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| **P.V.P Siddhartha Institute of Technology** | **Signature of Invigilator with date:** | **Marks Obtained:** |
| **Department of Computer Science and Engineering** |
| **Course: B.Tech** | **Year: III** | **Semester: I** | **Objective: I** |
| **Regulation:PVP20** | **Maximum Marks:10Marks** | **Session: F.N** |
| **A.Y:2024-2025** | **Date:16/08/2024** | **Duration: 20 min** |
| **Subject Code:** **20CS4501D** | **Subject Name: ARTIFICIAL INTELLIGENCE**  |
| **Registered Number:** | **Name:** |
| **Answer all the Questions. Each Question carries ½ Mark 20×½ M =10M** |
| **S. No** | **Question** | **CO** | **Level** | **Answer**  |
| 1. | What is the primary objective of a problem-solving agent in AI?a) To find the most cost-effective solutionb) To gather as much data as possiblec) To find a sequence of actions that reaches a goal stated) To communicate effectively with other agents | CO1 | L2 |  |
| 2. | In AI, a heuristic function is used in problem-solving to:a) Reduce the search spaceb) Increase the complexity of problemsc) Store data efficientlyd) Encrypt sensitive information | CO1 | L2 |  |
| 3. | Which algorithm is commonly used for pathfinding in AI?a) QuickSort b) A\* Algorithm c) Linear Regression d) Support Vector Machine | CO1  | L2 |  |
| 4. | What is "backtracking" in AI problem-solving?a) Storing data in a backward mannerb) Returning to previous states to find new pathsc) Decreasing the speed of computationd) Encrypting the problem data. | CO1 | L2 |  |
| 5. | Which of the following is a characteristic of a depth-first search algorithm?a) It explores the deepest node in the search tree firstb) It always finds the shortest pathc) It requires a large amount of memoryd) It operates in a parallel manner | CO1 | L2 |  |
| 6. | In AI, "constraint satisfaction problems" are typically solved using:a) Neural networks b) Genetic algorithmsc) Backtracking algorithms d) Linear programming | CO1 | L2 |  |
| 7. | The problem solving requires which of the following.i. Formal knowledge representationii. Conversion of informal knowledge to formal knowledgeiii. Conversion of formal knowledge to informal knowledgea) i and ii onlyb) ii and iii onlyc) i and iii onlyd) All i, ii and iii | CO1 | L2 |  |
| 8. | What is "state space" in AI problem-solving?a) The physical space where the agent operatesb) The set of all possible states reachable from the initial statec) The memory space allocated for the AI programd) The graphical representation of the problem | CO1 | L2 |  |
| 9. | In AI, "pruning" in the context of search algorithms refers to:a) Removing unnecessary or suboptimal paths from considerationb) Cutting down the data storage requirementsc) Reducing the number of agents in a systemd) Encrypting data to protect it from pruning attacks | CO1 | L2 |  |
| 10. | The "traveling salesman problem" in AI is an example of:a) A linear programming problemb) A constraint satisfaction problemc) An optimization problemd) A data storage problem |  CO1 | L2 |  |
| 11. | What does an "admissible heuristic" in AI guarantee?a) The fastest solution b) The most cost-effective solutionc) An optimal solution d) The least memory usage | CO1 | L2 |  |
| 12. | The concept of "hill climbing" in AI problem solving is similar to:a) Simulated annealing b) Genetic algorithmsc) Gradient ascent d) Random walk | CO1 | L2 |  |
| 13. | What is the primary function of "Alpha-Beta pruning" in AI?a) To compress data more efficientlyb) To reduce the number of nodes evaluated in the minimax algorithmc) To increase network throughputd) To encrypt sensitive data | CO1 | L2 |  |
| 14. | A key distinction between a simple reflex agent and a model-based reflex agent is:a) The ability to maintain internal stateb) The speed of executionc) The complexity of tasks it can performd) The type of sensors used | CO1 | L2 |  |
| 15. | What role does a "utility function" play in AI agents?a) It determines the speed of the agentb) It defines the agent's learning algorithmc) It measures how desirable a given state isd) It controls the agent's physical movements | CO1 | L2 |  |
| 16. | The "PEAS" description of an AI agent includes:a) Performance measure, Environment, Actions, Sensorsb) Processor, Energy, Agility, Speedc) Prediction, Efficiency, Accuracy, Stabilityd) Programming, Execution, Adaptation, Storage |  CO1 | L2 |  |
| 17. | Which AI concept involves an agent improving its performance by observing and mimicking human behavior?a) Supervised learning b) Cognitive modelingc) Neural networking d) Reinforcement learning | CO1 | L2 |  |
| 18. | The "actuators" of an AI agent are responsible for:a) Processing datab) Learning from experiencesc) Carrying out actions in the environmentd) Gathering sensory data | CO1 | L2 |  |
| 19. | The main difference between a deterministic environment and a stochastic environment in AI is:a) The presence of other agentsb) The predictability of the environment's responsec) The complexity of the tasksd) The speed of change in the environment | CO1 | L2 |  |
| 20. | Which form is called as a conjunction of disjunction of literals?a) Conjunctive normal form b) Disjunctive normal formc) Normal form d) All of the mentioned | CO1 | L2 |  |