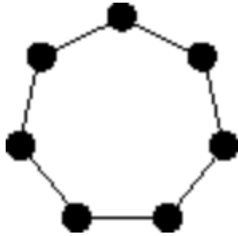


A graph on 10 vertices has 3 isolated vertices (degree 0) and 7 vertices of degree 2. Could such a graph be bipartite? How many vertices are there in an optimal vertex cover for this graph? (Consider all possible cases.)

Ans:

- 1) Not necessary. It can be bipartite. It can also be heptagon.



- 2) In order to find its vertex cover, we need to find its matching. Vertex cover is a subset C of vertices such that for any edge at least one its endpoint belongs to C . We use greedy method. At each step, we pick new edges and remove edges which are adjacent to it. We stop until we can not add new edges.
- Bipartite: matching size: 3, vertex size 6.
 - Heptagon: matching size: 3, vertex size 6.