

15

# CSE 221: Algorithm Quiz - 3

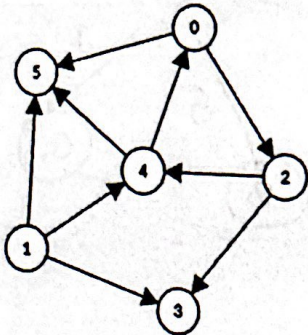
Duration: 20 minutes [No Extra page]

Full Marks: 15

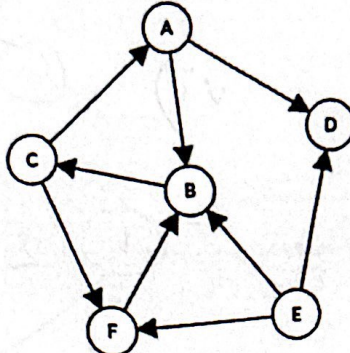
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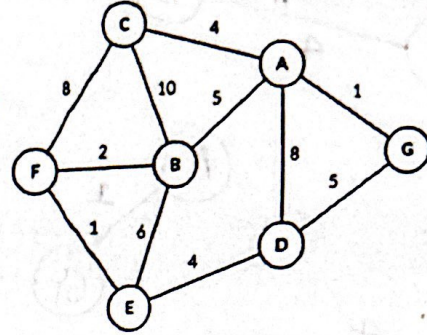
tion: 04



Graph-1



Graph-2



Graph-3

CO2 1. Using any suitable algorithm find out the Topological ordering in graph-1

(7)

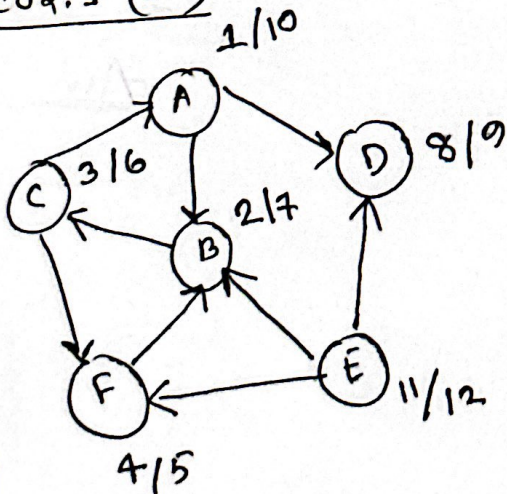
OR

Using any suitable algorithm find out the Strongly Connected Components in graph-2

CO3 2. Using Kruskal/Prim's algorithm, find out the Minimum Spanning tree for the given graph-3. Also find out the minimum cost of the spanning tree.

(6+2)

CO2.1 (or)



