

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- SEPTEMBER 2018

B. Tech VII Semester

COURSE CODE: 10B1WCI733

MAX. MARKS: 15

COURSE NAME: Graph Algorithms and Applications

COURSE CREDITS: 3

MAX. TIME: 1Hr

*Note: All questions are compulsory.*

1. [5 Marks]

a. The largest independent set in Figure 1 has size.

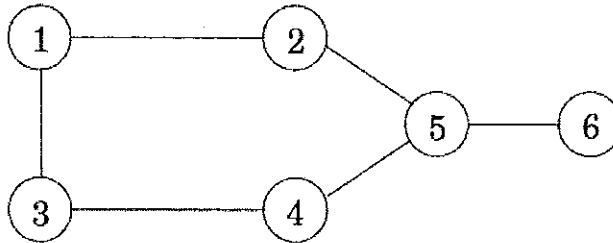


Figure 1

b. Can the graph given in Figure 2 be decomposed into edge-disjoint spanning trees? Into isomorphic edge-disjoint spanning trees?

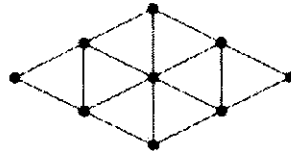


Figure 2

2. [5 Marks]

a. Can you construct a graph if you are given all its spanning tree? How?

b. Prove or disprove: Any two simple connected graphs with  $n$  vertices, all of degree two, are isomorphic.

3. [5 Marks]

a. Prove or disprove: Every tree with average degree  $a$  has  $2/(2-a)$  vertices.

b. Prove or disprove: An edge is a cut-edge if and only if it belongs to no-cycle.