

**DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE**

**Bachelor of Technology (Computer Engineering) SEMESTER - 7 Winter 2025 ( Regular )**

**Course :Bachelor of Technology (Computer Engineering) Branch : Engineering and Technology**

**Semester : SEMESTER - 7**

**Subject Code & Name: BTCOC701 - ARTIFICIAL INTELLIGENCE**

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**Time : 3 Hours]**

**[Total Marks : 60**

**Instructions to the Students:**

1. Each question carries 12 marks.
  2. Question No. 1 will be compulsory and include objective-type questions.
  3. Candidates are required to attempt any four questions from Question No. 2 to Question No.6
  4. Use of non-programmable scientific calculators is allowed.
  5. Assume suitable data wherever necessary and mention it clearly.
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**Q1. Objective type questions. (Compulsory Question)**

**12**

- 1 What is the primary goal of Artificial Intelligence (AI)?
  - A) To create software that operates without user input
  - B) To develop machines that think and act rationally
  - C) To replace all human jobs with robots
  - D) To simulate physical environments in virtual reality
- 2 Which of the following best describes an intelligent agent?
  - A) A system that solves all problems independently
  - B) A system that perceives its environment and takes actions to achieve goals
  - C) A system that operates only in controlled environment
  - D) static program designed for a specific task
- 3 Which type of environment is the easiest for an AI agent to operate in?
  - A) Fully observable and deterministic
  - B) Partially observable and stochastic
  - C) Dynamic and multi-agent
  - D) Partially observable continuous
- 4 Which search strategy expands nodes level by level without considering path cost?
  - A) Depth-first search
  - B) Uniform- cost search
  - C) Breadth- first search
  - D) Greedy best- first search
- 5 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

- 6 Which of the following is an example of a heuristic function in AI?  
 A) The shortest path in a graph  
 B) The Manhattan distance in a grid problem  
 C) A binary search algorithm  
 D) A depth-first traversal
- 7 Knowledge and reasoning also play a crucial role in dealing with ----- environment.  
 A) Completely Observable  
 B) Partially Observable  
 C) Neither Completely nor Partially Observable  
 D) Only Completely and Partially Observable
- 8 Which reasoning approach works backward from the goal to determine the necessary steps?  
 A) Forward reasoning  
 B) Backward reasoning  
 C) Deductive reasoning  
 D) Inductive reasoning
- 9 What is the primary purpose of Bayesian networks in AI?  
 A) To represent deterministic relationships between variables  
 B) To handle reasoning under uncertainty  
 C) To perform hierarchical planning  
 D) To implement goal stack planning
- 10 Semantic analysis in NLP focuses on:  
 A) Sentence boundary detection  
 B) Parsing sentence structure  
 C) Extracting meaning from text  
 D) Managing discourse relations
- 11 Which is not Familiar Connectives in First Order Logic  
 A) and  
 B) iff  
 C) or  
 D) not
- 12 Where does the bayes rule can be used?  
 A) Solving queries  
 B) Increasing complexity  
 C) Decreasing complexity  
 D) Answering probabilistic query

Q2. Solve the following.

- A) Explain the following in detail. i) Goal Based Agents ii) Utility Based Agents 6  
 B) Elaborate Artificial intelligence with suitable example along with it's Application. 6

Q3. Solve the following.

- A) What is alpha-beta pruning? Explain the function of alpha-beta pruning 6  
 B) Give the outline of Uniform cost search algorithm. 6

Q4. Solve Any Two of the following.

- A) What is Quantifier? Differentiate in between universal quantifier & Existential quantifier with its example. 6

- B) Give outline of simple forward chaining algorithm with suitable example. 6
- C) List and Explain the issues in knowledge representation. 6

Q5. Solve Any Two of the following.

- A) What are different components of planning system. 6
- B) Explain about Dempster- shafer theory. 6
- C) List out the planning terminologies and components of planning. 6

Q6. Solve Any Two of the following.

- A) Explain Semantic analysis in NLP. 6
- B) What is Expert system? Explain its Architecture, Features & applications. 6
- C) Comparison between Syntactic Processing & Semantic Processing. 6

\*\*\* End \*\*\*