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**CS T71 / ARTIFICIAL INTELLIGENCE**

**UNIT I**

**(2 marks)**

1. Define AI as” Systems that think like humans”?
2. Define AI as” Systems that think rationally”?
3. Define AI as” Systems that act like humans”?
4. Define AI as” Systems that act rationally”?
5. Explain the turning test approach for ‘acting humanly’?\*
6. What are the things the computer needs to act as human?
7. To pass the total Turing Test, the computer needs what?
8. Explain the cognitive modeling approach for’ Thinking humanly’?
9. Explain the laws of thought approach for’ Thinking rationally’?
10. Explain the rational agent approach for’ acting rationally’?
11. Give the advantages when we study AI as rational agent design?
12. What are all the fields from which AI can be inherited?
13. What is the first successful *knowledge-intensive* system. Explain?
14. What is the first successful *rule based expert* system. Explain?
15. Give the applications of AI?\*
16. Define an ‘Intelligent agent’?\*
17. Give the sensors and actuators for human, robotics and software agent?
18. How does an Agents interact with environments through sensors and effectors.?
19. Define an ideal rational agent? \*
20. What are the four things rational agent depend on?
21. What is an agent function? \*
22. What are four types of environment? \*
23. Explain Accessible vs. inaccessible environment?
24. Explain Deterministic vs. nondeterministic environment?
25. Explain Episodic vs. nonepisodic environment?
26. Explain Static vs. dynamic environment?
27. Explain Discrete vs. continuous environment?
28. What are the four types of agent program?
29. What is simple reflex agent?
30. What is model based agent?
31. What is Goal-based agents?
32. What is utility based agent?
33. What is the advantage of learning agent?
34. Explain the components of learning agent?
35. Write the algorithm for simple problem solving agent?
36. Define search?\*
37. What are the four components in a well defined problem?
38. What is uninformed search?\*
39. Give the types of uninformed search?
40. Define breadth first search.\*
41. What is uniform cost search?\*
42. Define depth first search.\*
43. Define depth limited search.\*
44. Define iterative deepening depth first search.
45. What is bidirectional search?
46. Compare all uninformed searches.
47. Define informed search. \*
48. What is best first search? \*
49. What is heuristic function? \*
50. What is greedy best first search?\*
51. What is A\* search?\*
52. What is recursive best first search?

**(11 Marks)**

1. What is AI and Discuss the History of AI. \*
2. What areintelligent agents and its environments?
3. Explain Structure of agents and its functions
4. Explain Problem spaces and search
5. What Is Uninformed Search Strategies? Explain \*
6. Discuss Heuristic Search techniques - Best-first search \*
7. What is Problem Reduction? Explain it with AO\* Algorithm.\*
8. What is Constraint satisfaction? Explain \*
9. What is Means Ends Analysis? Explain \*

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**Unit II**

**(2 marks)**

1. What is knowledge based agent?
2. What are the three levels of KB?
3. Describe Wumpus world?
4. What is Knowledge Representation?
5. What is Sound OR Truth-Preserving?
6. Define Inference?
7. Define Validity?
8. Define Satisfiability?
9. Define Logic?
10. Define Propositional Logic?
11. Define First-Order Logic?
12. State Rules of inference for propositional logic?
13. What is Models?
14. Define Monotonicity?
15. Define Horn Sentences?
16. Define Terms?
17. Define Atomic Sentences?
18. Define Complex Sentences?
19. Define Ground Term?
20. Define Situation Calculus?
21. Give the three Inference Rules?
22. What is Universal Elimination? \*
23. What is Existential Elimination? \*
24. What is Existential Introduction? \*
25. What is Unification? \*
26. What is forward chaining?
27. What is backward chaining?
28. Define Renaming?
29. What is Semantic Net? \*
30. Give the four fundamental parts of Semantic Net? \*
31. What is Describe and Match method?
32. What do you mean by Frames? \*
33. What do you mean by Chunk?
34. What do you mean by Instances or Instance frames? \*
35. What do you mean by classes (or) Class frames? \*
36. What do you mean by Access Procedures?
37. What is CPL?\*
38. What is Thematic Role?
39. What is an Agent? \*
40. What is Co agent?
41. What do you mean by Beneficiary?
42. What is Thematic Object?
43. What is an Instrument?
44. What do you mean by source and destination?
45. What do you mean by Old and New Surroundings?
46. What do you mean by conveyance?
47. What is Location?
48. What do you mean by Time?
49. What is Duration?
50. What are Ontological Commitments? \*
51. What are Epistemological commitments? \*
52. What is Higher-order logic?

**(11 Marks)**

1. What is a Knowledge .How it is represented in AI.\*
2. What Is Knowledge Based Agents. Explain \*
3. Discuss Propositional Logic? \*
4. What is Predicate Logic Or First Order Logic – FOL. Explain \*
5. What is Unification? Explain \*
6. What Is Resolution? Explain \*
7. Explain Weak Slot - Filler Structure \*
8. Explain Strong Slot - Filler Structure.\*

