

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

Shaikpet, Hyderabad- 500 104

III-B.Tech II-Semester Supplementary Examinations, February -2022.**MACHINE LEARNING****(Common to CSE & IT)****Max. Marks: 70****Time: 03 Hours***(Answer any 05 full questions. Each question carries 14 marks)*

Q.No.	Question	Marks	Bloom's Level
Q.1(a)	What is machine learning? Explain different forms of learning.	[07]	[L2]
(b)	Discuss the design issues of machine learning.	[07]	[L2]
Q.2(a)	Explain the CANDIDATE-ELIMINATION Algorithm. Will the algorithm converge to the correct Hypothesis justify.	[07]	[L4]
(b)	Consider a hypothesis space defined over the instances given in the following table. Give a trace of CANDIDATE-ELIMINATION algorithm learning from these instances and show G and S boundaries.	[07]	[L2]

Example	Sky	AirTemp	Humidity	Wind	Water	Forecast	EnjoySport
1	Sunny	Warm	Normal	Strong	Warm	Same	Yes
2	Sunny	Warm	High	Strong	Warm	Same	Yes
3	Rainy	Cold	High	Strong	Warm	Change	No
4	Sunny	Warm	High	Strong	Cool	Change	Yes

Q.3	Consider the training examples given in Table 1	[14]	[L2]
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Weekend	Weather	Parents	Money	Decision
W1.	Sunny	Yes	Rich	Cinema
W2	Sunny	No	Rich	Tennis
W3	Windy	Yes	Rich	Cinema
W4	Rainy	Yes	Poor	Cinema
W5	Rainy	No	Rich	Stay-in
W6	Rainy	Yes	Poor	Cinema
W7	Windy	No	Poor	Cinema
W8	Windy	No	Rich	Shopping
W9	Windy	Yes	Rich	Cinema
W10	Sunny	No	Rich	Tennis

Table 1: Training Examples for ID3

Using ID3 algorithm construct decision tree.

What is the best attribute for the root node child (take one of the child nodes)?

Q.4(a)	Explain back-propagation approach with the help of an example.	[07]	[L2]
(b)	Mention different types of activate functions used foser training the neuron.	[07]	[L5]
Q.5(a)	Explain the concepts of Probably Approximately Correct (PAC) learnability and PAC criterion.	[07]	[L2]
(b)	Discuss the mistake bound model and list the advantages.	[07]	[L3]
Q.6(a)	Explain Bayes optimal classifier with suitable examples.	[07]	[L2]
(b)	Compare the sample complexity for finite and infinite Hypothesis space.	[07]	[L3]
Q.7(a)	What is Instance based learner? List out the advantages and disadvantages of Instance based learning approach.	[07]	[L2]
(b)	Discuss the drawbacks of Explanation-based learning.	[07]	[L4]
Q.8(a)	Describe the main features of Genetic Algorithms.	[07]	[L2]
(b)	Formulate and design genetic algorithm for some classification problem and explain with examples.	[07]	[L6]

END OF THE QUESTION PAPER