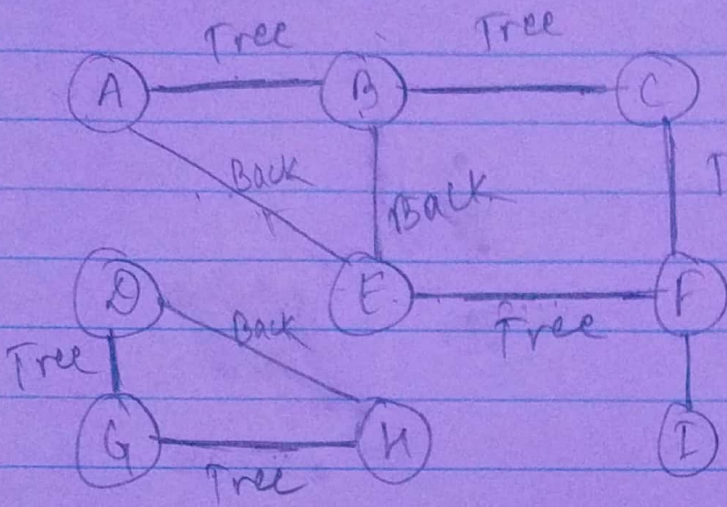
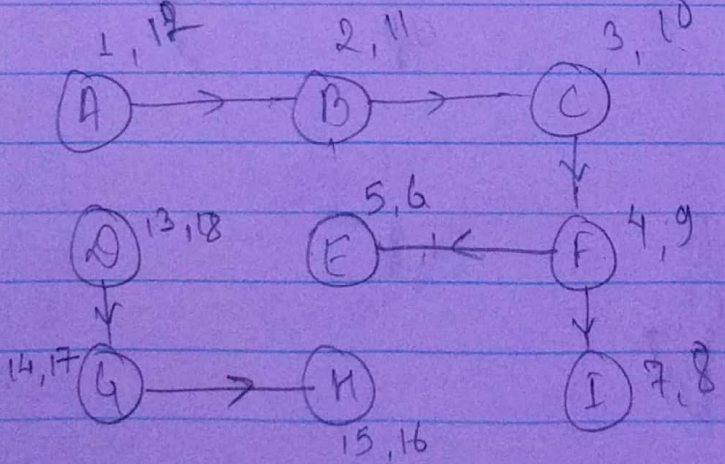
Ganesh Budhathoki

Solution 3.1.

