Avinashilingam Institute for Home Science and Higher Education for Women

Deemed to be University Estd. u/s 3 of UGC Act 1956, Category A by MHRD (now MoE)
Re-accredited with A++ Grade by NAAC. CGPA 3.65/4, Category I by UGC
Coimbatore - 641 043, Tamil Nadu, India

Master's Degree Examination – May 2025
II Semester

Class : I P.G. **Time: 3 Hours**
Major : Information Technology **Max. Marks: 100**

23MITC08 Deep Learning

Course Outcomes:
CO1: Identify the fundamentals of Deep Learning and Neurons
CO2: Discover Feed Forward Neural Networks
CO3: Apply Neural Networks in Tensorflow
CO4: Estimate Convolution Networks
CO5: Structure Markov Decision Processes

Part A **10 x 1 = 10**
Choose the Correct Answer

1. Which of the following is a fundamental component of a neural network? CO1K2
   a. Kernel b. Neuron c. Filter d. Feature Map

2. What is the primary goal of Gradient Descent? CO2K2
   a. To maximize the cost function b. To minimize the cost function
   c. To keep the cost function constant d. Transmitting cellular signals

3. Tensor Flow is primarily used for CO3K2
   a. Image editing b. Web development
   c. Deep Learning applications d. Text processing

4. What does Max Pooling do in a Convolutional Neural Network? CO4K3
   a. Increases feature map size b. Reduces feature map size
   c. Performs convolution operation d. Adds noise to data

5. In Reinforcement Learning, the agent learns by CO5K3
   a. Supervising labels b. Predefined rules
   c. Interacting with the environment d. Random guessing

6. Which activation function is commonly used in deep networks? CO1K3
   a. ReLU b. Sigmoid c. Tanh d. All of the above

7. The Back propagation Algorithm is used for CO2K2
   a. Forward Propagation b. Training Neural Networks
   c. Pre processing data d. None of the above

8. What is a Placeholder Tensor in TensorFlow? CO3K2
   a. A constant value b. A variable that can hold input data
   c. A special type of activation function d. None of the above

9. What is the primary function of Filters in CNNs? CO4K3
   a. Detect Edges and patterns b. Perform pooling operation
   c. Store learned weights d. None of the above

10. Which of the following represents a Markov Decision Process? CO5K3
   a. Image Processing b. Supervised Learning
   c. Reinforcement Learning d. None of the above

Part B **5 x 6 = 30**

Answer ALL questions

Each answer should not exceed 400 words or two pages

11.a. Explain the mechanics of Machine Learning with an example.	CO1K3
(or)	
11.b. Discuss the limitations of Linear Neurons in deep learning.	CO1K3
12.a. Describe the Delta Rule and its significance in Gradient Descent.	CO2K3
(or)	
12.b. Explain the concept of Overfitting and methods to prevent it.	CO2K3
13.a. Outline the differences between TensorFlow and its alternatives.	CO3K3
(or)	
13.b. Explain the concept of Sessions in TensorFlow with an example.	CO3K3
14.a. Discuss the role of Filters and Feature Maps in CNNs.	CO4K4
(or)	
14.b. Describe Batch Normalization and its effect on training deep networks.	CO4K4
15.a. Explain the Explore vs. Exploit dilemma in Reinforcement Learning.	CO5K3
(or)	
15.b. Discuss the process of Policy Gradient in Reinforcement Learning.	CO5K3

Part C **5 x 12 = 60**

Answer ALL questions

Each answer should not exceed 800 words or four pages

16.a. Explain Feed-Forward Neural Networks and their working with an example.	CO1K4
(or)	
16.b. Describe the role of Perceptrons in Deep Learning with a real-world application.	CO1K4
17.a. Discuss the Back propagation Algorithm with the required mathematical Explanation.	CO2K4
(or)	
17.b. Explain Stochastic Gradient Descent and Mini-batch Gradient Descent with Examples.	CO2K4
18.a. Explain the importance of Variable Scopes in Tensor Flow.	CO3K4
(or)	
18.b. Describe the implementation of Logistic Regression using Tensor Flow.	CO3K4
19.a. Explain the complete architecture of Convolutional Neural Networks.	CO4K5
(or)	
19.b. Discuss how Image Processing Pipelines improve CNN performance.	CO4K5
20.a. Explain the concept of Markov Decision Processes and their role in Reinforcement Learning.	CO5K5
(or)	
20.b. Describe how an agent is created and trained in Deep Reinforcement Learning.	CO5K5

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