1. (a) Remove $\{uv\}$ from the graph ($O(1)$)
   (b) Run $DFS(u)$ ($O(n+m)$)
   (c) If $isReachable[v]$ is true, there is a cycle using $\{uv\}$ ($O(1)$)
2. (a) Run $BFS(u)$ ($O(n+M)$)
   (b) For all $v \in V$, check if $dist[v] \leq r$. ($O(n)$)
3. (a) For any vertex $u \in V$, run $BFS(u)$. ($O(n+m)$)
   (b) For every vertex v, if $dist[v]$ is even, put u in set A; otherwise, put it in set B. ($O(n)$)
   (c) For every vertex v, check if all of its neighbors are in the opposite set. If not, the partition is impossible. ($O(n+m)$)