

Homework questions 20, 20

CISC 320

April 20, 2015

For a graph $G = (V, E)$, A vertex cover is a subset S of V such that for every edge (u, v) in E at least one of u or v is in S .

- 20 (a) What is the minimal size k of a vertex cover on the complete graph on n vertices?
- (b) What is the minimal size k of a vertex cover on the complete bipartite graph on V where V is a set of n vertices partitioned into two sets V_1 and V_2 with an edge (v_1, v_2) for every $v_1 \in V_1, v_2 \in V_2$. Let $k = |V_1|$ so that $n - k = |V_2|$.
- (c) What is the minimal size k of a vertex cover on an n vertex cycle.
- 21 Design a fast algorithm to determine, given an integer k and a tree with n vertices, whether the tree has a vertex cover of size k .