



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)**

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QUESTION BANK (DESCRIPTIVE)

Subject with Code: Artificial Intelligence (20CS0522)

Course & Branch: B.Tech - CSE

Regulation: R20

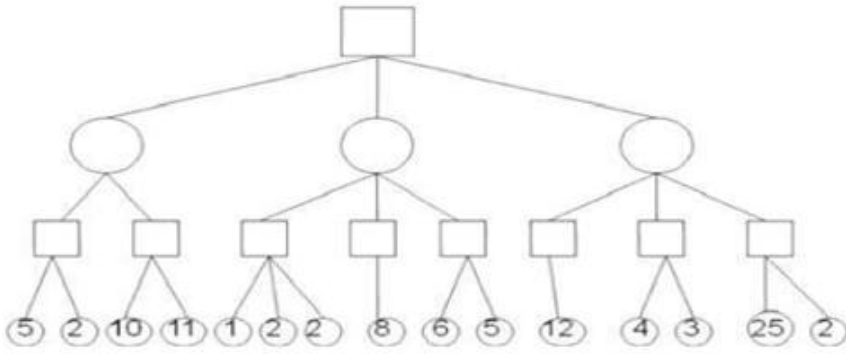
Year & Sem: III-B.Tech & II - Sem

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	a	Discuss the following Terms: i. AI in the Present ii. AI in The Future	[L2][CO1]	[6M]
4	b	Recall the applications of Artificial Intelligence?	[L1][CO1]	[6M]
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]

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]

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	a	Define Propositional logic and explain Syntax of proposition Logic	[L1][CO3]	[6M]
	b	Consider the following facts <ul style="list-style-type: none"> • Team India • Team Australia • Final match between India and Australia • India scored 350 runs, Australia scored 350 runs, India lost 5 wickets, Australia lost 7 wickets. Represent the facts in Predicate, convert to clause form and prove by resolution "India wins the match".	[L4][CO3]	[12M]
3		Explain the inference process in First order logic, using suitable example	[L1][CO3]	[12M]
4	a	Explain resolution in predicate logic with suitable example	[L2][CO3]	[6M]
	b	Discuss Wumpus World Problem based on a knowledge-based agent	[L2][CO3]	[6M]
5		Consider the following sentences: <ul style="list-style-type: none"> • John like all kinds of food • Apples are food • Chicken is food • Anything anyone eats and isn't killed is food • Bill eats peanuts and still alive • Sue eats everything Bill eats (i) Translate these sentences into formulae in predicate logic. (ii) Convert the above FOL into clause form.	[L5][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]

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]

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 BackwardChaining 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	a	Explain the expert System life Cycle.	[L2][CO6]	[6M]
	b	Design an expert system for travel recommendation and discuss its roles	[L4][CO6]	[6M]
10		Explain in detail about Knowledge Acquisition and Meta-Knowledge in expertsystem	[L1][CO6]	[12M]