Course Code: 20CS0522 **R20**

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
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QUESTION BANK (DESCRIPTIVE)

Subject with Code: Artificial Intelligence (20CS0522) **Course & Branch**: **B.Tech - CSE**

Regulation: R20 **Year &Sem:** III-B.Tech & II - Sem

UNIT- I
Artificial Intelligence and its Issues

1	**a**	Define Artificial Intelligence and identify the Strong, Weak AI.	[L1][CO1]	**[6M]**
	b	Discuss in detail an importance of AI	[L2][CO1]	**[6M]**
2	**a**	Predict the foundations of Artificial Intelligence?	[L3][CO1]	**[6M]**
	b	Describe the history of Artificial Intelligence from the year 1943.	[L2][CO1]	**[6M]**
3		Discuss the following Terms: i. AI in the Present ii.AI in The Future	[L2][CO1]	**[12M]**
4		Recall the applications of Artificial Intelligence?	[L1][CO1]	**[12M]**
5	**a**	Explain in details about the four approaches that are followed in AI	[L2][CO1]	**[6M]**
	b	Explain in Detail various Types of Knowledge	[L2][CO1]	**[6M]**
6	**a**	Define Agent and explain its types and Terminology?	[L1][CO1]	**[6M]**
	b	Summarize the various types of Environments for Intelligent Agent	[L2][CO1]	**[6M]**
7	Sketch the following Agent types and illustrate its working principle with merits, demerits. i) Simple reflex agent. ii) Model based agent. iii) Utility based agent iv) Goal based agent		[L3][CO1]	**[12M]**
8	**a**	Illustrate any four PEAS description of the task environment for intelligent agents and Explain it	[L2][CO1]	**[6M]**
	b	Difference between Forward Chaining and Backward Chaining	[L2][CO1]	**[6M]**
9	**a**	What is planning in AI? Explain the Basic components of a planning system in AI.	[L1][CO1]	**[6M]**
	b	Explain in detail of four major types of uncertainties in Decision-Making Problems.	[L2][CO1]	**[6M]**
10	**a**	What are the various Learning AI Learning Methods?	[L1][CO1]	**[6M]**
	b	Explain various AI Methods to Perform Decision Making under Uncertainty	[L2][CO1]	**[6M]**

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UNIT– II

OVERVIEW TO PROBLEM SOLVING

1	**a**	Illustrate the concept of Problem Solving Agent with an example.	[L3][CO2]	**[6M]**
	b	Design and Solve Vacuum Cleaner toy problem in AI.	[L6][CO2]	**[6M]**
2	Consider the given problem. Describe the operator involved in it. Consider the water jug problem: You are given two jugs, a 4-gallon one and 3-gallon one .Neither has any measuring marker on it. There is a pump that can be used to fill the jugs with water. How can you get exactly 2 gallon of water from the 4-gallon jug ?Explicit Assumptions: A jug can be filled from the pump, water can be poured out of a jug on to the ground ,water can be poured from one jug to another and that there are no other measuring devices available.		[L5][CO2]	**[12M]**
3	Evaluate a problem as a state space search with an example?		[L5][CO2]	**[12M]**
4	Explain travelling sales person problem procedure with the following instance and find an optimal tour. 0 10 5 20 5 0 9 10 6 13 0 12 8 8 9 0		[L2][CO2]	**[12M]**
5	Discuss the Eight Queen's problem. Draw the portion of the state space tree for Eight Queens using Backtracking Algorithm.		[L2][CO2]	**[12M]**
6	Analyze the Blind Search and its Types ? Explain any two in detail with example		[L5][CO4]	**[12M]**
7	Discuss about i) Greedy best-first search. ii) A* search		[L2][CO4]	**[12M]**
8	Discuss in detail various Heuristic Search types with suitable example		[L2][CO4]	**[12M]**
9	Design game tree using Mini-Max Algorithm explain with suitable example.		[L6][CO4]	**[12M]**
10	Design game tree using Alpha--Beta Pruning. Show the nodes that will be pruned.		[L6][CO4]	**[12M]**

