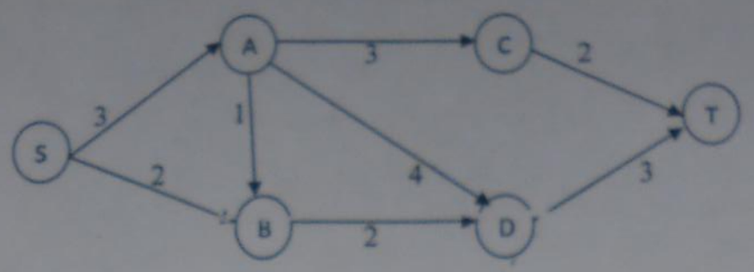
b. Discuss the concept of network flow. Consider the network given below and solve it to show that – (here 'S' is source and 'T' is destination)
Maximal flow = minimal cut. (10)

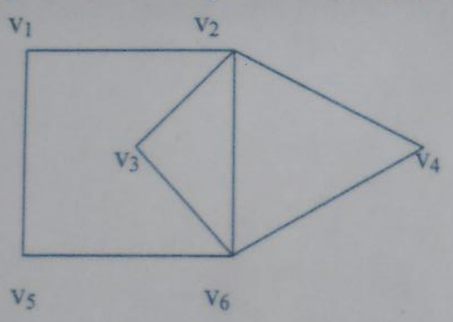


c. In cut-vertex concept Prove that - "For any non-trivial connected graph there will be at-least 2 non-cut vertices". (10)

Q 4. *(Attempt any two questions of choice from a, b and c)*

a. Write notes on –
i) Euler Graph
ii) Planar Graph and Planarity (5*2=10)

b. For the connected graph G given below, form incidence matrix, circuit matrix, cut-set matrix and adjacency matrix. [Name edges by your own] (10)



c. Prove that - maximum size of a disconnected graph of order 'n' and component 'k' could be – (n-k)*(n-k+1)/2 (10)

Q 5. *(Attempt any two questions of choice from a, b and c)*

a. Define matching, maximal matching and perfect matching. Explain why - "Every maximal matching is not perfect matching". (10)

b. Explain 4-color problem in graph coloring concept. (10)

c. What is Chromatic number? Justify the statement given below –
"Chromatic Number for any graph <= Order of the Graph (10)