Hall Ticket Number :										

R-15

Code: 5G522

IV B.Tech. I Semester Supplementary Examinations April 2019

Artificial Intelligence Search Methods for Problem Solving

(Information Technology)

Max. Marks: 75 Time: 3 Hours

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Choose the correct Answer.

Question Numbers from 1 to 25 carries 2 MARKS each

1. The start node in the plan space search represents

   a) is always the empty set b) Always contains exactly two actions.

   c) Contains all actions relevant to the goal state. d) None

2. Which of the following was a rule-based expert system to help automatically configure computer systems?

   a) IBM Deep Blue b) MYCIN c) XCON d) IBM Watson

3. Exploitation in the context of heuristic search refers to

   a) choosing the next node as indicated by the heuristic function

   b) the willingness to go against the heuristic value

   c) Taking unfair advantage of the CLOSED list. d) None of the above.

4. In Iterated Hill Climbing which of the following are true?

   a) The algorithm always finds the global optimum.

   b) The algorithm makes stochastic moves from the same start state.

   c) The algorithm uses different start states chosen randomly

   d) None of the above.

5. A search node in Plan Space Planning (PSP) consists of

   a) a list of states explored b) The current state.

   c) The goal state. d) a partial plan

6. Divide-and-Conquer Beam Stack Search (DCBSS)

   a) Deterministic path b) feasible path c) optimal path d) goal state

7. Which of the following is true with respect to Recursive Best First Search (RBFS) is

   a) Admissible b) More Space Complexity c) Less Time Complexity d) Uniform cost

8. The branching factor of the different nodes in a Chess tree

   a) follows no particular pattern b) largest in the middle game.

   c) largest in the end game d) is always the same

9. A Mutex relation in a planning graph

   a) signifies a no-op action

   b) Can occur across an individual proposition layer signifying mutual exclusion.

   c) a relation between a proposition and an action

   d) can occur across layers signifying mutual exclusion

10. Which computes a game tree with k-poly look ahead is

a) MiniMax b) AlphaBeta c) SSS* search d) None of the above

11. Which chemical is released by ants to keep track of their path?

a) Deoxyribonucleic acid (DNA) b) Pheromone c) H2O d) Citric acid

12. Which of the following algorithm(s) always terminate(s) on a finite search space?

a) AO* b) AND-OR graph c) DFID d) A*

13. The Sussman Anomaly illustrates that

a) even simple blocks problems may have non-serializable sub-goals
b) even simple blocks problems can have serializable sub-goals
c) Goal Stack Planning always finds the shortest plan in the blocks world domain
d) Backward State Spec Planning

14. The Progression operation is ___ over state space where as the regression operation is _____ over state space.

a) Not closed, closed b) complete, sound c) closed, not closed d) sound, complete

15. The performance of an agent can be improved based on this

a) Observe b) Learn c) Improvise d) Implement

16. A type of non-monotonic reasoning.

a) Ordinary b) Special c) Duplicate d) Default

17. In a rule-based system, procedural domain knowledge is in the form of:

a) rule interpreters b) meta-rules c) production rules d) control rules

18. An AI technique that allows computers to understand associations and relationships between objects and events is called:

a) relative symbolism b) pattern matching c) cognitive science d) heuristic processing

19. A problem is first connected to its proposed solution during the _____ stage

a) conceptualization b) identification c) formalization d) implementation

20. Boolean Satisfiability Problem is a

a) configurable problem b) dynamic programming c) Greedy problem d) None

21. Which of the following is NP-hard problem in combinatorial optimization

a) TSP b) SAT c) BFS d) DFS

22. The heuristic function used by the AO* algorithm represents

a) an estimate of the distance to the goal node b) an estimate of the cost of solving the node.
c) an estimate of cost of decomposing the node d) None of the above.