4/5

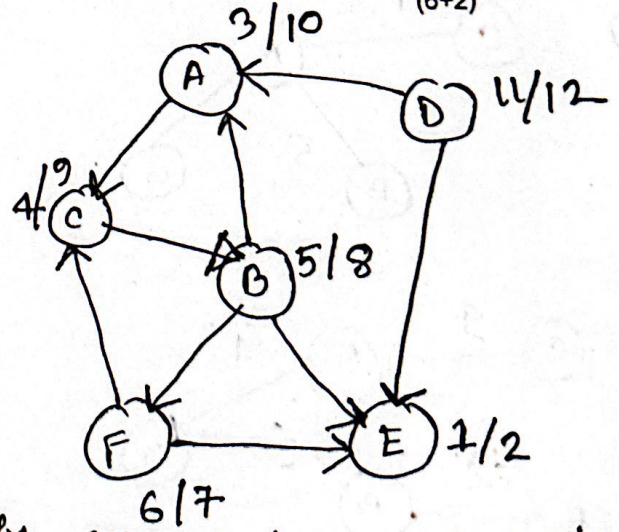
7

strongly connected components →

i) E

ii) A, C, B, F

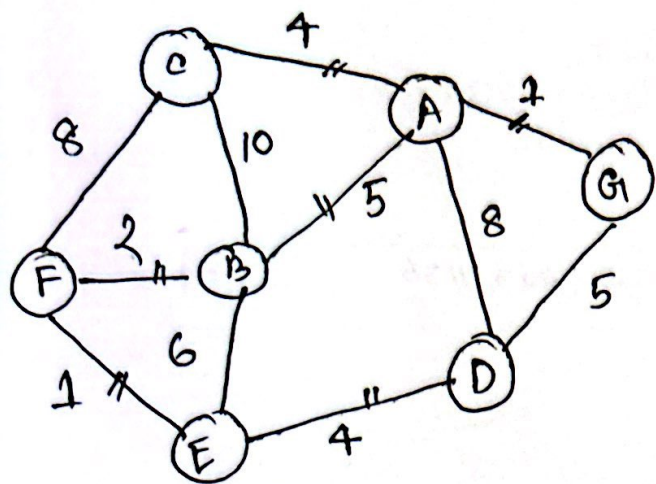
iii) D



strongly connected

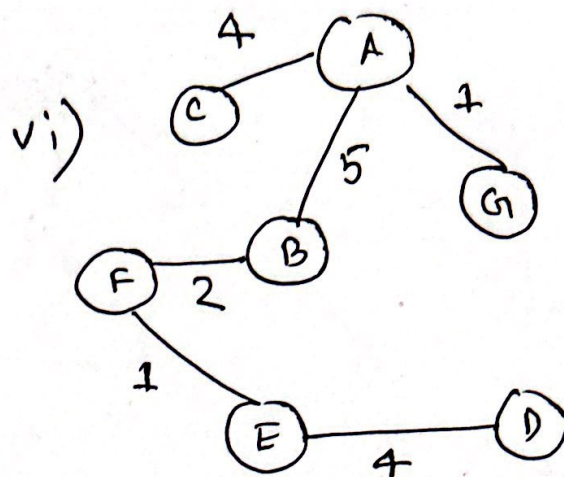
components →

~~It~~ It is a dense graph. so we show w/ prim's algorithm.



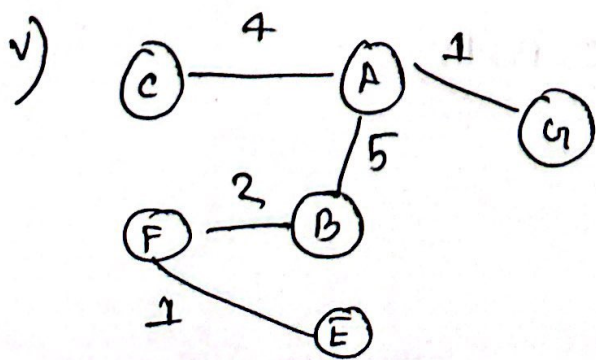
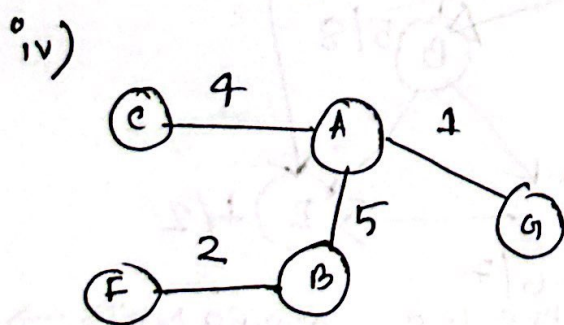
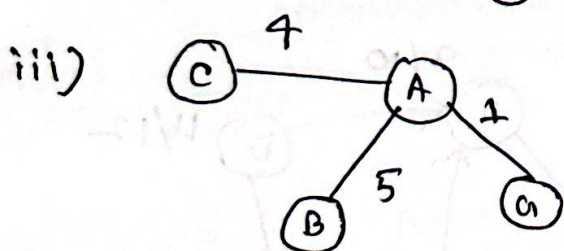
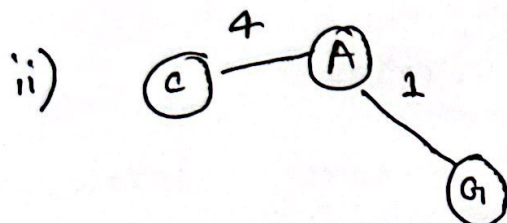
vertex = 7

$$7 - 1 = 6$$



$$\begin{aligned} \text{minimum cost} &= 4 + 1 + 5 + \\ &\quad 2 + 4 + 1 + 4 \\ &= 17 \end{aligned}$$

