Answer key

1. Agents behavior can be best described by _____
   a) Perception sequence
   b) Agent function
   c) Sensors and Actuators
   d) Environment in which agent is performing
2. Performance Measures are fixed for all agents.
   a) True
   b) False
3. **A problem in search space is defined by which one of the following state.**
   (A). Intermediate state
   (B). Last state
   (C). Initial state
   (D). dead state
4. Which of the following can improve the performance of an AI agent?
   a) Perceiving
   b) Learning
   c) Observing
   d) All of the mentioned
5. In artificial Intelligence, knowledge can be represented as_____.
   i. Predicate Logic
   ii. Propositional Logic
   iii. Compound Logic
   iv. Machine Logic

   a. Both I and II

   b. Only II

   c. Both II and III

   d. Only IV
6. After applying conditional Probability to a given problem, we get_____
   a. 100% accurate result

   b. Estimated Values

   c. Wrong Values

   d. None of the above
7. Which statement is valid for the Heuristic function?

   a. The heuristic function is used to solve mathematical problems.

   b. The heuristic function takes parameters of type string and returns an integer value.

   c. The heuristic function does not have any return type.

   d. The heuristic function calculates the cost of an optimal path between the pair of states.

8. Which agent deals with happy and unhappy states?

a) Simple reflex agent

b) Model based agent

c) Learning agent

d) **Utility based agent**

9. What kind of environment is strategic in artificial intelligence?

a) **Deterministic**

b) Rational

c) Partial

d) Stochastic

10. The term _____ is used for a depth-first search that chooses values for one variable at a time and returns when a variable has no legal values left to assign.

a) Forward search

b) **Backtrack search**

c) Hill algorithm

d) Reverse-Down-Hill search

11. Problemsolvingtechniqueinvolves

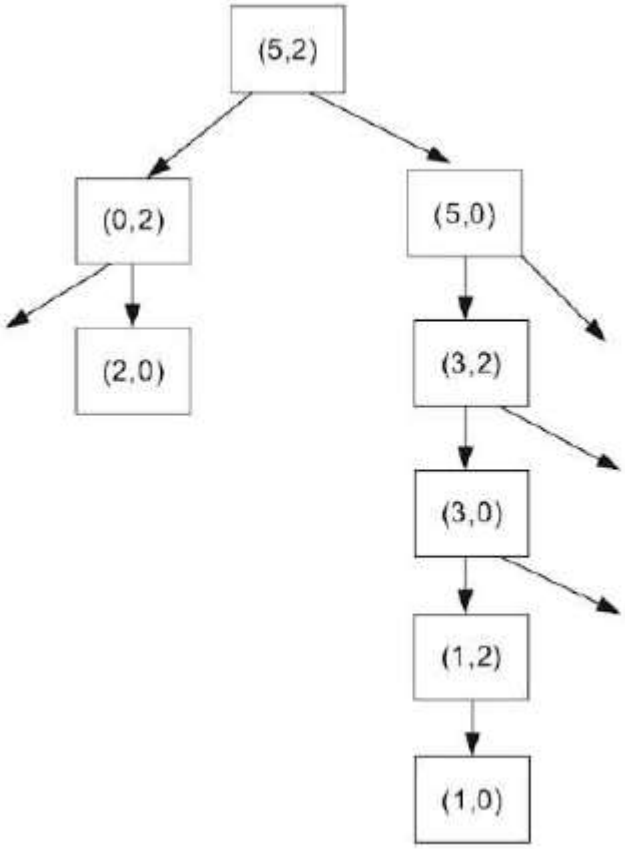
1.problemdefinition
2.problemanalysisandrepresentation
3.planning
4.execution
5.evaluatingsolution
6.consolidating gains

(Brief about each point) (3 Marks)

(one example) (2 Marks)

12. Diagram (2.5 marks)

Explanation (2.5 Marks)



13. In goal-based agents, the user provides the input and knows the expected output; thus, it is an example of supervised learning. The model performs the actions while keeping the goal state in perspective. The whole technique of the goal-based agent to reach a goal or a final state is based on searching and planning. The AI agent searches and develops the methodology that provides the easiest and most convenient pathway to reach a goal state.

Example – Group of friends planning for a road trip, team of students working on a project etc., (5 Marks)

14.

S1: Create a recursive function that takes the current index, number of vertices and output color array
S2: If the current index is equal to number of vertices.
S3: check if the adjacent vertices do not have same color and there are no more vertices to color. If the conditions are met, print the configuration and break else
S4: Assign a color to a vertex (1 to m)
S5: For every assigned color recursively call the function with next index and number of vertices
S6: If any recursive function returns true break the loop and returns true.

(5 Marks)

15. M=0
    I=1
    E=2
    C=3
    A=4
    O=5
    K=6
    J=7
    N=8
    H=9

(5 Marks)