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**UNIT III**

**(2 marks)**

1. State the conditions under which uncertainty can arise? \*
2. What are the three reasons why FOL fails in medical diagnosis?
3. What is the tool that is used to deal with degree of belief? \*
4. For what the utility theory is useful and in what way it is related to decision theory?
5. What is the fundamental idea of the decision theory? \*
6. How are the probability over the simple and complex propositions are classified?
7. State the axioms of probability.
8. What is Joint Probability Distribution?
9. What is the disadvantage of Baye's rule? \*
10. What is the advantage of Baye's rule? \*
11. What is a belief network? \*
12. What is the task of any Probabilistic inference system?
13. State the uses of belief networks.
14. What are the two ways in which one can understand the semantics of belief networks?
15. What is Probabilitic Reasoning?Explain\*
16. What are the disadvantages of Full joint Probability distribution?
17. Explain Bayesian Network.
18. What makes the nodes of the Bayesian network and how are they connected?
19. What is Conditional Probability Table(CPT)? \*
20. What is Conditioning Case?
21. What are the Semantics of Bayesian Network?
22. State the way to representing the Full joint Distribution.
23. When will a Bayesian Network is said as Compact?
24. What are Deterministic nodes?
25. Explain Noisy-OR Relationship.
26. What are the four types of inferences?
27. What are the three basic classes of algorithms for evaluating multiply connected networks?
28. What is done in clustering?
29. What is a utility function?
30. What is the principle behind the maximum expected utility?
31. What are the two types of the dominance?
32. What are the two roles of decision analysis?
33. What are the axioms of the utility theory ?
34. What is meant by nonmonotoniclogic ?\*
35. Give an example for nonmonotonic logic.\*
36. What are the 2 kinds of nonmonotonicreasoning ?\*
37. What is meant by ATMS ?
38. What is meant by JTMS ?
39. Define belief revision.
40. List the limitations of CWA.
41. Give the difference between ATMS and JTMS.
42. What is a contraction ?\*
43. What are the properties of contraction ?

**(11 Marks)**

1. What is uncertainty?Explain
2. What is non-monotonic reasoning? Explain \*
3. What is probability and Basic probability notation ? \*
4. Explain Bayes’ Rule. \*
5. Explain Bayesian networks \*
6. Explain Dempster - Shafer Theory in AI \*
7. Explain Fuzzy Logic in AI. \*

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**Unit-IV**

**(2 marks)**

1. What is planning in AI? \*
2. How does a planner implement the solution?
3. What is the difference between planner and problem solving agents? \*
4. What are the effects of non- planning? \*
5. What are the key ideas of planning approach?
6. State the 3 components of operators in representation of planning?
7. What is STRIPS? \*
8. What is situation space planner?
9. What are the drawbacks of programmer’s planner?
10. What are the Planning Algorithms for Searching a *World Space*:
11. What is partial plan? \*
12. What is fully instantiated plan?
13. What is Complete plan
14. What are the Properties of POP?
15. What is conditional planning? \*
16. What is monitoring/ replanning \*
17. Distinguish between the learning element and performance element
18. What is the role of critic in the general model of learning.
19. Describe the problem generator.\*
20. What is meant by Speedup Learning.
21. What are the issues in the design of learning agents.
22. List the Components of the performance element
23. What are the types of learning \*
24. What are the approaches for learning logical sentences.
25. What are decision trees?\*
26. Give an example for decision tree logical sentence.
27. What are Parity Function & Majority Function.
28. Draw an example decision tree \*
29. Explain the terms Positive example, negative example and training set.
30. Explain the methodology used for accessing the performance of learning algorithm.
31. Draw an example of training set.
32. What is Overfighting?
33. What is Decision tree pruning
34. What is Pruning? \*
35. What is Cross Validation?
36. What is Missing Data
37. What are multivalued attributes
38. What is continuous valued attribute
39. What are version space methods?
40. What is PAC learning?
41. Difference between learning and performance agent? \*
42. Give a function for decision list learning?
43. What is decision list?

**(11 Marks)**

1. What is planning in AI? Explain the Planning done by an agent? \*
2. What is learning and its representation in AI explain?
3. Explain Planning Graph.\*
4. Explain Inductive Learning \*
5. Discuss decision tree learning.
6. Explain Reinforcement [Learning](http://www.cs.duke.edu/brd/Teaching/Previous/AI/Lectures/Summaries/learning.html#learning) \*
7. Discuss Neural Net learning and Genetic learning \*
8. What is conditional planning?Explain.\*
9. Describe continuous planning.\*

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**UNIT V**

**(2 marks)**

1. Define expert system. \*

2. What are applications of expert systems? \*

3. What are the distinguishing characteristics of programming languages needed for expert systems work?

4. How are expert systems are organized? \*

5. What are the Needs for Expert Systems? \*

6. What are the effectiveness in implementing human-like decision processes

7. What are the Benefits of Expert Systems? \*

8. Write short notes on HEURISTIC REASONING? \*

9. Write short notes on Search Control Methods

10. Write short notes on Forward Chaining

11. Write short notes on Backward Chaining

12. Write short notes on Data Uncertainties

13. What is robotics? \*

14. How does robots percepts? Or what is reception? \*

15. How does a robot pan to move?

16. What is Swarm intelligence? \*

17.What is ant system and ant colony system? \*

18. What are the essential characteristics that are need for a robot?

19. What is a sensor? \*

20. What is Effectors? \*

21. What is Expert system shell? \*

22. What is Meta data in Knowledge base?

23.Explain the shell portion in software modules

**(11 MARKS)**

1.Explain minimax search procedure - Adding alpha-beta cutoffs in Game Playing \*

2.Explain Expert System its Expert System shells and Knowledge Acquisition.\*

3.Explain Robotics and its hardware perception.\*

4.Explain Swarm Intelligent Systems. (or) What are Ant Colony System, its Application and Working? \*

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