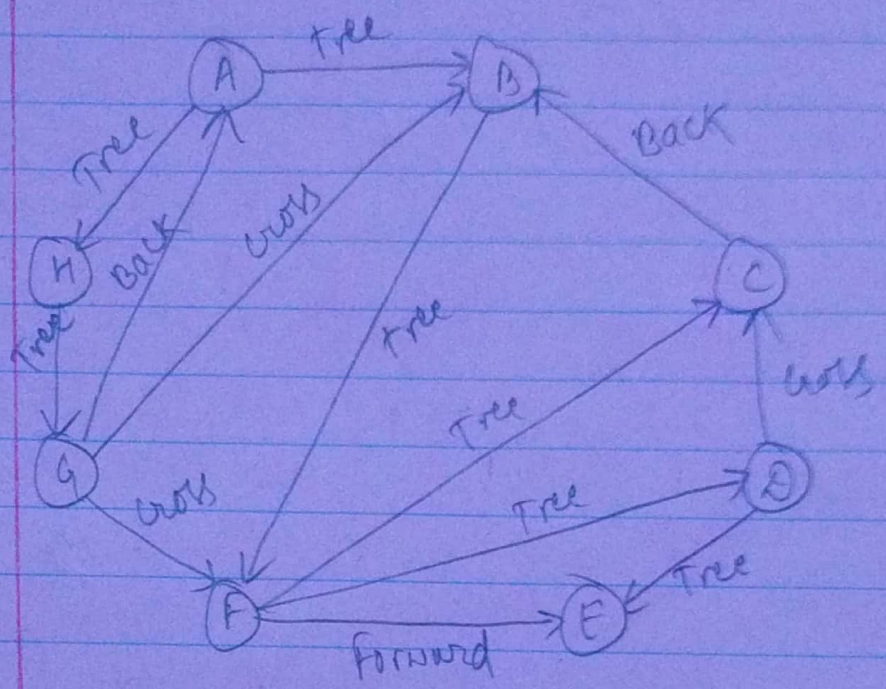


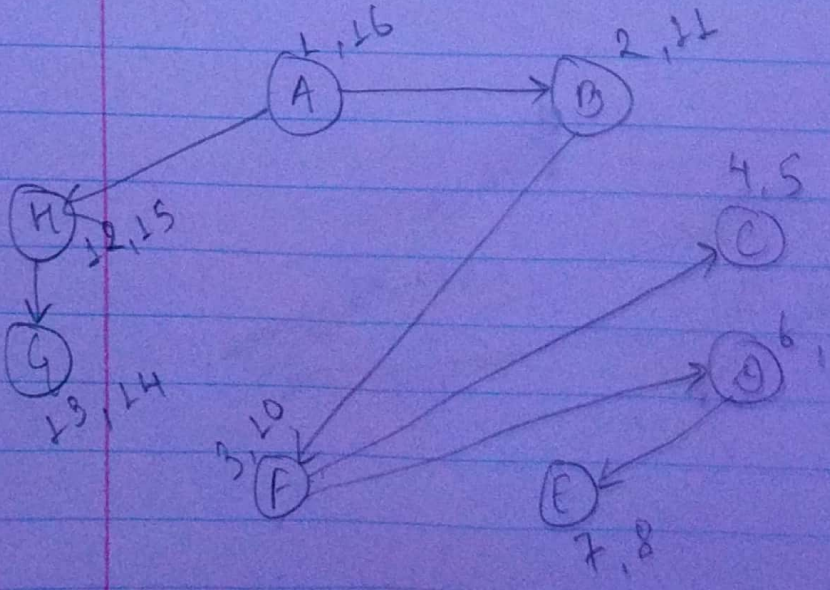
A	B, E
B	C, E
C	F
F	E, I
E	—
I	—

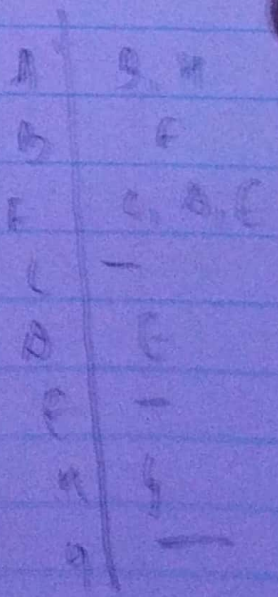
DFS tree.



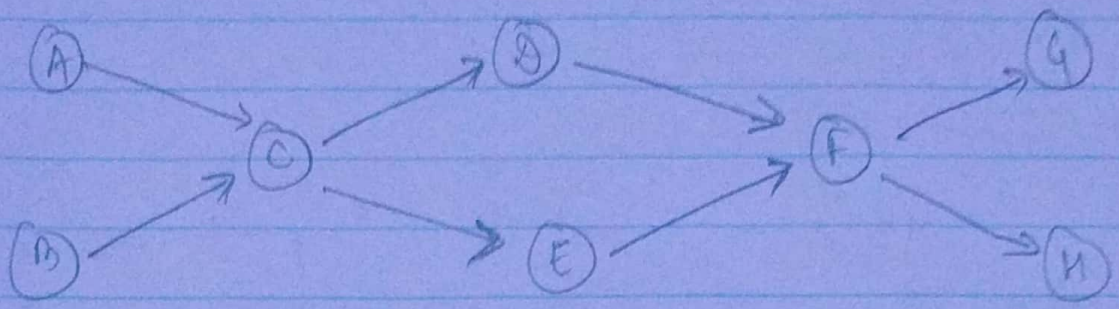
Solution 3.2 (b)



