Registration No: | | | | | | | | | | |

Total Number of Pages: 01 **M.TECH**

P2CTCC10

2nd Semester Regular Examination 2016-17

GRAPH THEORY

BRANCH: COMPUTER ENGG, COMPUTER SCIENCE, COMPUTER SCIENCE AND ENGG, COMPUTER SCIENCE AND TECH., Information Tech Eng, INFORMATION TECH.

Time: 3 Hours

Max Marks: 100

Q.CODE:Z819

Answer Part-A which is compulsory and any four from Part-B.

The figures in the right hand margin indicate marks.

Part – A (Answer all the questions)

Q1 Answer the following questions:**Short answer type** **(2 x 10)**

a) What are factors of graphs?

b) What is chromatic number?

c) Define Konig's theorem.

d) What is forest of tree?

e) Define Petersen's theorem.

f) What do you mean by a path in a graph?

g) Define perfect graphs.

h) Define flow cuts.

i) Define incidence matrix.

j) What is depth of tree?

Part – B (Answer any four questions)

Q2 **a)** Define graph. Explain various terms related to graphs. Explain the various representation technique of graph in memory. **(10)**

b) Define digraph and undirected graph with examples. **(10)**

Q3 **a)** Explain max flow min cut theorem. **(10)**

b) Explain Tutte's theorem. **(10)**

Q4 **a)** Define vertex colouring and edge colouring of a graph. **(10)**

b) Explain Vizing's theorem. **(10)**

Q5 **a)** Explain Matrix-Tree theorem. **(10)**

b) Explain Cayley's theorem with proof. **(10)**

Q6 **a)** What is toroidal graph? Explain the theorem-the Euler characteristic of the torus with proof. **(10)**

b) Explain Ramsey's Theorem-1 and Theorem-2 with proof. **(10)**

Q7 **Write Short note:** **(4 x 5)**

a) Hamilton Path

b) Euler Tour

c) Bipartite graph

d) Random graphs

e) Minimum Spanning Tree