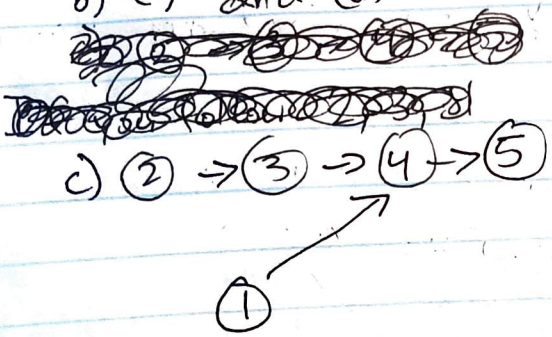
Gordon Ng

1a) a) False
b) False
c) False

b) a) (a) abcdefgh and (c) abcegfhedb
b) (a) and (d)



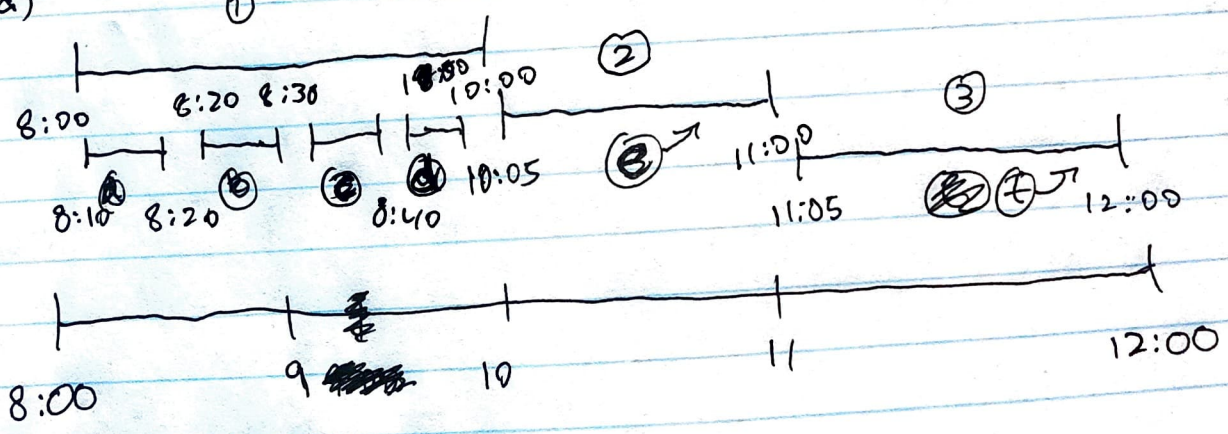
c) ② → ③ → ④ → ⑤
① → ④

Follow 2, 3, 4, 5 nodes for the path.

d) Yes, definition of minimum spanning tree is that the shortest path is found by partitioning

e) Yes, linear transformation, the difference between any two weights is the same

2a)




ESTF: nodes 1, 2, 3
Optimal Solution: nodes. a, b, e, d, e, f

2b) If all jobs have equal lengths, you order by end time if you order by Earliest Start Time First algorithm, you get end time, which is the most optimal solution. In one of the proofs end time gives the most optimal solution.

3b) This algorithm uses $O(m+n)$ time for BFS algorithm.

3c) In order for there to be a cycle, you would have to go from U to V, every other node in U then V. When you complete the cycle, you're back to the node in U. Compare each node from U as in V.

Bipartite group has two groups, so you can only have even groups

$X, Y$

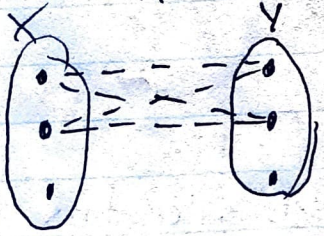
$C = (v_1, v_2, \ldots, v_n, v_1)$ n is odd

$v_1 \in X, v_2 \in Y, v_3 \in X, \ldots$

$v_i \in X$ if i is odd

$v_n \in X$

$v_n v_1 \in E(G_1)$




Bipartite graphs have no odd cycle