

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

Subject with Code: Fundamentals of Artificial Intelligence (20CS0901)

Course & Branch: B.Tech CCC

Regulation: R20

Year & Sem: III-I

UNIT –I

INTRODUCTION TO ARTIFICIAL INTELLIGENCE

1	Explain in detail about Intelligent System and when it acts rationally.	[L2][CO1]	[12M]
2	Discuss in detail about the Foundations of Artificial Intelligence.	[L2][CO1]	[12M]
3	a Define Artificial Intelligence and Elaborate about its think ability.	[L1] [CO1]	[6M]
	b Identify what are the capabilities of a computer in terms of AI.	[L3] [CO1]	[6M]
4	Recall about the History of Artificial Intelligence in detail.	[L1] [CO1]	[12M]
5	a Explain the role of AI in Education and Finance.	[L2] [CO1]	[6M]
	b Explain the role of AI in Online and telephone customer service.	[L2] [CO1]	[6M]
6	a Explain the role of AI in Media and E-commerce.	[L2] [CO1]	[6M]
	b Explain the role of AI in News, publishing and writing.	[L2] [CO1]	[6M]
7	Outline the current trends in Artificial Intelligence.	[L2] [CO1]	[12M]
8	How AI evolve over Tic – Tac – Toe Game Playing? Deduce with an example.	[L4] [CO1]	[12M]
9	a What are the languages that support AI over a period of time? Explain	[L2] [CO1]	[6M]
	b How AI is transformed over the years? What are the languages supported by it.	[L1] [CO1]	[6M]
10	Explain the areas from which Artificial Intelligence laid its foundation	[L2] [CO1]	[12M]

UNIT –II
PROBLEM SOLVING, PROBLEM REDUCTION AND GAME PLAYING

1	Explain about State-Space Search in detail with an example	[L2][CO2]	[12M]
2	Write the Pseudo-code for ‘n’ Queen Problem. Deduce it with 8 Queen Example.	[L1][CO2]	[12M]
3	a What are the general steps in Problem Solving? Explain in detail why it is used in Artificial Intelligence.	[L4][CO2]	[6M]
	b Explain in detail about the Process in Control Strategies.	[L2][CO2]	[6M]
4	a Explain about BFS. Deduce it with an example. List the Pros and Cons in it.	[L2][CO2]	[6M]
	b What are the characteristics of a problem? How effectively it can be solved?	[L1][CO2]	[6M]
5	How Heuristic Search Techniques helps in Problem Solving. Explain in detail.	[L2][CO2]	[12M]
6	a Explain about DFS. Deduce it with an example. List its Pros and Cons.	[L2][CO2]	[6M]
	b How water jug problem can be effective when solving it.	[L2][CO2]	[6M]
7	a Write a short note on Problem Reduction “AND-OR” graphs with an example.	[L1][CO3]	[6M]
	b Prepare a Graph tree for Minimax Search Procedure and explain it in detail with an example.	[L3][CO3]	[6M]
8	Write the algorithm for Iterative Deepening Search A*. Explain it with an example.	[L2][CO2]	[12M]
9	a Write a short note on Constraint Satisfaction Problem with an example.	[L1][CO2]	[6M]
	b How Game playing strategies helps to improve effectiveness in search?	[L2][CO3]	[6M]
10	Explain about Alpha-Beta Pruning with α and β algorithms. Prepare a Graph Tree and explain it.	[L3][CO3]	[12M]

UNIT - III
LOGIC CONCEPTS

1	a	What is Mathematical Deduction? How it helps to solve Logic Problems	[L2][CO4]	[6M]
	b	What is Propositional Logic? Explain the facts and types in it in detail.	[L2][CO4]	[6M]
2	Explain in detail about Logical Connectives and its types in detail		[L2][CO4]	[12M]
3	a	What is the Limitations of Propositional logic?	[L1][CO4]	[6M]
	b	How effectively Propositional Calculus is used in AI? Explain	[L2][CO4]	[6M]
4	Explain in detail about Semantic Tableau in propositional logic.		[L2][CO4]	[12M]
5	a	How representation of Simple Facts in Logic is done? Explain	[L2][CO4]	[6M]
	b	What are the Uses of predicate logic? Make use of it and analyze the how it can create Resolution for it.	[L3][CO4]	[6M]
6	How representation facts in Propositional Logic are done? Explain		[L2][CO4]	[12M]
7	a	Write the algorithm of “Resolution in Propositional Logic” and explain with an example	[L1][CO4]	[6M]
	b	What is set-of-support strategy and how predicate logic complements by making use of it.	[L3][CO4]	[6M]
8	Give your inference about Axiomatic System with an example		[L4][CO4]	[12M]
9	Explain in detail about Natural Deduction system with an example		[L2] [CO4]	[12M]
10	a	Write the algorithm of “Conversion to Clause Form” and explain	[L1] [CO4]	[6M]
	b	What is unit-preference-strategy and why it complements predicate logic	[L4][CO4]	[6M]

