Student Enrollment No: _____

GANPAT UNIVERSITY
U. V. PATEL COLLEGE OF ENGINEERING
B.TECH (COMPUTER ENGINEERING/INFORMATION TECHNOLOGY) SEM – VII
FIRST INTERNAL EXAMINATION – SEPTEMBER 2020
2CE702/2IT702: ARTIFICIAL INTELLIGENCE

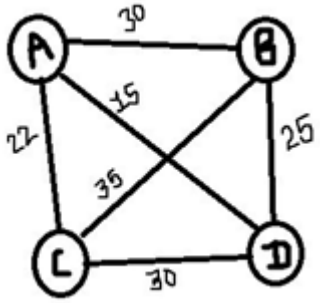
TIME:1 Hour **TOTAL MARKS: 20**

Instructions:
1. Figures to the right indicate full marks.
2. Be precise and to the point in your answer.

Q.1 There is rain in the whole August month in Gujarat. A river is passing from a village in gujarat. Because of rain, a flood situation is created in that village so Ramesh wants to cross a river to save his life. But, Ramesh wants to cross a river taking his wolf, goat and broccoli with him. There is a boat on the bank of the river and that boat can accommodate only Ramesh and a possession. If Ramesh left the wolf alone only with a goat then the goat will be eaten by the wolf. If Ramesh left the goat alone only with broccoli then the broccoli will be eaten by the goat. The boat cannot cross the river by itself with no people on board. Write all the moves considered for a successful journey. Write problem formulation using state representation, actions, initial state, intermediates state and final state. Draw a state space tree for this puzzle using left bank and right bank to denote left and right river banks respectively. How many journeys will it take to cross the river? **[6]**

OR

Q.1 Can we solve the TSP problem by using BFS if there are more than 10 cities? How does a combinatorial explosion occur in TSP? Solve the example shown in the given image by using nearest neighbor technique. Justify How the nearest neighbor technique is better than branch and bound for the given problem. (consider A as starting and ending city) **[6]**



Q.2 Generate a tree to solve the given 8-puzzle problem using simple hill climbing technique. (Take the heuristic function as the number of misplaced numbered tiles). **[5]**

5		8
4	2	1
7	3	6

Initial State (N)

1	2	3
4	5	6
7	8	

Goal State (G)

Q.3 Assume that you have two jugs, Jug-A and Jug-B each of which holds 8 liter and 5 liter of water respectively. Initially, both gallons are empty. We have an infinite supply of water. How can we measure exactly 4 liter of water in Jug-A? Also write the production rules for solving water jug problems. **[5]**

Q.4 Write a prolog program that can give output as shown in following query: **[4]**

```
?- inwords([3,5,1,4],X).
X = [three, five, one, four].
```

OR

Q.4 Write a prolog program that can give output as shown in following query: **[4]**

```
?- rule1([a,a,a,a,b,a,b,c,f,r,t],X).
X = [a, b, a, b, c, f, r, t] .
```