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UNIT– III

KNOWLEDGE REPRESENTATION AND REASONING

1	**a**	Discuss the following terms: i) Logical AI ii) Knowledge based Agents	[L2][CO3]	**[6M]**
	b	Explain Various levels of knowledge-based agent	[L2][CO3]	**[6M]**
2		Define Propositional logic and explain Syntax of proposition Logic with logical equivalence	[L1][CO3]	**[12M]**
3		Explain the inference process in First order logic, using suitable example	[L1][CO3]	**[12M]**
4		Explain resolution in predicate logic with suitable example	[L2][CO3]	**[12M]**
5		Discuss Wumpus World Problem based on a knowledge-based agent	[L2][CO3]	**[12M]**
6	**a**	Construct How Facts are Conversion into FOL using Forward Chaining Algorithm with suitable example	[L5][CO3]	**[8M]**
	b	discuss the following terms i) Ontology's ii) Uncertainty	[L2][CO3]	**[4M]**
7		Explain utility based system with neat sketch	[L2][CO3]	**[12M]**
8		Discuss the Bayes rule inference with an example.	[L5][CO3]	**[12M]**
9		Explain the method of performing exact inference in Bayesian networks briefly.	[L3][CO3]	**[12M]**
10		Give a brief outline on belief network with an example	[L1][CO3]	**[12M]**

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UNIT – IV
LEARNING SYSTEMS

1	**a**	Define Learning and explain its impertinence.	[L2][CO5]	**[6M]**
	b	Explain the various forms of Learning Types?	[L2][CO5]	**[6M]**
2	**a**	What are the various of Feedback Analysis in Learning	[L1][CO5]	**[6M]**
	b	Analyze the Linear Regression in Supervised Learning.	[L4][CO5]	**[6M]**
3	**a**	Discriminate Logistic Regression analysis in Supervised Learning.	[L5][CO5]	**[6M]**
	b	Discuss the following terms i. Unsupervised learning ii.Clustering	[L1][CO5]	**[6M]**
4	**a**	Differentiate between supervised learning and unsupervised learning	[L1][CO5]	**[6M]**
	b	Discuss in detail about Reinforcement learning	[L1][CO5]	**[6M]**
5	**a**	Compare unsupervised learning and Reinforcement learning?	[L2][CO5]	**[6M]**
	b	Discuss the term Passive Reinforcement Learning	[L2][CO5]	**[6M]**
6	**a**	Applications of Reinforcement Learning.	[L2][CO5]	**[6M]**
	b	Discuss the Following Terms Information Gain ii .Gini Index	[L2][CO5]	**[6M]**
7		Analyze the Decision Tree Learning with an suitable example.	[L4][CO5]	**[12M]**
8		Explain about Evaluating And Choosing The Best Hypothesis.	[L2][CO5]	**[12M]**
9	**a**	Briefly explain about Broadening the applicability of decision trees.	[L2][CO5]	**[6M]**
	b	What is Active Reinforcement Learning?	[L2][CO5]	**[6M]**
10	**a**	Explain Generalization in Reinforcement Learning.	[L2][CO5]	**[6M]**
	b	How will Policy Search Reinforcement Learning.	[L1][CO5]	**[6M]**

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UNIT –V
EXPERT SYSTEMS

1		What do you mean by expert system technology? Explain.	[L1][CO5]	**[12M]**
2		Explain Components of Expert Systems in detail	[L2][CO5]	**[12M]**
3	**a**	Discuss about Characteristics and Capabilities of Expert Systems	[L2][CO5]	**[6M]**
	b	Explain Expert Systems Limitations in detail	[L2][CO5]	**[6M]**
4	**a**	List out the Applications of Expert System and Explain	[L1][CO5]	**[6M]**
	b	Why Expert System is required? What is the Technology used in it	[L4][CO5]	**[6M]**
5	**a**	List out the Benefits of Expert Systems.	[L1][CO5]	**[6M]**
	b	Discuss about hybrid expert system in detail	[L2][CO5]	**[6M]**
6	**a**	Describe the phases of developing an Expert system.	[L2][CO6]	**[6M]**
	b	Discuss Expert systems design examples.	[L2][CO6]	**[6M]**
7	**a**	What is Rule-based Systems? How Forward Chaining and Backward Chaining is used in Rule-based System	[L1][CO6]	**[6M]**
	b	Distinguish Model-based Expert system Vs Case based expert system	[L2][CO6]	**[6M]**
8		Explain stages in the development of an expert systems	[L3][CO6]	**[12M]**
9		Explain the expert System life Cycle.	[L2][CO6]	**[12M]**
10		Explain in detail about Knowledge Acquisition and Meta-Knowledge in expert system	[L1][CO6]	**[12M]**

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