

**BACHELOR OF TECHNOLOGY (CBCS - 2023)**  
**B. Tech. Sem-V Computer Science & Business Systems : WINTER: 2025**  
**SUBJECT: ARTIFICIAL INTELLIGENCE**

Day : Thursday  
 Date : 18/12/2025

**W-30744-2025**

Time : 02:30 PM-05:30 PM  
 Max. Marks : 60

NB :

1. All questions are COMPULSORY.
2. Figures to the right indicate FULL marks.
3. Draw neat labeled diagram WHEREVER necessary.
4. Assume Suitable Data if necessary.

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|------|---|------|
| Q. 1 | Define Artificial Intelligence (AI). What are the major problems of AI?   | (10) |
|      | <b>OR</b>   |      |
| Q. 1 | Design a simple AI agent for Tic-Tac-Toe and explain its decision-making process.   | (10) |
| Q. 2 | Compare <i>BFS</i> and <i>DFS</i> based on completeness, time, and space requirements.  | (10) |
|      | <b>OR</b>   |      |
| Q. 2 | Compare Hill Climbing, Simulated Annealing, and Local Beam Search.  | (10) |
| Q. 3 | Describe the working of the minimax procedure with a game tree example.   | (10) |
|      | <b>OR</b>   |      |
| Q. 3 | Compare single-agent search and multi-agent (adversarial) search.   | (10) |
| Q. 4 | What is an MDP? Explain its components and significance in sequential decision-making.  | (10) |
|      | <b>OR</b>   |      |
| Q. 4 | Describe the planning agent architecture. How does a planning system improve decision-making in comparison to reactive systems? | (10) |
| Q. 5 | Discuss the phases of Expert System development life cycle with a neat diagram.   | (10) |
|      | <b>OR</b>   |      |
| Q. 5 | Explain how AI improves Decision Support Systems. Discuss data-driven and knowledge-driven DSS.                                 | (10) |
| Q. 6 | Discuss AI-based drug discovery and development. Highlight benefits, challenges, and future scope.                              | (10) |
|      | <b>OR</b>   |      |
| Q. 6 | Explain the working of generative models (GANs/Transformers) and their applications in industries.                              | (10) |

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