

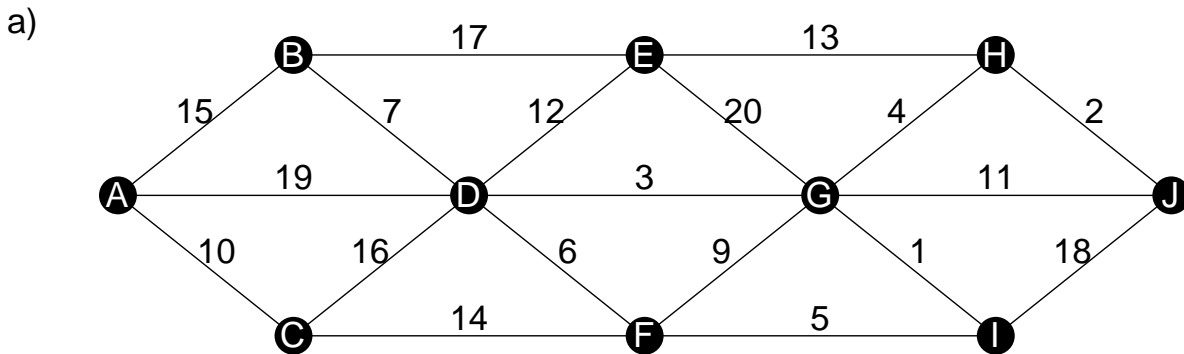
Name:

Class/Set:

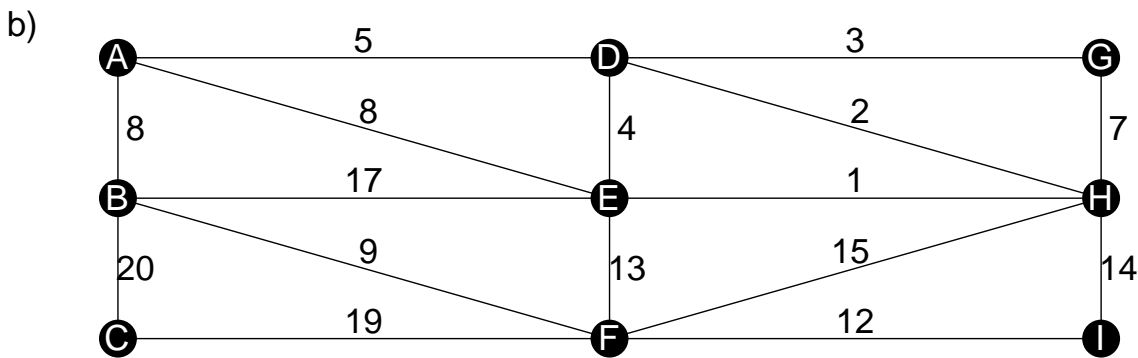
Discrete - Prim and Kruskal

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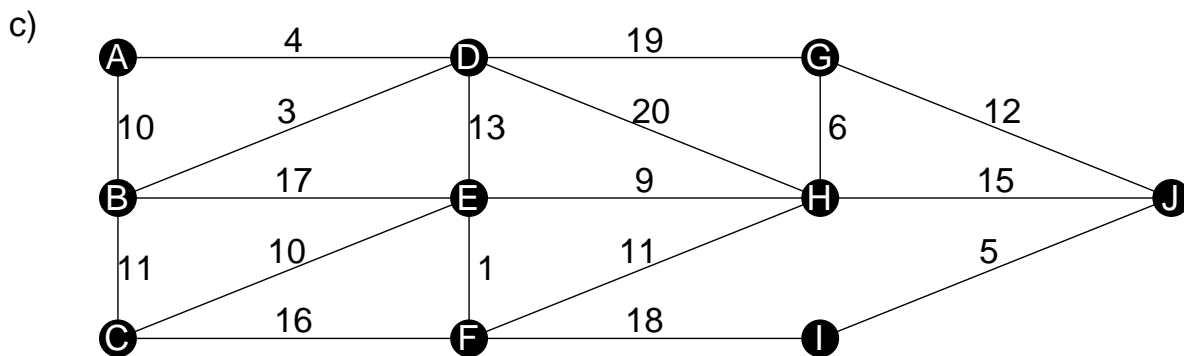
1: Find the Minimum Spanning Tree using Prim's Algorithm starting from vertex A:



