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BEC515A

Fifth Semester B.E./B.Tech. Degree Examination, June/July 2025

Intelligent Systems and Machine Learning Algorithm

Time: 3 hrs.

Max. Marks: 100

*Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.**2. M : Marks , L: Bloom's level , C: Course outcomes.*

Module – 1			M	L	C
Q.1	a.	Construct the differentiation between simple reflex agents, model – based agents, goal based agents and utility based agents.	10	L2	CO1
	b.	Briefly Organize the properties of the task environment.	10	L2	CO1
OR					
Q.2	a.	Construct the interaction between agents and their environments in the context of AI.	10	L2	CO1
	b.	Build task environment (PEAS) with an example.	10	L2	CO1
Module – 2					
Q.3	a.	Explain the principles of breadth first search as a problem solving strategy.	10	L2	CO2
	b.	Demonstrate real-world problems with examples that can be addressed using AI based problem solving techniques.	10	L2	CO2
OR					
Q.4	a.	Illustrate the concept of search strategies in problem solving.	10	L2	CO2
	b.	Outline the key principles of depth first search as an uninformed search strategy.	10	L3	CO2
Module – 3					
Q.5	a.	Construct the greedy best first search with a neat diagram.	10	L2	CO3
	b.	Develop a model of A* search using an example diagram.	10	L3	CO3
OR					
Q.6	a.	Build a model of Wumpus world with knowledge based wumpus agent explaining the environment.	10	L2	CO3
	b.	Construct the syntax and semantics of propositional logic by the way in which the truth of sentences is determined with the truth table.	10	L2	CO4

Module – 4										
Q.7	a.	Explain the detail about all the steps involved in designing a learning system.						10	L2	CO4
	b.	Illustrate Find – S algorithm over EnjoySport concept. Training instances given below :						10	L3	CO4
		Eg	Sky	AirTemp	Humidity	Wind	Water	Forecast	Enjoy sports	
		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	
OR										
Q.8	a.	Explain in detail about the candidate elimination Algorithm with a sequence of training examples.						10	L3	CO4
	b.	Explain the inductive biased hypothesis space, unbiased learner and the futility of Bias Free Learning.						10	L2	CO4
Module – 5										
Q.9	a.	Identify the key steps involved in data cleaning handling text and categorical attributes in the preparation of data for machine learning algorithms.						10	L2	CO5
	b.	Construct the comparative approach of grid search and randomized search techniques used in fine tuning the model.						10	L3	CO5
OR										
Q.10	a.	Apply the various performance measures used in machine learning to evaluate the effectiveness of a model with example code and results.						10	L3	CO5
	b.	Build a detailed explanation of multi label classification and multi-output classification and apply relevant examples to illustrate each concept with its code and results.						10	L2	CO5
