



**K. K. Wagh Institute of Engineering Education & Research, Nashik**  
(An Autonomous Institute From A.Y. 2022-23)

| InSem Examination-II Summer 2025                          |                         |
|---|-------------------------|
| Exam Seat No.:  |                         |
| Academic Year: 2024-2025                                  | Semester: VI            |
| Class: TY   | Program: B.Tech         |
| Branch Code: INT  | Pattern: 2022           |
| Name of Course: Artificial Intelligence & Neural Networks | Course Code: INT223014A |
| Max. Marks: 30  | Duration: 1.15 Hrs.     |

**Instructions:** Candidates should read carefully the instructions printed on the Question Paper and on the cover page of the Answer Book, which is provided for their use.

1. This question paper contains 2 page(s).
2. Answer to each new question is to be started on a new page.
3. Assume suitable data wherever required, but justify it.
4. Draw the neat labelled diagrams, wherever necessary.
5. The last columns indicates the Course Outcome and level of Blooms Taxonomy of the Question/sub-question.

**Marks CO**

**Question No. 1**

- 1 a) How is a problem formally defined? Describe the components of a problem with a suitable example. (3) CO1
- 1 b) What is the complexity (in space and in time) of the following search methods: (4) CO1
- i) depth-first search
  - ii) breadth-first search
  - iii) depth limited search
  - iv) bi-directional search

**Question No. 2**

- 2 a) Justify iterative deepening depth first search by means of its parameters based on time complexity, space complexity. (4) CO1
- 2 b) Discuss the concept of depth limited search and its applicability in problem-solving. (4) CO1

**Group OR**

- 2 c) What is the main principle of breadth first search? Why might depth first search fail to find a solution in some cases? (4) CO1
- 2 d) Describe bi-directional search algorithm with suitable example. (4) CO1

**Question No. 3**

- 3 a) Write an algorithm for generate and test search method. (3) CO2
- 3 b) Discuss constraint satisfaction problem for solving a cryptarithmic problem. (4) CO2

**Question No. 4**

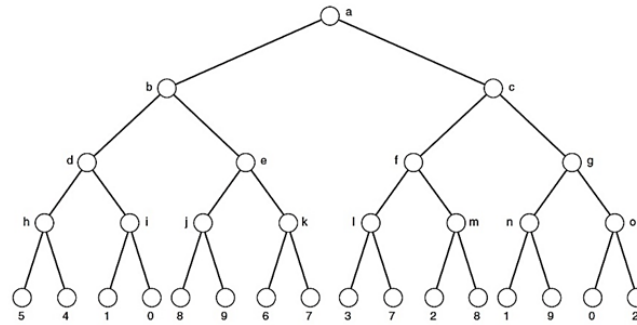
- 4 a) What are the problems with hill climbing and how can they be solved? (4) CO2

4 b) Discuss minimax search method for game playing.

(4) CO2

**Group OR**

4 c) Show the steps that would be taken in running the minimax algorithm on the game tree in following figure. (4) CO2



4 d) Explain AO\* search algorithm in brief.

(4) CO2

..... End of question paper.....