DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
S.R.M.ENGINEERING COLLEGE
QUESTION BANK MK
III B.Tech (CSE)
SUBJECT: ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS

CODE: CS307
UNIT –I
PART-A
1. What is AI?
2. What are the task domains of artificial intelligence?
3. List the properties of knowledge?
4. What is an AI technique?
5. What are the steps to build a system that solves a problem?
6. What is a state space?
7. Explain the process operationalization?
8. How to define the problem as a state space search?
9. What does the production system consists of?
10. What are the requirements of a good control strategy?
11. What is chronological backtracking?
12. Give the advantages of depth-first search?
13. Give the advantages of breadth-first search?
14. What is combinatorial explosion?
15. Give an example of a heuristic that is useful for combinatorial problems?
16. What is heuristic?
17. Define heuristic function?
18. What is the purpose of heuristic function?
19. Write down the various problem characteristics?
20. What is certain outcome and uncertain outcome problem with examples?
21. What are the classes of problems with respect to solution steps with eg?
22. Illustrate the difference between any-path and best problem with examples?
23. What are the types of problems with respect to task interaction with a person?
24. What is propose and refine?
25. What is monotonic production system?
26. What is nonmonotonic production system?
27. What is commutative and partially commutative production system?
28. What are weak methods?
29. Write generate and test algorithm?
30. How is hill climbing different from generate and test?
31. When hill climbing fails to find a solution?
32. What is local maximum?
33. What is ridge?
34. What is plateau?
35. List the ways to overcome hill climbing problems?
36. Differentiate steepest accent from basic hill climbing?
37. Differentiate simple hill climbing from simulated annealing?
38. What are the components essential to select an annealing schedule?
39. What is best first search process?
40. State 'Graceful decay of admissibility'
41. What is an agenda?
42. What is the limitation of problem reduction algorithm?
43. What is constraint satisfaction?
44. What is operator subgoaling?
45. Define playing chess

PART-B
1. Explain briefly the various problem characteristics?
2. What are the problems encountered during hill climbing and what are the ways available to deal with these problems?
3. Explain the process of simulated annealing with example?
4. Write A* algorithm and discuss briefly the various observations about algorithm?
5. Discuss AO* algorithm in detail?
6. Write in detail about the constraint satisfaction procedure with example?
7. Explain how the steepest accent hill climbing works?
8. Write in detail about the mean end analysis procedure with example?
9. Illustrate how to define a problem as a state space search with an example?
10. Discuss the merits and demerits of depth-first and breadth-first search with the algorithm?

UNIT – II
PART – A
1. How is predicate logic helpful in knowledge representation?
2. Define semantic networks.
3. What is the need of facts and its representation?
4. What is property inheritance?
5. Discuss in brief about ISA and Instance classes.
6. Give some use of conceptual dependency.
7. Define inference.
8. Define logic.
9. Write short notes on uniqueness quantifier.
10. Write short notes on uniqueness operator.
11. Define WWF with an example.
12. Define FOL with an example.
13. Difference between propositional and FOL logic.
14. Define forward chaining and backward chaining.
15. Define Horn clause.
16. Define Canonical horn clause.
17. Write notes on long term and short term memory.
18. Name any 3 frame languages.
19. Write short notes on SCRIPTS.
20. Define frames.

PART – B
1. Issues in knowledge representation
2. State Representation of facts in predicate logic.
3. How will you represent facts in propositional logic with an example?
4. Explain Resolution in brief with an example.
5. Write algorithm for propositional resolution and Unification algorithm.
6. Explain in detail about forward and backward chaining with suitable example.
7. Explain steps involved in Matching.
8. Explain in detail about semantic nets with its types and application with suitable examples.
9. Explain in detail about frames representation.
10. Discuss about conceptual dependency.
11. Explain in detail about scripts and CYC along with their uses.

UNIT – III
PART – A
1. Define NMR
2. Define Justifications
3. What is non monotonic inference?
4. Difference between JTMS and LTMS
5. Define Bayes theorem.
6. What do you mean by Rule based system?
7. Define fuzzy logic.
8. What is credit assignment problem?
10. What is planning?
11. What is nonlinear plan?
12. What is understanding
13. State different types of mapping
14. What do you understand by Default reasoning.
15. Is minimax depth fist search or Breadth first search.
16. What are singular extensions?
17. What is a Bayesian network?
18. Define dumpster Shafer theory.
19. What is goal directed mode.
20. Write in short about iterative deepening.
21. What are the components of planning system?

