M.Tech. (CSE/AI) (Sem.–2)
ADVANCED DEEP LEARNING

Subject Code : MTAI-PE-10-20
M.Code : 92284
Date of Examination : 13-12-22

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

INSTRUCTIONS TO CANDIDATES :
1. Attempt any FIVE questions out of EIGHT questions.
2. Each question carries TWELVE marks.

1. **Explain the following terms :**

   a) Natural language processing

   b) Neural language models

   c) Word embeddings

   d) Dropout rate.

2. Explain in detail about stochastic gradient descent algorithm. Compare it with gradient descent algorithm explaining the advantages and disadvantages it offers over the other.

3. What are feed forward neural networks? Discuss their working by taking an example of learning XOR function.

4. a) What is Regularization and what is its significance? Explain different types of regularization techniques.

   b) What is dataset augmentation? What effect does it have on the performance of a model?

5. a) Write briefly about a loss function. Explain with the help of an example, under which situations surrogate loss function is preferred over the generic loss function.

   b) Discuss various challenges in neural network optimization.

6. a) What are convolutional networks and how are they different from traditional neural networks? Write various applications where one is preferred over the other.

b) What role does pooling layer plays in a convolutional neural network? Discuss various types of pooling mechanisms explaining the significance of each.

7. Explain the sequence to sequence architecture. What advantages and limitations do this architecture holds over recurrent neural networks?

8. What do you mean by debugging? Discuss various debugging strategies to analyse poor performance of a machine learning system.

NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.