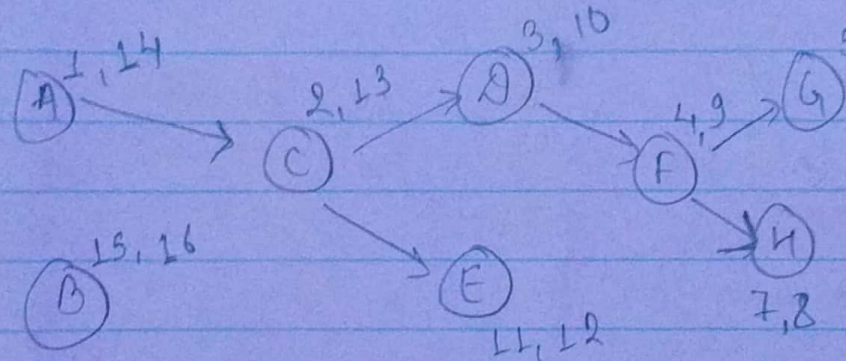




Solution 3.3



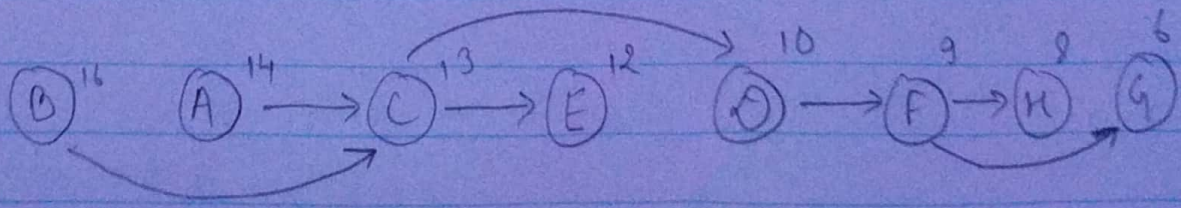
(a)



A	C
C	D, E
D	F
F	G, H
G	–
H	–
E	–
B	–

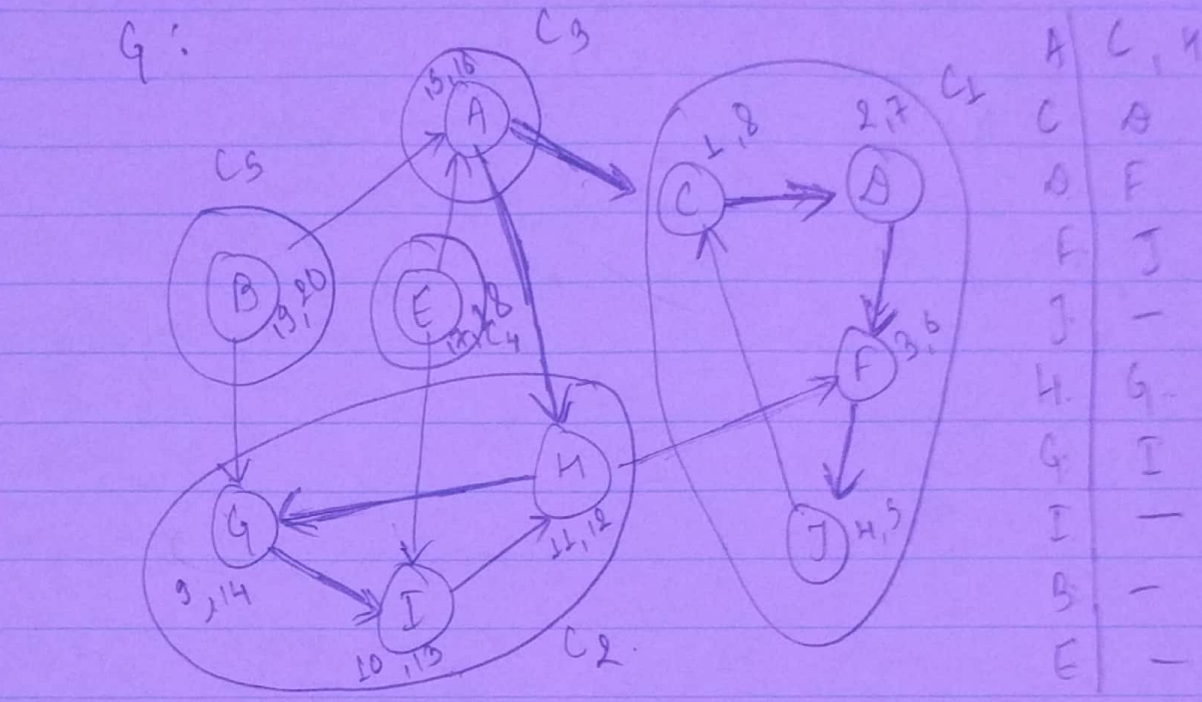
(b) Sources - A, B
Sinks - G, H.

