VIT-AP University, Amaravati

FAT

Course Title: Discrete Mathematical Structures   Class: B.Tech.
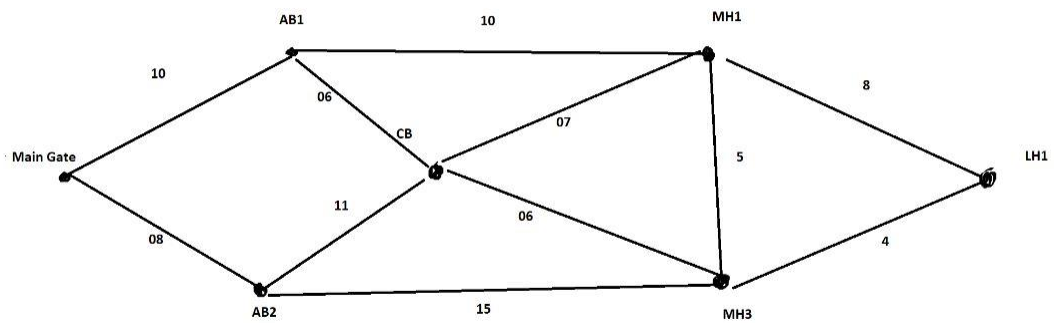Course Code: MAT1003   Semester: FALL

Dr. Tanuj Kumar

1) I went to a workshop. There was a game, rules of the game is that you can only speak in mathematical language. I want to say "Some real numbers are rational". Write the above sentence in argument form?   **-05 Marks**

2) Test the validity of the following arguments (without using truth table)
   If Amit play, he will not fail in the playground.
   If he do not study, he will play.
   Amit failed in the playground
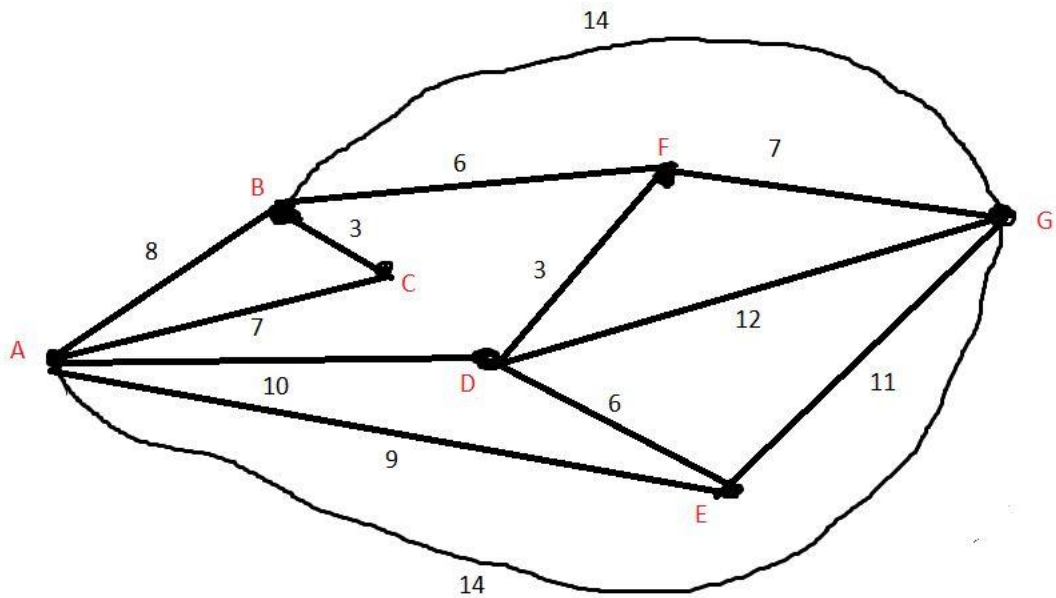
   Therefore Amit must have studied in the evening.   **-10 Marks**

3) Anil has certain pieces of chocolates. If he gives two chocolate to his all friends at a time he will have one at the end; If he gives five chocolates at a time to his friends he will left with three chocolates; if he gives three chocolates at a time to his each friend, Anil will have two chocolates at the end. How many pieces of chocolates Anil have with him?   **-10 Marks**

4) If initially in India 1 patient of COVID-19 is found. Now it is increasing in a pattern. On the nth day number of patients are two more than the three times of previous day. What will be the recurrence relation for the same, and find the solution using generating function?   **-10 Marks**

5) Check whether the Permutation on the set X={1,2,3,4,5} defined by $\sigma(1)=5$, $\sigma(2)=3$, $\sigma(3)=1$, $\sigma(4)=4$, $\sigma(5)=2$ with the composition of permutation is a group or not?   **-05 Marks**

6) A salesman is at the main gate of VIT-AP University. He wants to visit the LH1. Help him to find the shortest route using Dijkstra's algorithm from the following map.

-10 Marks

7) A cable company wants to lay line to multiple neighborhoods. They need to minimize the length of cable used, so they can save money. Following is the layout of their neighborhood. Help them to set up the network.

-10 Marks