

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2021****Subject Code:3171105****Date:27/12/2021****Subject Name: Introduction of Artificial Intelligence****Time:10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1** (a) Define Artificial Intelligence (AI). Why do we need AI? **03**
 (b) Discuss latest trends in the field of AI? **04**
 (c) Write short note on production systems. **07**

- Q.2** (a) How Artificial intelligence and Machine Learning differ from each other. **03**
 (b) Define the term “agent”. Explain how agent interacts with environments. **04**
 (c) List and explain applications of AI. **07**

OR

- (c) List and explain five components of problem definition. **07**

- Q.3** (a) What do you mean by optimal solution? **03**
 (b) Discuss difference between Breadth first search and depth first search techniques. **04**
 (c) What is difference between toy problem and real-world problem? Explain toy problem with suitable example. **07**

OR

- Q.3** (a) What is the use of computer vision in AI? **03**
 (b) Discuss issues with hill climbing. **04**
 (c) Explain Breadth first search using suitable example. **07**

- Q.4** (a) What do you mean by topological sorting? **03**
 (b) Briefly explain constraint satisfaction problem. **04**
 (c) Explain Brute Force problem solving method using suitable example. **07**

OR

- Q.4** (a) What is a heuristic function? **03**
 (b) List advantages and disadvantages of Branch & bound algorithm. **04**
 (c) Consider the following graph (Figure-1), the numbers written on edges represent the distance between the nodes and the numbers written on nodes represent the heuristic value. **07**

Find the most cost-effective path to reach from start state “A” to final state “J” using A* Algorithm.

- Q.5** (a) List out the component of a planning system. **03**
 (b) What is parsing techniques in AI? **04**
 (c) How alpha-beta pruning can improve MIN MAX algorithm? Explain using suitable example. **07**

OR

- Q.5** (a) What is hierarchical AI planning? **03**
 (b) What is difference between Forward state space planning and Backward state space planning? **04**
 (c) List and explain Components of Natural Language processing in AI **07**

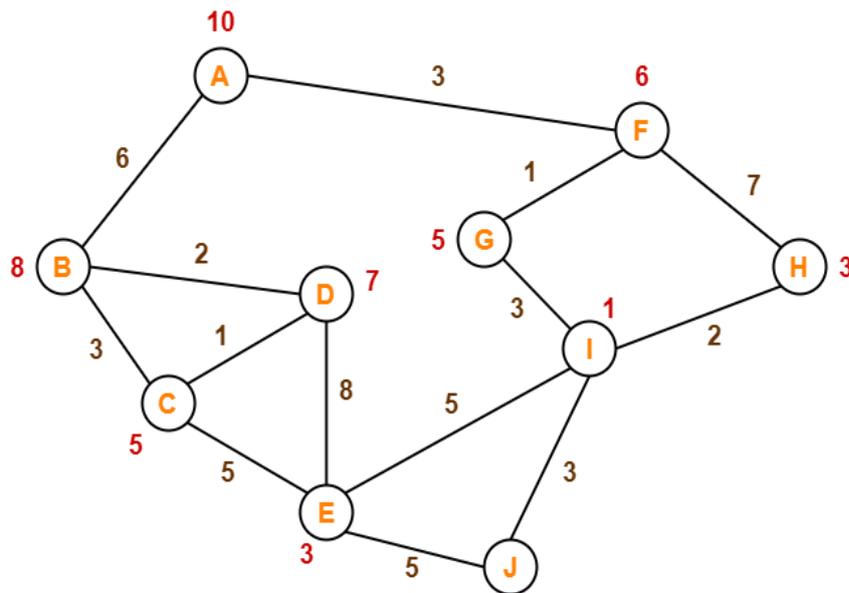


Figure-1