23. _____ is an extreme of exploitation and _____ is an extreme of exploration

a) Hill Climbing, Random Walk b) Random Walk, Hill Climbing
c) Simulated Annealing, Tabu Search d) Tabu Search, Simulated Annealing

24. An AND/OR graph embodies a problem solving approach in which

a) the problem is solved in a goal directed fashion
b) search starts from one state/solution towards the goal state/solution
c) each node represents a candidate solution
d) None

25. A* always terminates when

a) graph is finite b) graph is DAG c) graph with loops d) None

Question Numbers from 26 to 50 carries 1 MARK each

26. Which function will select the lowest expansion node at first for evaluation?

a) Greedy best-first search b) Best-first search

c) Depth-first search d) None of the mentioned

27. What is the space complexity of Depth-first search?

a) O(b) b) O(bl) c) O(m) d) O(bm)

28. The initial state and the legal moves for each side define the _____ for the game.

a) Search Tree b) State Space Search c) Game Tree d) Random Forest

29. What is state space?

a) The whole problem b) Your Definition to a problem

c) Problem you design d) Representing your problem with variable and parameter

30. When breadth-first search is is optimal?

a) When there is less number of nodes b) When all step costs are equal

c) When all step costs are unequal d) Both a & c

31. Which search is equal to Minimax search but eliminates the branches that can't influence the final decision?

a) Depth-first search b) Breadth-first search

c) Alpha-beta pruning d) None of the mentioned

32. General algorithm applied on game tree for making decision of win/lose is _____

a) DFS/BFS Search Algorithms b) Heuristic Search Algorithms

c) Greedy Search Algorithms d) MIN/MAX Algorithms

33. What is the other name of informed search strategy?

a) Simple search b) Heuristic search c) Online search d) None of the mentioned

34. Which search is implemented with an empty first-in-first-out queue?

a) Depth-first search b) Breadth-first search

c) Bidirectional search d) None of the mentioned

35. Which search strategy is also called as blind search?

a) Uninformed search b) Informed search

c) Simple reflex search d) All of the mentioned

36. Web Crawler is a

a) Intelligent goal-based agent b) Problem-solving agent

c) Simple reflex agent d) Model based agent

37. Which search method will expand the node that is closest to the goal?

a) Best-first search b) Greedy best-first search c) A* search d) AO*

38. What is the heuristic function of greedy best-first search?

a) f(n) != h(n) b) f(n) < h(n) c) f(n) = h(n) d) f(n) > h(n)

39. An ant in Ant Colony Optimization algorithm for TSP produces a tour by

a) a deterministic greedy constructive method b) a stochastic greedy constructive method

c) a deterministic perturbation of the previous tour

d) a stochastic perturbation of the previous tour

40. Which of the following are true regarding alpha and beta nodes?

a) An alpha node can have a beta node as its parent

b) An alpha node can have only one parent

c) A beta node can have only one parent d) None of the above

41. A* always terminates when

a) graph is finite b) graph is DAG c) graph with loops d) None

42. A Genetic algorithm operator is used for

a) small population b) diverse population c) large population d) large diverse population

43. Beam stack Search finds_____

a) Deterministic path b) feasible path c) optimal path d) goal state

44. The Set of actions for a problem in a state space is formulated by a _____

a) Intermediate states b) Initial state

c) Successor function, which takes current action and returns next immediate state

d) None of the mentioned

45. The algorithm A* is admissible if

a) the branching factor of each node is less than 7

b) h(n) is always less than or equal to h*(n).

c) g(n) is always less than h(n) d) the cost of each edge is positive

46. Tabu search is a _____ search technique?

a) Deterministic b) Nondeterministic c) Finite d) Infinite

47. If monotone property holds for a particular heuristic function, then at the time when A* picks a node n for expansion which of the following hold(s)?

a) g(n) = g*(n) b) h(n) = h*(n) c) f(n) = f*(n) d) None of the above

48. Which of the following is the most expensive phase in the working of a rule-based system?

a) Matching WMEs with rules b) Resolving conflict set to select a rule with its data

c) Execute the rule selected from the conflict set d) None of the above

49. The complexity of Minimax algorithm is

a) Same as of DFS b) Same as BFS c) same as Alpha-beta d) none

50. A search algorithm takes _____ as an input and returns _____ as an output.

a) Input, output b) Problem, solution c) Solution, problem

d) Parameters, sequence of actions