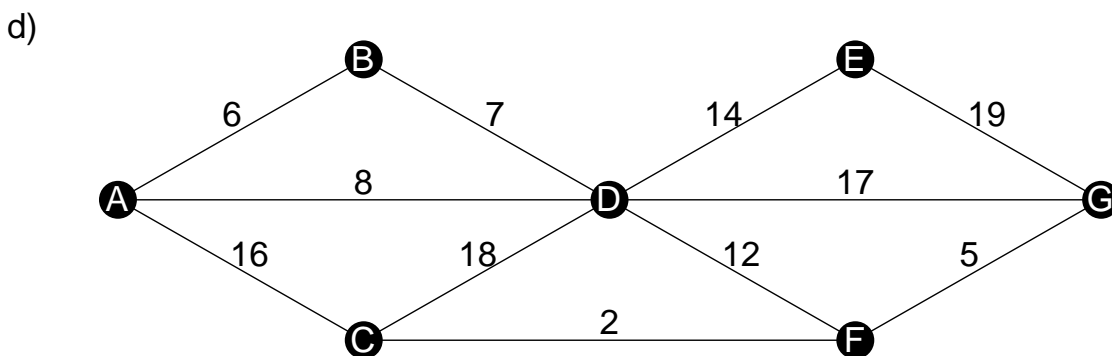
Arcs/Length:



Arcs/Length:

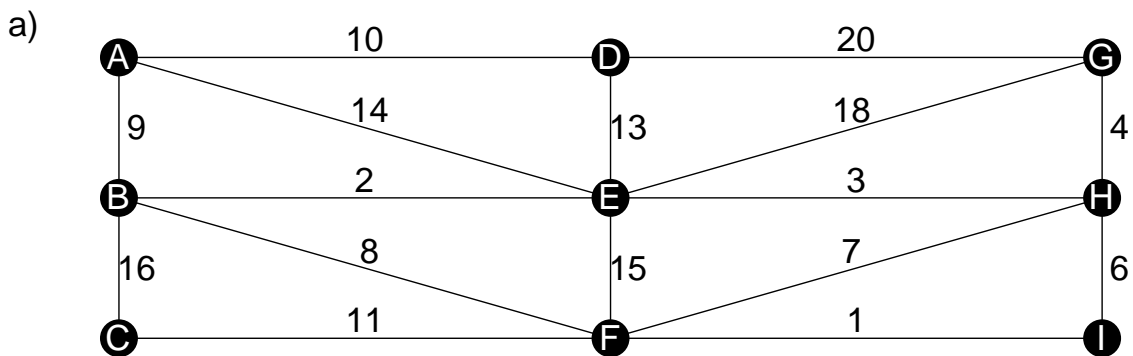


Arcs/Length:

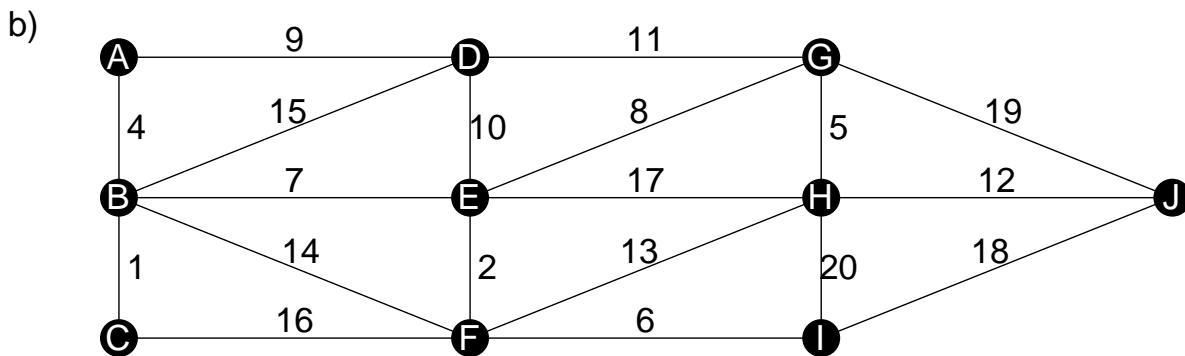


Arcs/Length:

