hours   CSE (AI&ML)   Max Marks: 20

Answer any FOUR questions

All parts of the question must be answered in one place only

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1. (a) Give the step-by–step procedure of back-propagation algorithm that uses GDR procedure for three layer feed-forward neural network. [BL: Understand| CO: 3|Marks: 2]

   (b) Summarize stochastic gradient descent optimization algorithm. How does it differ from traditional gradient descent, and why is it commonly used in training deep neural networks?
   [BL: Understand | CO: 3|Marks: 3]

2. (a) Outline the practical considerations in the design and implementation of multi layer perceptron feed forward neural network. [BL: Understand| CO: 3|Marks: 2]

   (b) What is Maximum Likelihood Estimation (MLE) and how is it used in machine learning? Provide an example to illustrate its application [BL: Understand | CO: 3|Marks: 3]

3. (a) Discuss briefly the working concepts of Boltzmann machine. List the merits, demerits and applications of Boltzmann's machine. [BL: Understand| CO: 3|Marks: 2]

   (b) Describe how deep learning is a kind of representation learning with the Venn diagram?
   [BL: Apply | CO: 3|Marks: 3]

4. (a) Distinguish between deep learning and machine learning. Explain unsupervised learning with block diagram . [BL: Understand| CO: 2|Marks: 2]

   (b) Assess the following with respect to deep learning examples.
   i) Random Variables
   ii) Probability. [BL: Understand | CO: 2|Marks: 3]

5. (a) Develop a table with examples of different formats of data that can be used with convolutional networks [BL: Understand| CO: 3|Marks: 2]

   (b) Elaborate the following with suitable diagram.
   i) Sparse interactions.
   ii) Parameter sharing. [BL: Apply | CO: 3|Marks: 3]

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