

MIT ACADEMY OF ENGINEERING**COURSE CODE: CS422T****13 DECEMBER 2019****BTECH SEMESTER - VII 2019-2020 EXAMINATION****DEPARTMENT OF COMPUTER ENGINEERING****END SEMESTER EXAMINATION****DEEP LEARNING****TIME : 3 HOURS****MAX MARKS : 100 MARKS****TOTAL NO OF QUESTIONS: 5****TOTAL NO OF PRINTED PAGES:2****INSTRUCTIONS TO CANDIDATES:**

1. Assume suitable data wherever necessary
2. Non programmable scientific calculators are allowed
3. Black figures to the right indicate full marks

- 1 a) "Normal distribution is a probability distribution that is [05] CO1 L2 symmetric about the mean and median. In graph form, normal distribution will appear as a bell curve." Illustrate the statement with suitable example.
(Example - 2M,Justification - 3M)
- 1 b) Two standard dice with 6 sides are thrown and the faces [05] CO1 L1 are recorded. Given that the sum of the two faces equals to 10, what is the probability that the first throw equals to 5?
- 1 c) Why does regularization reduce Over fitting? Make use of [10] CO2 L3 two forms of regularization to describe it.
(Reason - 4M,Two forms - 6M)
- 2 a) Analyze the process to control the size of output image in [06] CO3 L4 each CNN layer using hyper parameter like depth, stride and zero-padding.
(2M each hyper parameter)
- 2 b) Identify the steps involved in the working of softmax [04] CO3 L3 classification layer of a neural network and describe them?
Softmax Explanation(1M) with mathematical model (1M) and suitable example (2M)

- 2 c) Compare back propagation in a recurrent neural network with a feed-forward neural network? [06] CO4 L4
(Comparison discussion with suitable example)
- 2 d) Explain how the traditional Recurrent Neural Network (RNN) units suffer from the vanishing gradient problem? (RNN-2m, Vanishing gradient -2M) [04] CO4 L2
- 3 a) Apply LSTM model and specify how it overcome short term memory challenges in RNN model? [10] CO4 L3
(Short term memory problem in RNN-2M, Explanation LSTM model steps - 6M, Diagram of LSTM model - 2M)
- 3 b) Make use of output gate and cell state to operate on previous hidden state information and current input? [05] CO4 L3
(0.5M - diagram of each gate, explanation - 2M each)
- 3 c) Interpret how RNN train sequential data set. [10] CO5 L5
(RNN purpose-2m, Example with a suitable example -8M)
- 4 a) Determine the procedure to automate Ulcer Detection in Wireless Capsule Endoscopy Images using CNN. [10] CO5 L5
(CNN purpose-2m, Example with an example-5M and diagram -3M)
- 4 b) Determine difference between hierarchical and multiagent reinforcement learning with suitable example? [06] CO6 L5
(3 comparisons - 3M, example of each- 1.5M)
- 4 c) Explain how robot will learn to walk in room using reinforcement learning? What parameters affects the performance of robot's action. [06] CO6 L5
(Explanation - 3M, Parameters - 3M)
- 5 a) Q-Learning algorithm is used to maximize its reward in the long run. Justify your answer. [10] CO6 L5
(Q learning algorithm with explanation - 5M, Example - 5M)
- 5 b) What is role of policy gradient in deep reinforcement learning? [03] CO6 L1
(Explanation 3M)