**PART-B**

1. Explain in detail about Non Monotonic Reasoning with an example.
2. Describe the logics for NMR.
3. Sketch in detail about DFS and BFS implementation of NMR.
4. State how JTMS can be used to solve medical diagnosis.
5. Show how TMS are useful tools in solving constraint satisfactions problems.
6. Explain in detail about minimax procedure.
7. Explain the effect of Alpha beta cut off over minimax.
8. How would the minimax procedure have to be modified to be used by a program playing 3 or 4 persons instead of 2 persons.
9. Explain in detail about components of planning system.
10. Explain about various planning systems with appropriate examples.
11. What is understanding and state what makes it hard to understand.

**Unit IV**

**PART- A**

1. What are expert systems?
2. What are the most important aspects of expert system?
3. What are the characteristics of expert system?
4. Sketch the general features of expert system?
5. Who are all involved in the expert system building?
6. Explain the role of domain expert?
7. Explain the role of knowledge engineer?
8. What is the use of expert system building tool?
9. Compare the merits of human over artificial expertise?
10. Compare the merits of artificial over human expertise?
11. Give the structure of an expert system?
12. Define knowledge base, facts, rules, interpreter, scheduler and inference engine?
13. What are different ways of representing knowledge?
14. Explain rule based knowledge representation?
15. Give an example for representing knowledge using semantic nets?
16. Give an example for representing knowledge using frames?
17. Explain the knowledge acquisition process?
18. Explain the approaches in interviewing the expert?
19. What is meant by protocol analysis?
20. What is the use of expert system tools?
21. Name the programming languages used for expert system applications?
22. What are the types of tools available for expert system building?
23. Explain AGE?
24. What are the typical components of an expert system support environment?
25. Explain debugging aids, I/O facilities, explanation facilities and knowledge based editors?
26. What are the stages in the development of Expert System Tools?
27. Name the programming methods supported by expert system tools?
28. What are the knowledge representations supported by expert system tools?
29. Explain the tools AL/X EMYCIN, EXPERT, LOOPS, MRS, OPSS, ROSIE, SRL
30. What are the applications of EMYCIN?
31. What are the applications of EXPERT?
32. What are the applications of ROSIE?
33. What are the applications of OPSS?
34. Explain symbolic reasoning?
35. Explain blackboard architecture?
36. Defines semantic net.
37. Explain the following terms: Backward chaining, Database, forward chaining, frame, inference chain, slot, rule and natural language.
38. Explain reasoning.
39. Explain end user.
40. Explain heuristic rule with an example.
41. What is the need for expert system tool while building expert system.

PART B
1. Explain rule based systems with example.
2. Explain in EMYCIN and write its applications.
3. Explain associative nets with example.
4. Explain in EXPERT and write its applications.
5. Explain in ROSIE and write its applications.
6. In detail explain blackboard architecture.
7. Explain in OPSS and write its applications.
8. Elaborately explain the process of knowledge acquisition.
9. Explain the various stages in development of ES tools.

UNIT V
PART A
1. What are the phases in Expert system development?
2. Explain identification phase.
3. Explain conceptualization phase.
4. Explain formalization phase.
5. Explain implementation and testing phases.
6. Describe demonstration prototype.
7. Describe research prototype.
8. Describe field prototype.
9. What is meant by production prototype?
10. What is meant by commercial system?
11. When is Expert System Development Possible?
12. When is Expert System Development justified?
13. When is Expert System Development appropriate?
14. What are the questions to ask when selecting an Expert system tool?
15. What are the limitations of expert systems?
16. What are the problems the company faces when trying to apply expert system?
17. What are the common pitfalls in planning an expert system?
18. What are the pitfalls in dealing with the domain expert?
19. What are the pitfalls during the development process?
20. Where is expert system work being done?
21. What is meant by a commercial expert system?
22. Name any two expert system used in research?
23. Name any two expert system used in business?
24. Explain XCON?
25. Name any three universities and mention the expert system tools developed there?
26. Name any three research organization and mention the expert system tools developed there?
27. Explain Intelllicorp?
28. Explain CGI?
29. Explain Syntelligence?
30. Explain teknowledge?

PART-B
1. Explain the tasks involved in building expert system?
2. Explain the various stages of expert system development?
3. Explain the difficulties involved in developing an expert system?
4. What are common pitfalls in planning an expert system?
5. Explain the pitfalls in dealing with the domain expert?
6. Explain the pitfalls during the development process?
7. Explain expert system work at universities and research organizations?
8. Explain expert system work at knowledge engineering companies?
9. What is meant by high performance expert system? How is it used in research and in business?
10. In detail Explain XCON?