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Dr. Ambedkar Institute of Technology

(An Autonomous Institution, Aided by Government of Karnataka
Affiliated to Visvesvaraya Technological University, Belgaum & Approved by AICTE, New Delhi)
BDA Outer Ring Road, Near Jnana Bharathi Campus, Mallathahalli, Bengaluru-560056, Karnataka

Department of Computer Science & Engineering
Sixth Semester B.E. Degree (Autonomous) Continuous Internal Evaluation (CIE – I)
2021

Date : 17/05/2021	**Sub. Title : Machine Learning**	**Timings : 1.30-2.30**
Day : Monday	**Sub. Code :18CS62**	**Time duration : 60 Mins**
Branch : CSE		**Max marks : 25**
Semester : 6	**CIE – I**	**Staff in-charge:** **Asha K N** **Asha Rani K P**

Q. No.		**Note : Answer ALL the questions**	Marks	Course Outcome	**Blooms Level**
1.	a)	Describe the following problems with respect to Tasks, Performance and Experience: a. A Checkers learning problem b. A Handwritten recognition learning problem c. A Weather Prediction problem	**5 M**	**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:	**5 M**	**CO2**	**L3**
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.	**5 M**	**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

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)	Give Decision Tree representations for following Boolean Functions a) $A \wedge (B \vee C)$ b) A NAND B	**5 M**	**CO2**	**L3**
		OR			
	c)	Construct the decision tree for the following training examples using ID3 Algorithm.	**5 M**	**CO2**	**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

QUIZ **Note : Answer ALL the questions** **10X0.5=05 Marks**

1. In general, to have a well-defined learning problem, we must identity which of the following

A	The class of tasks	B	The measure of performance to be improved	C	The source of experience	D	All of the above

2. Concept learning inferred a _____ valued function from training examples of its input and output.

A	Decimal	B	Hexadecimal	C	Boolean	D	All of the above

3. FIND-S Algorithm starts from the most specific hypothesis and generalize it by considering only _____ examples.

A	Negative	B	Positive	C	Negative or Positive	D	None of the above

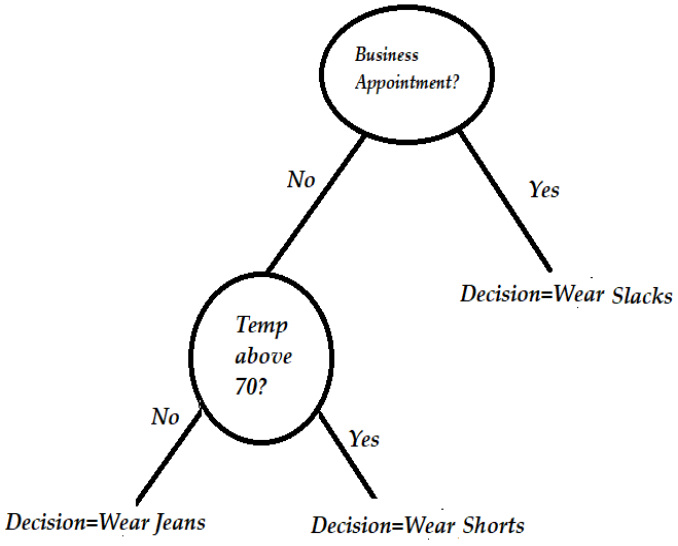
4. The Candidate-Elimination Algorithm represents the _____.

A	Solution Space	B	Version Space	C	Elimination Space	D	All of the above

5. Inductive learning involves finding a _____.

A	Consistent Hypothesis	B	Inconsistent Hypothesis	C	Regular Hypothesis	D	Irregular Hypothesis

6. Which of the following is a valid production rule for the decision tree below?



A	IF Business Appointment = No & Temp above 70 = No THEN Decision = wear slacks	B	IF Business Appointment = Yes & Temp above 70 = Yes THEN Decision = wear shorts	C	IF Temp above 70 =No THEN Decision = wear shorts	D	IF Business Appointment = No & Temp above 70 = No THEN Decision = wear jeans

7.	Which of these is a reasonable definition of machine learning?							
	A	Machine learning is the science of programming computers.	B	Machine learning learns from labeled data.	C	Machine learning is the field of allowing robots to act intelligently.	D	Machine learning is the field of study that gives computers the ability to learn without being explicitly programmed.
8.	Some of the problems below are best addressed using a supervised learning algorithm, and the others with an unsupervised learning algorithm. Which of the following would you apply supervised learning to?							
	A	Take a collection of 1000 essays written on the US Economy, and find a way to automatically group these essays into a small number of groups of essays that are somehow "similar" or "related".	B	Given genetic (DNA) data from a person, predict the odds of him/her developing diabetes over the next 10 years.	C	Examine a large collection of emails that are known to be spam email, to discover if there are sub-types of spam mail.	D	Given a large dataset of medical records from patients suffering from heart disease, try to learn whether there might be different clusters of such patients for which we might tailor separate treatments.
9.	Consider a dataset with **Attrib1** and **Attrib2** are two features (attributes) with two possible values for each feature or attribute. **How many hypotheses (Semantically Distinct Hypothesis) can be expressed by the hypothesis language?**							
	A	2	B	4	C	16	D	10
10	Amazon Movie Recommendation is_____learning							
	A	Supervised	B	Unsupervised	C	Reinforcement	D	None

Faculty Incharge:
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