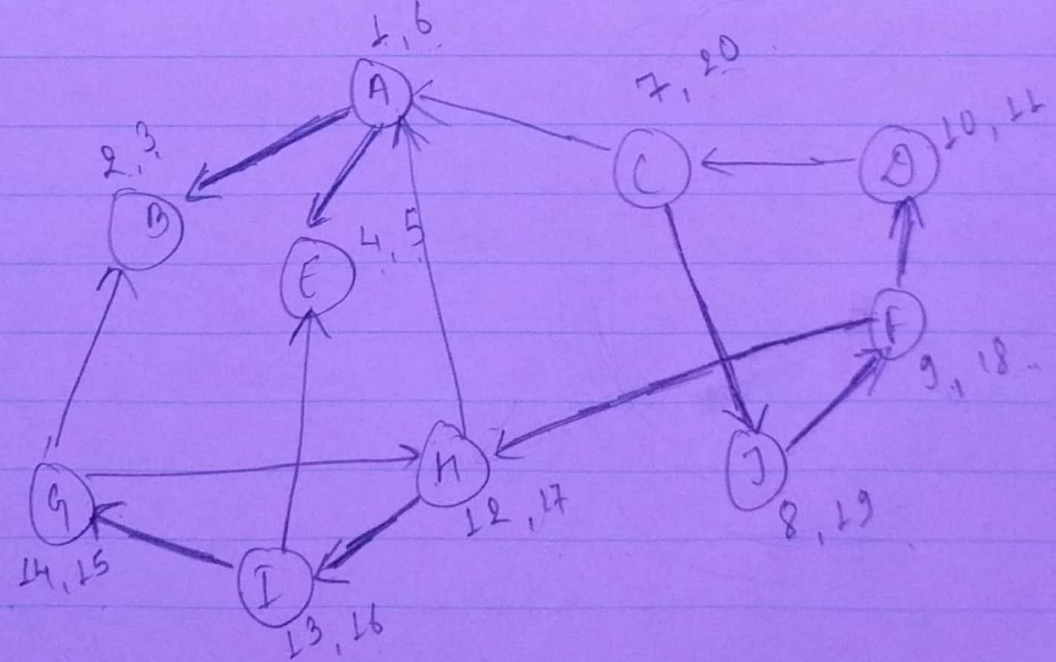
(c)



(d) There are 8 topological orderings for this graph

Solution 3.4





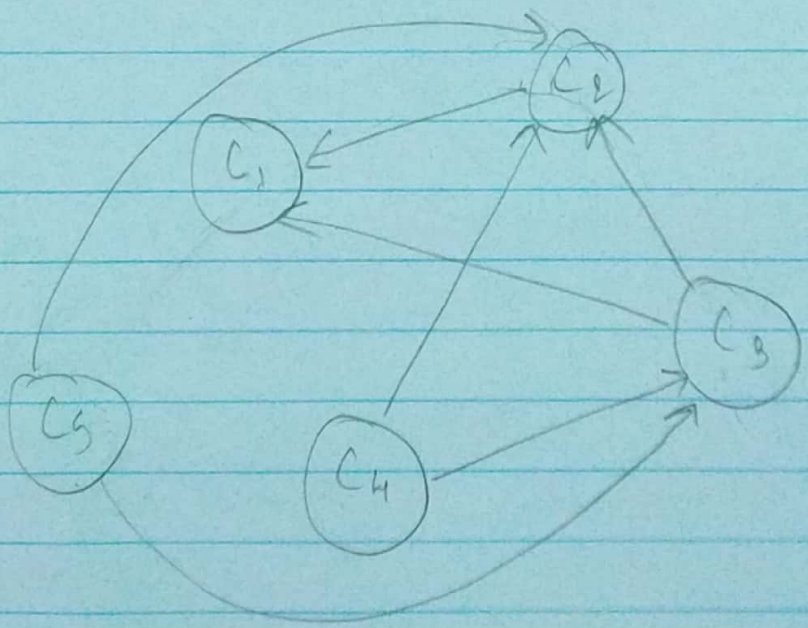
G^R nodes sorted in decreasing order of post visit values

$C^{20}, J^{19}, F^{18}, H^{17}, I^{16}, G^{15}, D^{11}, A^{6}, E^{5}, B^{3}$

(a) C_1, C_2, C_3, C_4, C_5

(b) Source : C_4, C_5
Sinks : C_1

(c)



(d) The minimum number of edges we must add is 2. from either (C_1 to C_4 or C_4 to C_1) and C_4 to C_5. This will make the graph strongly connected