Department of Artificial Intelligence and Machine Learning

Subject Name: Data Science & Its Applications
Subject Code: 21AD62

SEM: 6th **DIV: A**

Faculty: Prof. Manzoor Ahmed

Module-4 Question Bank

SL#	Question	CO	Level	Marks
1.	Compute tensors in deep learning by implementing the concepts in Python.	CO4	L3	10
2.	Explain layer abstraction in deep learning.	CO4	L2	8
3.	Construct linear layers with implementation in Python.	CO4	L3	10
4.	What is Decision Tree? Explain ID3 algorithm with an example.	CO4	L3	10
5.	Consider the following dataset. Write a program to demonstrate the working of the decision tree based ID3 algorithm. Price | Maintenance | Capacity | Airbag | Profitable Low | Low | 2 | No | Yes Low | Med | 4 | Yes | Yes Low | Low | 4 | No | Yes Low | Med | 4 | No | No Low | High | 4 | No | No Med | Med | 4 | No | No Med | Med | 4 | Yes | Yes Med | High | 2 | Yes | No Med | High | 5 | No | Yes High | Med | 4 | Yes | Yes high | Med | 2 | Yes | Yes High | High | 2 | Yes | No high | High | 5 | yes | Yes	CO4	L3	10
6.	Define neural network? With the diagram explain the implementing AND function using perceptron algorithm.	CO4	L4	10
7.	Write Python program to train a network that can compute XOR.	CO4	L4	10
8.	Explain feedforward neural network in detail with a neat diagram.	CO4	L4	10
9.	Discuss the role of backpropagation algorithm in training neural network.	CO4	L4	10
10.	Write Python program to solve the below Fizz Buzz programming challenge Print the numbers 1 to 100, except that if the number is divisible by 3, print "fizz"; if the number is divisible by 5, print "buzz"; and if the number is divisible by 15, print "fizzbuzz".	CO4	L4	10
11.	Write Python program to compute loss and optimization in deep learning.	CO4	L4	10
12.	Explain bottom-up hierarchical clustering approach with an example in detail.	CO4	L4	10
13.	Define Clustering. Explain K-means clustering algorithm with an example.	CO4	L4	10
14.	Consider the dataset spiral.txt (https://bit.ly/2Lm75Ly). The first two columns in the dataset corresponds to the co-ordinates of each data point. The third column corresponds to the actual cluster label. Compute the rand index for the following methods: • K – means Clustering • Single – link Hierarchical Clustering • Complete link hierarchical clustering. • Also visualize the dataset and which algorithm will be able to recover the true clusters.	CO4	L4	10

Faculty Signature