Ans



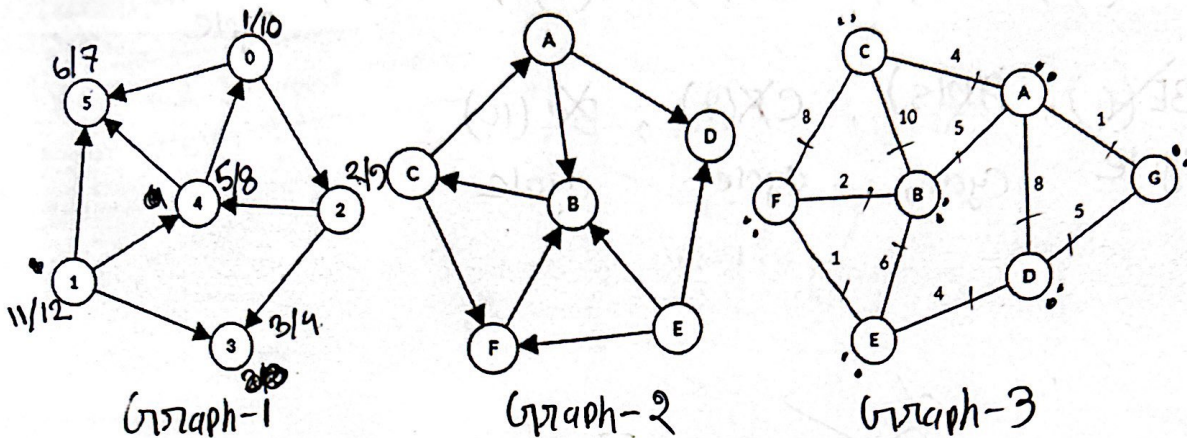


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Duration: 20 minutes [No Extra page]

Full Marks: 15

Name: <u>A</u>	ID: <u>α</u>	1:
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CO2 1. Using any suitable algorithm find out the Topological ordering in graph-1

(7)

OR

Using any suitable algorithm find out the Strongly Connected Components in graph-2

CO3 2. Using Kruskal/Prim's algorithm, find out the Minimum Spanning tree for the given graph-3. Also find out the minimum cost of the spanning tree. (6+2)

No

Topological order

Descending order of finish time = 12, 10, 9, 8, 7, 4

~~Topological order~~

But for topological order the graph has to be

\* Acyclic

\* Directed.

There is cycle in vertex 0, 2, 4

∴ Topological order can't be done.

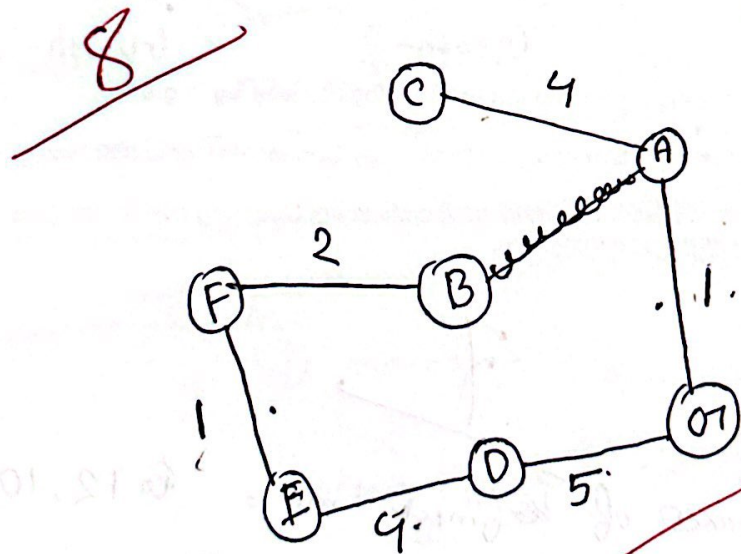
2nd

## Kruskal Algorithm

AG(1), EF(1), BF(2), AC(4), DE(4), AB(5), DG(5), ~~AD(8)~~, BE(6), CF(8), BC(10)

AG(1), EF(1), BF(2), AC(4), DE(4), ~~AB(5)~~, DG(5),  
cycle

~~BE(6)~~, ~~AD(8)~~, ~~CF(8)~~, ~~BC(10)~~  
cycle cycle cycle cycle



$$\therefore \text{cost} = 17 \quad (4 + 1 + 5 + 4 + 1 + 2)$$
$$= 17$$