USN									**18CS62**

B. E. Degree (Autonomous) Sixth Semester End Examination (SEE), June/July 2022

MACHINE LEARNING

(Model Question Paper - II)

[Time: 3 Hours]		**[Maximum Marks: 100]**

Instructions to students:

1. **Answer any one from question number 1 and 2**
2. **Answer any one from question number 3 and 4**
3. **Answer any one from question number 5 and 6**
4. **Answer any one from question number 7 and 8**
5. **Answer any one from question number 9 and 10**   Unit4 Playlist
https://youtube.com/playlist?list=PLmAmHQ-_5ySyQeEryrlomrEvOGNYN3TAL

Q. No.		QUESTIONS	Marks	COs	RBT Level
1	**A)**	Describe the following problems with respect to Tasks, Unit1 Page2 Performance and Experience: a. A Checkers learning problem b. A Handwritten recognition learning problem c. A Weather Prediction problem d. A robot driving learning problem	**10M**	CO1	L2
	B)	Write FIND-S algorithm. Using Find-S Algorithm find the hypothesis to figure out if a person is Covid Positive or not using the data given below with Solve according to examples in Unit1 Notes	**10M**	CO2	L3

SI No.	Breathing difficulty	Cough	Fever	Covid
1	Yes	Yes	Yes	Positive
2	Yes	Yes	No	Positive
3	Yes	No	Yes	Negative
4	No	Yes	Yes	Negative
5	No	No	Yes	Negative
6	No	No	No	Negative

OR

2	A)	The Bank wants to decide whether or not an individual should be given a bank loan or not. Use Candidate - Elimination Algorithm on the data below to find the decision. Will Solve and send later	10M	CO2	L3

Sl. No	State	Account type	Education	Employment	Application	Y/N
1	MP	NA	Bachelor	Employed	Online	Y
2	MP	Savings	College	Unemployed	Offline	N
3	MP	Savings	Bachelor	Employed	Online	Y
4	MH	Current	Master	Employed	Online	N
5	MP	NA	College	Employed	Online	Y
6	MP	Savings	College	Unemployed	Online	Y
7	MP	NA	Master	Unemployed	Offline	N

	B)	Explain Find-S algorithm with a flowchart. Unit1 Page17-18	**10M**	CO1	L2

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3	A)	Describe the ID3 algorithm for decision tree learning. Unit2 Page4	10M	CO2	L2

	B)	Give Decision trees to represent the Boolean Functions:
		    a) A && ~ B
		    b) A V [B && C] Unit2 Last Three pages
		    c) A XOR B
		    d) [A&&B] V [C&&D]
			10M	CO2	L3

<div align="center">OR</div>

4	A)	Construct the decision tree for the following trainingexamples using ID3 Algorithm.	12M	CO3	L3

Major	Experience	Tie	Hired?
CS	programming	pretty	NO
CS	programming	pretty	NO
CS	management	pretty	YES
CS	management	ugly	YES
business	programming	pretty	YES
business	programming	ugly	YES
business	management	pretty	NO
business	management	pretty	NO

Unit2 Page20	B)	Write a note on Occam's razor and minimum description principal.	08M	CO2	L2
5	A)	Implement AND NOT function using McCulloch Pitts(MP) neuron(Use binary data representation) Unit3 Page94	10M	CO3	L3

	B)	Explain important terminologies Unit4 Page75
		  (i) Threshold
		  (ii) Learning rate
		  (iii)Momentum Factor
		  (iv)Vigilance Parameter
		  (v) Bias
			10M	CO1	L2

<div align="center">OR</div>

6	A)	Explain perceptron networks architecture and training algorithm for Multiple output classes. Unit3 Page160 & 164	10M	CO1	L2
	B)	Implement OR function with bipolar inputs and targets using Adaline network. Unit4 Page205	10M	CO3	L3
7	A)	Prove that how maximum likelihood (Bayesian Learning) can be used in any learning algorithms that are used to minimize the squared error between actual output hypothesis and predicted output hypothesis. After learning the concepts we can write answer on our own	08M	CO3	L3
	B)	Explain Naïve Bayes Classifier and Bayesian belief networks.	12M	CO1	L2

Unit4 15 and 18
<div align="center">OR</div>

8	A)	Explain maximum a posteriori (MAP) hypothesis using Bayes Theorem. Unit4 Page4	10M	CO2	L2
	B)	Explain Bayesian belief networks and Conditional independence with an example. Unit4 Page16	10M	CO2	L2
9	A)	Define the following terms Unit5 Page15 a) Sample error. b) True error. c) Expected value. Mean Unit5 Page11	5M	CO1	L2
	B)	Explain Binomial Distribution. Unit5 Page14	5M	CO4	L2
	C)	Explain the K – nearest neighbour algorithm for approximating a	10M	CO4	L3

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		discrete – valued function $f : \Re^n \rightarrow V$ with pseudo code Unit5 Page3			
		OR			
10	**A)**	Discuss the K-nearest neighbor Learning. Unit5 Page2	**10M**	**CO4**	**L2**
	B)	Explain CADET System using Case based reasoning. Unit5 Page8	**10M**	**CO4**	**L3**

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