

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2021****Subject Code:3172421****Date:29/12/2021****Subject Name:AI and Machine Learning in Power Electronics****Time:10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
<b>Q.1</b>	(a) Define version space, candidate eliminations and inductive bias.	<b>03</b>
	(b) How the knowledge should be represented in AI techniques?	<b>04</b>
	(c) Compare supervised, unsupervised and reinforcement machine learning methods.	<b>07</b>
<b>Q.2</b>	(a) Define state space search.	<b>03</b>
	(b) What are the issues in design of search programs?	<b>04</b>
	(c) Explain steepest ascent hill climbing algorithm.	<b>07</b>
<b>OR</b>		
<b>Q.3</b>	(c) Explain convert to clause form algorithm.	<b>07</b>
	(a) Differentiate depth first search and breadth first search algorithm.	<b>03</b>
	(b) What problems is Artificial Intelligence helping to solve for Samsung company?	<b>04</b>
	(c) How does Alibaba use artificial intelligence?	<b>07</b>
<b>OR</b>		
<b>Q.3</b>	(a) Explain computable functions and predicates.	<b>03</b>
	(b) What are the key challenges and learning points for the Dominos using AI?	<b>04</b>
	(c) Explain AO* algorithm for problem reduction.	<b>07</b>
<b>Q.4</b>	(a) Draw neural representation of AND gate.	<b>03</b>
	(b) Write prolog program to find maximum number from list.	<b>04</b>
	(c) Explain Decision tree algorithm with issues.	<b>07</b>
<b>OR</b>		
<b>Q.4</b>	(a) Describe radial basis function.	<b>03</b>
	(b) Explain process of weights change during training in multilayer network.	<b>04</b>
	(c) Explain K- Nearest Neighbors algorithm.	<b>07</b>
<b>Q.5</b>	(a) Define Hypothesis Space.	<b>03</b>
	(b) Let hypothesis space as three function $h_1, h_2$ and $h_3$ . $P(h_1 D)=0.4$ , $P(h_2 D)=0.3$ , $P(h_3 D)=0.3$ . For new instance $x$ , $h_1(x)=+1$ , $h_2(x)=+1$ , $h_3(x)=-1$ . What is most probable classification of $x$ ?	<b>04</b>
	(c) Explain Naïve Bayes algorithm.	<b>07</b>
<b>OR</b>		
<b>Q.5</b>	(a) Give an advantages of Gibbs algorithm over Bayes optimal classifier.	<b>03</b>
	(b) Describe relationship between Maximum Likelihood and Least squared Error Hypothesis.	<b>04</b>
	(c) Explain Minimum Description Length Principle.	<b>07</b>

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