VIT
Vellore Institute of Technology
Deemed to be University under section 3 of UGC Act, 1956

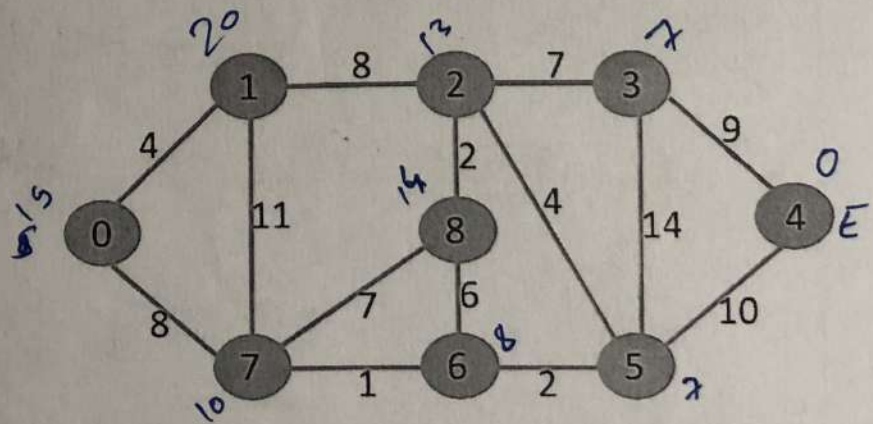
Continuous Assessment Test – I

Programme Name & Branch: B.Tech(CSE)

Course Code: CSE3013

Course Name: Artificial Intelligence

Class Number: ALL **Slot:** B2+ TB2 **Exam Duration:** 90 Mins **Maximum Marks:** 50

Section – A (10 x 5 = 50 Marks)	
S.No.	**Question**
1	Describe the task environment for self-driving car and part picking robot. Provide proper justification for your claims.
2	Consider the Water Jug problem as stated here: "You are given two jugs, a 4-gallon one and a 3-gallon one. Neither have any measuring markers on it. There is a pump that can be used to fill the jugs with water. How can you get exactly 2 gallons of water into the 4-gallon jug?" Represent this as a problem in State Space Search and state its Production Rules. Show at least one solution to this problem. Why is 'depth limited search' necessary in DFS?
3	Explain Steepest ascent Hill climbing algorithm. Discuss the situations under which Hill Climbing may fail to find a solution. What can be done to overcome these situations?
4	State the significance of using heuristic functions. Perform A* search algorithm on the graph given below taking node '0' as the starting node and give the proof of optimality.  Heuristics: h(0)=19 ; h(1)=20; h(2)=13; h(3)=7; h(4)=0; h(5)=7; h(6)=8; h(7)=10; h(8)=14.

5. Consider the game tree in which the static scores are from first player's point of view. Suppose the first player is maximizing player. Applying mini-max search, show the backed-up values in the tree. What move will the MAX choose? If the nodes are expanded from left to right, what nodes would not be visited using alpha-beta pruning.