SVKM's
Dwarkadas J. Sanghvi College of Engineering
Acad .Year 2022-2023
YEAR III / Semester VI

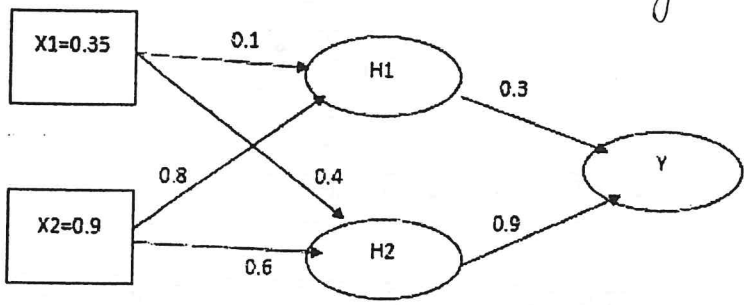
Program: B.Tech in Computer Engineering
Subject/Course: Machine Learning
Date: 02.06.2023

Max. Marks: 75
Time: 09:00-12:00
Duration: 03:00 Hrs

FINAL EXAMINATION

Instructions: Candidates should read carefully the instructions printed on the question paper and on the cover page of the Answer Book, which is provided for their use.

(1) This question paper contains 03 pages.
(2) All Questions are Compulsory.
(3) All questions carry equal marks.
(4) Answer to each new question is to be started on a fresh page.
(5) Figures in the brackets on the right indicate full marks.
(6) Assume suitable data wherever required, but justify it.
(7) Draw the neat-labelled diagrams, wherever necessary.

Question No.		Max. Marks
Q1 (a)	bias = 1 for all layers  Assume that the neurons have sigmoid activation function. Perform forward pass on the network. Assume that actual output of y is 0.5 and learning rate is 1. find output and error in the network after 1 epoch. **OR** Describe Support Vector Machine with its type in detail	[10] [10]
Q1 (b)	Explain application of machine learning in detail	[05]
Q2 (a)	Elaborate Linear Regression with its advantages and disadvantages **OR**	[10]

	Construct Decision tree for the given dataset using gini index. | Weather	Parents	Money	Decision | |---|---|---|---| | Sunny | Yes | Rich | Cricket | | Sunny | No | Rich | Table Tennis | | Windy | Yes | Rich | Cricket | | Rainy | Yes | Poor | Cricket | | Rainy | No | Rich | Video Games | | Rainy | Yes | Poor | Cricket | | Windy | No | Poor | Cricket | | Windy | No | Rich | Shopping | | Windy | Yes | Rich | Cricket | | Sunny | No | Rich | Table Tennis |	[10]
Q2 (b)	Write a note on Logistic Regression.	[05]
Q3 (a)	Compute single value decomposition for the matrix A= $\begin{bmatrix} 1 & -1 \\ -2 & 2 \\ 2 & -2 \end{bmatrix}$ **OR** Compute Eigen Vectors for the principal component analysis of the given dataset | X | Y | |---|---| | 2.5 | 2.4 | | 0.5 | 0.7 | | 2.2 | 2.9 | | 1.9 | 2.2 | | 3..1 | 3.0 | | 2.3 | 2.7 | | 2 | 1.6 | | 1 | 1.1 | | 1.5 | 1.6 | | 1.1 | 0.9 |	[10] [10]
Q3 (b)	Analyze issues in machine learning in detail	[05]

Q4 (a)	Review the working Expectation Maximization algorithm with its advantages and disadvantages. **OR** | Sepal Length | Sepal Width | Species | |---|---|---| | 5.3 | 3.7 | Setosa | | 5.1 | 3.8 | Setosa | | 7.2 | 3.0 | Verginica | | 5.4 | 3.4 | Setosa | | 5.1 | 3.3 | Setosa | | 5.4 | 3.9 | Setosa | | 7.4 | 2.8 | Verginica | Find the class of the given data point using KNN, k=1. | Sepal Length | Sepal Width | Species | |---|---|---| | 5.2 | 3.1 | ? |	[10] [10]
Q4 (b)	Write a note on Markov chain in detail	[05]
Q5 (a)	Summarize model based learning in Reinforcement Learning in detail. **OR** Differentiate Deep Neural Networks Vs. Wide Neural Networks	[08] [08]
Q5 (b)	How machine learning is useful in sentiment analysis. Elaborate	[07]

All the Best!