

G. Narayanamma Institute of Technology & Science**(Autonomous)****(for Women)**

Shaikpet, Hyderabad- 500 104

III-B.Tech II-Semester Supplementary Examinations, Jan/Feb -2023.**MACHINE LEARNING****(Common to CSE & IT)****Max. Marks: 70****Time: 03 Hours****Note:**

1. Question paper comprises of **Part A** and **Part B**.
2. **Part A** is compulsory which carries 10 marks. Answer all questions in Part A.
3. **Part B** (for 60 marks) consists of **five questions** with **“either” “or”** pattern. Each question carries 12 marks and may have a,b,c as sub questions. The student has to answer any one full question.

PART-A*(Answer 05 questions. Each question carries 2 marks)*

Q.No.	Question	Marks	CO	Bloom's Level
Q.1	a) List out different types of learning.	[02]	CO3	[L1]
	b) Explain Biological Neuron.	[02]	CO1	[L2]
	c) State Baye's Theorem.	[02]	CO1	[L1]
	d) Under what conditions Lazy learning is inefficient.	[02]	CO4	[L4]
	e) List out various types of crossover operator?	[02]	CO3	[L1]

END OF PART A**PART-B***(Answer 05 full questions. Each question carries 12 marks)***Marks**

Q.No.	Question	Marks	CO	Bloom's Level
Q.2(a)	Discuss in detail concept learning task with an example.	[06]	CO2	[L3]
(b)	Explain about Find-S method with an example.	[06]	CO3	[L2]

OR

Q.3	Discuss in detail about designing a learning system.	[12]	CO1	[L2]
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Q.4(a) Discuss representational power of Perceptron.

[06]

CO3

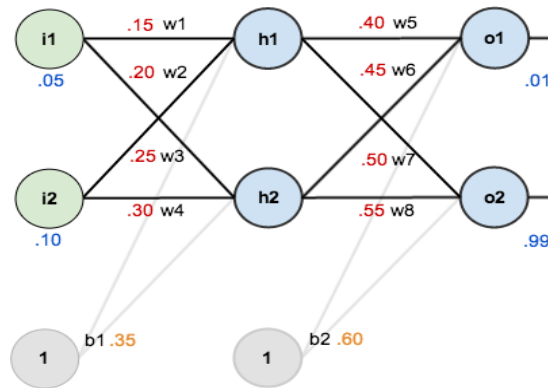
[L1]

(b) Consider the following neural network and update the W1 and W5 weights using back propagation algorithm? Show the new values of updated W1 and W5 weights.

[06]

CO6

[L4]



OR

Q.5 (a) Give ID3 algorithm for constructing decision tree.

[05]

CO3

[L2]

(b) A dataset collected for last 10 days of weather. Use this dataset to build a decision tree, with Plays as the target variable, to help in taking a decision whether to play badminton or not. Based on the following data, construct a decision tree.

[07]

CO6

[L6]

Day	Weather	Temperature	Humidity	Wind	Play?
1	Sunny	Hot	High	Weak	No
2	Cloudy	Hot	High	Weak	Yes
3	Sunny	Mild	Normal	Strong	Yes
4	Cloudy	Mild	High	Strong	Yes
5	Rainy	Mild	High	Strong	No
6	Rainy	Cool	Normal	Strong	No
7	Rainy	Mild	High	Weak	Yes
8	Sunny	Hot	High	Strong	No
9	Cloudy	Hot	Normal	Weak	Yes
10	Rainy	Mild	High	Strong	No

- Q.6(a)** Discuss Expectation Maximization algorithm. What is its strength? [06] CO4 [L2]
(b) Explain PAC learning. [06] CO2 [L2]

OR

- Q.7** Discuss Naïve Bayes classifier. What will be the class? When a new species holds following feature values: [12] CO6 [L6]
 [Name-hen, Give Birth-no, Can Fly-no, Live in Water –no, Have Legs-yes]
 For the following data set

Name	Give Birth	Can Fly	Live in Water	Have Legs	Class
human	yes	no	no	yes	mammals
python	no	no	no	no	non-mammals
salmon	no	no	yes	no	non-mammals
whale	yes	no	yes	no	mammals
frog	no	no	sometimes	yes	non-mammals
komodo	no	no	no	yes	non-mammals
bat	yes	yes	no	yes	mammals
pigeon	no	yes	no	yes	non-mammals
cat	yes	no	no	yes	mammals
leopard shark	yes	no	yes	no	non-mammals
turtle	no	no	sometimes	yes	non-mammals
penguin	no	no	sometimes	yes	non-mammals
porcupine	yes	no	no	yes	mammals
eel	no	no	yes	no	non-mammals
salamander	no	no	sometimes	yes	non-mammals
gila monster	no	no	no	yes	non-mammals
platypus	no	no	no	yes	mammals
owl	no	yes	no	yes	non-mammals
dolphin	yes	no	yes	no	mammals
eagle	no	yes	no	yes	non-mammals

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- Q.8(a)** Discuss Radial Basis Function. [06] CO1 [L2]
(b) Discuss KNN algorithm with an example. [06] CO6 [L3]

OR

- Q.9(a)** Elaborate on Locally Weighted Regression. [06] CO4 [L2]
(b) Discuss Explanation Based Learning. [06] CO5 [L2]

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- Q.10** Discuss various genetic operators with an example. [12] CO5 [L3]

OR

- Q.11(a)** Discuss parallelizing Genetic Algorithm in detail. [06] CO3 [L2]
(b) Explain Hypothesis space search in genetic algorithms. [06] CO4 [L1]

END OF PART B
END OF THE QUESTION PAPER