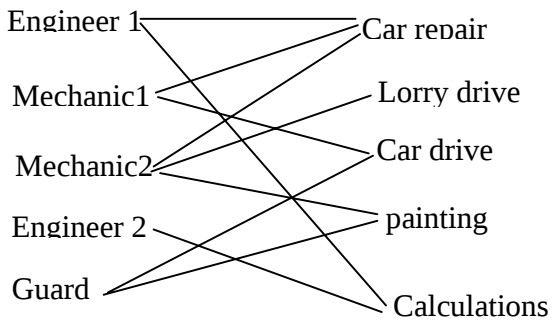
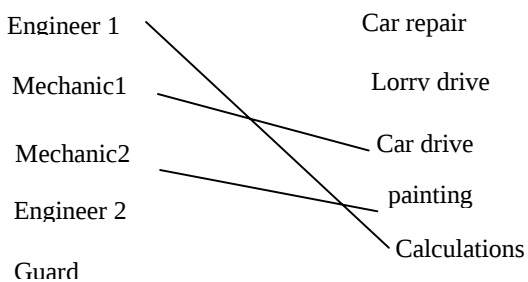


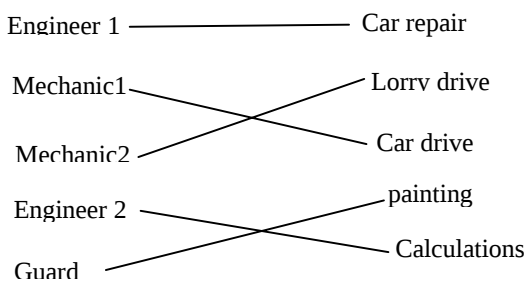
ASSIGNMENT PROBLEMS (Bipartite Matching)



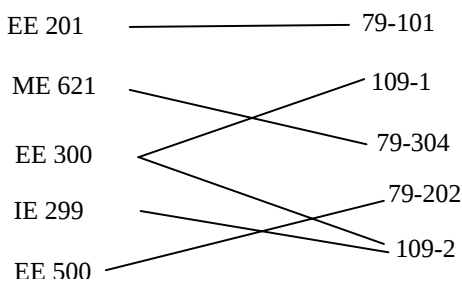
Engineer 1 can repair a car and can do calculations
 Mechanic 1 can repair a car, can drive a lorry and car
 Mechanic 2 can repair a car and can do painting
 Guard can drive a car and can do painting



Bad Matching (Car repair and lorry drv.?)



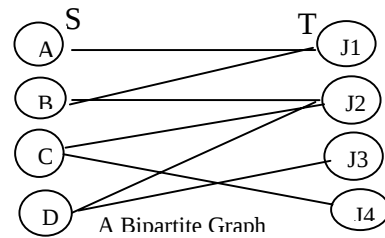
Good Matching (All jobs are assigned)



A bipartite graph is a graph in which the vertex set V is partitioned into two sets S and T without common elements.

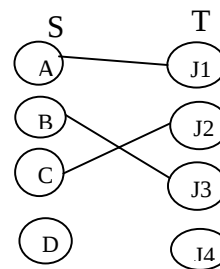
$S = \{A, B, C, D\}$ $T = \{J1, J2, J3, J4\}$

S and T do not have common elements

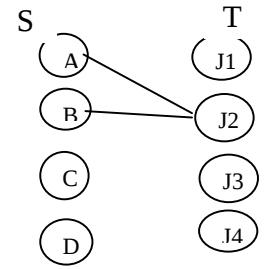


A matching in a graph G is a set M such that no two edges have common vertex.

S and T do not have common elements



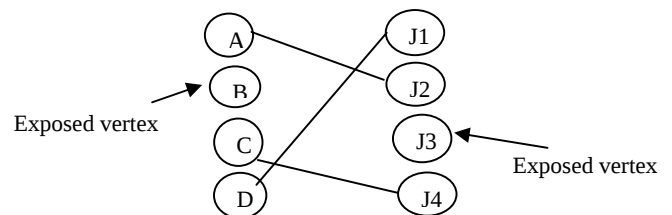
Matching



NOT Matching

Maximum Cardinality Matching: If matching M consists of the greatest possible number of edges, it is called maximum cardinality matching.

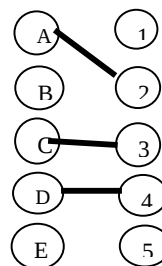
Exposed Vertex: A vertex V is exposed if V is not covered



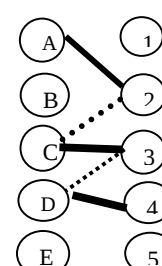
Complete Matching: If a matching leaves no vertex exposed it is called complete matching

Alternating Path: An alternating path is a path that consists of edges in M and not in M respectively

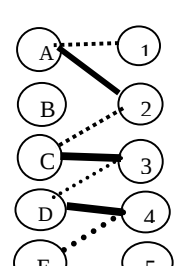
Augmenting Path: An augmenting path is an alternating path both of whose endpoints are exposed



A Matching



Alternating Path



Augmenting Path