UNIT - IV
KNOWLEDGE REPRESENTATION AND TECHNIQUES

1	a	How representations and Mappings in KR is done? Explain.	[L2][CO5]	[6M]
	b	Describe the approaches to Knowledge Representation?	[L2][CO5]	[6M]
2	a	Distinguish Inferential Knowledge Vs Procedural Knowledge	[L4][CO5]	[6M]
	b	How non binary predicates are represented using semantic net. Explain with suitable example	[L2][CO5]	[6M]
3	How KR using Semantic Network is done. Explain in detail.		[L1][CO5]	[12M]
4	a	Justify the statement- "Set theory provides a good basis for understanding Frame Systems".	[L5][CO5]	[6M]
	b	Make use of Frames as Instances and explain how KR is effectively used.	[L3][CO5]	[6M]
5	Explain in detail about Extended Semantic Networks for KR with example		[L2][CO5]	[12M]
6	a	List the four properties that a KR system must have.	[L1][CO5]	[6M]
	b	Represent the following facts using semantic nets: <ul style="list-style-type: none"> • John gave the book to Mary • John is 6 feet tall and that he is taller than Bill 	[L2][CO5]	[6M]
7	a	List the set of primitives and conceptual tenses used in Conceptual Dependency.	[L1][CO5]	[6M]
	b	List the ways in which classes are related to each other in frames, with suitable example?	[L1][CO5]	[6M]
8	a	How Script Structure in Conceptual Dependency Theory is used? Explain the rules in using it	[L2][CO5]	[6M]
	b	Explain four knowledge representation techniques	[L2] [CO5]	[6M]
9	Represent the following facts using partitioned semantic nets: <ul style="list-style-type: none"> • The dog bit the mail carrier. • Every dog has bitten a mail carrier. • Every dog in town has bitten the constable. • Every dog has bitten every mail carrier 		[L2][CO5]	[12M]
10	a	Why Case Grammars are used in Knowledge Representation? Explain	[L4][CO5]	[6M]
	b	Why Semantic Web is used in Knowledge Representation? Explain	[L4] [CO5]	[6M]
	a	Represent the following sentence in CD: <ul style="list-style-type: none"> • Since smoking can kill you, I stopped 	[L2] [CO5]	[6M]
	b	Describe the important components of a script, with a suitable example.	[L1] [CO5]	[6M]

UNIT - V
EXPERT SYSTEM AND APPLICATIONS AND PROBABILITY THEORY

1	a	What do you mean by expert system technology? Explain.	[L1][CO6]	[6M]
	b	Distinguish between forward chaining and backward chaining	[L2][CO6]	[6M]
2		Explain Components of Expert Systems in detail	[L2][CO6]	[12M]
3	a	Discuss about Characteristics and Capabilities of Expert Systems	[L2][CO6]	[6M]
	b	Explain Expert Systems Limitations in detail	[L2][CO6]	[6M]
4	a	List out the Applications of Expert System and Explain	[L1][CO6]	[6M]
	b	Why Expert System is required? What is the Technology used in it	[L4][CO6]	[6M]
5	a	List out the Benefits of Expert Systems.	[L1][CO6]	[6M]
	b	Discuss about hybrid expert system in detail	[L2][CO6]	[6M]
6	a	Describe the phases of developing an Expert system.	[L2][CO6]	[6M]
	b	Distinguish Expert system and Traditional system.	[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		What is a Bayesian belief network? By using Bayesian belief network, Calculate the probability that alarm has sounded, but there is neither a burglary, nor an earthquake occurred, and David and Sophia both called the Harry.	[L3][CO6]	[12M]
9	a	How Probability Theory is used in Theoretical and Experimental Probabilities.	[L2][CO6]	[6M]
	b	What is Certainty Factor Theory? Why it is considered as part of Expert System in AI. Explain.	[L4][CO6]	[6M]
10	a	What is Dempster Shafer Theory? List out its Characteristics, Advantages and Disadvantages	[L1][CO6]	[6M]
	b	What is Blackboard System Approach in AI. Why it is considered as Expert System Model?	[L4][CO6]	[6M]