Roll No. | | | | | | | |

Paper Code: TCS-604/TIT-604

End Semester Back Paper Examination 2018

Course – BTech (CS/IT) ***VIth Semester***

Paper Name – ***Graph Theory***

Time: Three Hours MM: 100

Note:

*I. This question paper contains **five** questions.*
II. All Questions are compulsory.
III. Instructions on how to attempt a question are mentioned against it.
*IV. Total marks assigned to each question are **twenty**.*

Q 1. *(Attempt any two questions of choice from a, b and c)* (5*2= 10)

a.

I. Prove that – number of even degree vertices of any graph is always even.
II. Define complete graph and complete bi-partite graph.

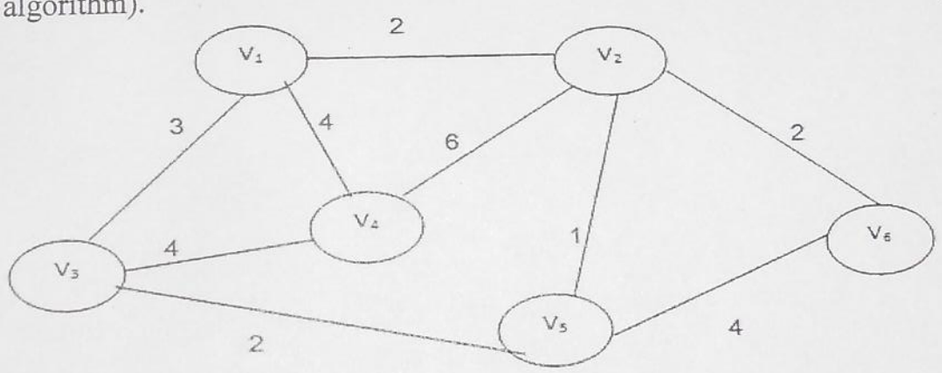
b. What is a Travelling Salesman Problem? Explain any one method to solve TSP.(Take an example to explain) (10)

c. Define (with example) – path, trail, circuit and cycle (2.5*4= 10)

Q 2. *(Attempt any two questions of choice from a, b and c)*

a. Define – Binary Tree, Fully Binary Tree, Binary Search Tree, AVL Tree (10)

b. Find the shortest path from node 'v_3' to node 'v_6' in the graph given below (using Dijkstra's algorithm). (10)



c. Define Spanning Tree. Mention some characteristics. Discuss Prim's Algorithm to find minimal spanning tree formed from a weighted graph with an example. (3+7=10)

Q 3. *(Attempt any two questions of choice from a, b and c)*

a. Draw any one graph as per the instruction-
i) Graph which has at-least one cut-vertex but doesn't have any bridge,
ii) Graph which has at-least one bridge but doesn't have any cut-vertex.