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B.TECH
(SEM VII) THEORY EXAMINATION 2022-23
DEEP LEARNING

*Time: 3 Hours**Total Marks: 100***Note:** Attempt all Sections. If you require any missing data, then choose suitably.**SECTION A****1. Attempt all questions in brief. 2 x 10 = 20**

- (a) What are the applications of Machine Learning?
- (b) Describe the Boltzmann Machine.
- (c) Is it possible to build deep learning models based solely on linear regression? Explain.
- (d) Define the different layers of a convolutional neural network.
- (e) Explain the linear models
- (f) Why is it important to introduce non-linearities in a neural network?
- (g) What are the limitations of using a perceptron?
- (h) Why do we use convolutions for images instead of using fully connected layers?
- (i) Why are GPUs important for implementing deep learning models?
- (j) Which is the best algorithm for face detection ?

SECTION B**2. Attempt any three of the following: 10 x 3 = 30**

- (a) Difference between Deep and Shallow Network.
- (b) Draw and explain the architecture of Convolutional Networks.
- (c) Why CNN is preferred over ANN for Image Classification tasks even though it is possible to solve image classification using ANN?
- (d) Explain LSTM (Long Short Term Memory). Give some famous applications of LSTM.
- (e) Explain Image Captioning in Deep Learning.

SECTION C**3. Attempt any one part of the following: 10 x 1 = 10**

- (a) Explain the difference between Gradient Descent and Stochastic Gradient Descent.
- (b) Explain GAN and its models. Name and describe different types of GANs.

4. Attempt any one part of the following: 10 x 1 = 10

- (a) Examine the Semi –Supervised learning.
- (b) Demonstrate deep learning. Explain its uses, application and history.

5. **Attempt any *one* part of the following:** **10 x 1 = 10**
- (a) Explain Back propagation with its algorithm.
 - (b) Write short notes :-
 - i) Deep Reinforcement
 - ii) Autoencoder Architecture
 - iii) VGG
 - iv) SOA
6. **Attempt any *one* part of the following:** **10 x 1 = 10**
- (a) Compare PCA (Principle Component Analysis) and RNN.
 - (b) Discuss how batch gradient descent and stochastic gradient descent are different.
7. **Attempt any *one* part of the following:** **10 x 1 = 10**
- (a) Demonstrate how the privacy will be affected when facial recognition gets used by private companies?
 - (b) How AI and Neuroscience drive each other forwards? Explain.

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