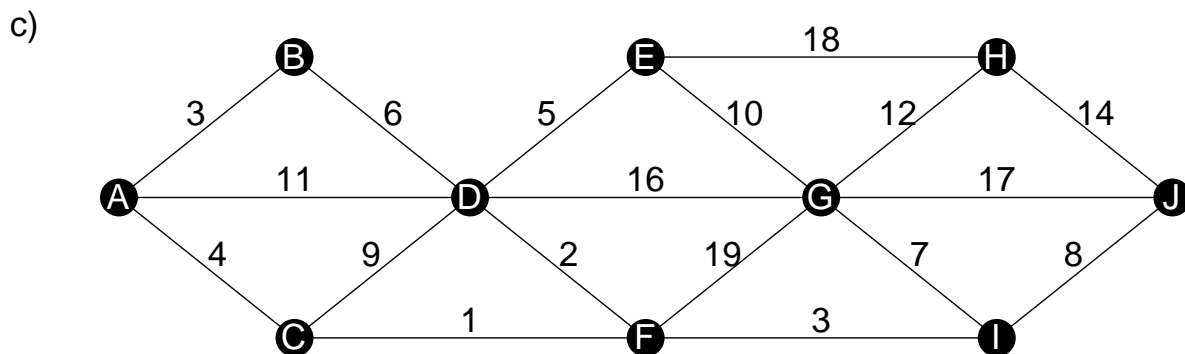
2: Find the Minimum Spanning Tree using Kruskal's Algorithm:



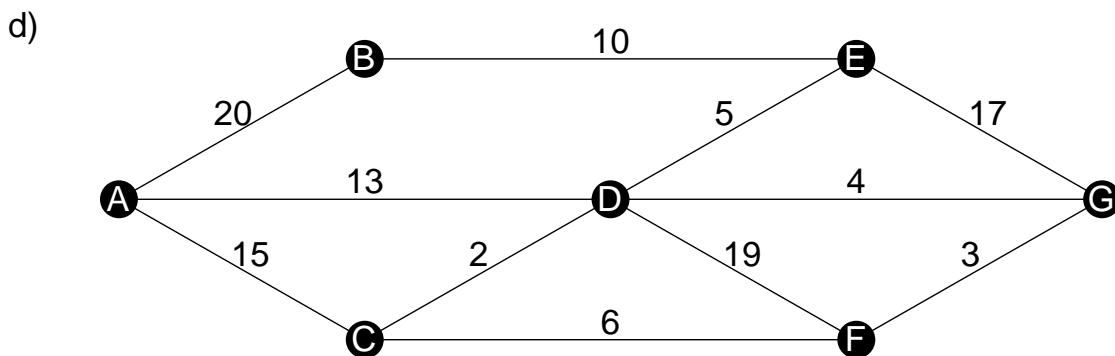
Arcs/Length:



Arcs/Length:



Arcs/Length:



Arcs/Length:

3: Find the Minimum Spanning Tree using Prim's Algorithm starting from vertex A:

a)

	A	B	C	D	E	F
A	-	29	7	12	17	18
B	29	-	24	9	19	6
C	7	24	-	26	14	21
D	12	9	26	-	3	28
E	17	19	14	3	-	16
F	18	6	21	28	16	-

Arcs:

Total length=

b)

	A	B	C	D	E	F	G
A	-	5	11	30	25	27	8
B	5	-	1	15	22	13	2
C	11	1	-	10	23	20	4
D	30	15	10	-	12	26	3
E	25	22	23	12	-	24	19
F	27	13	20	26	24	-	14
G	8	2	4	3	19	14	-

Arcs:

Total length=

c)

	A	B	C	D	E
A	-	6	16	1	5
B	6	-	25	29	28
C	16	25	-	8	30
D	1	29	8	-	21
E	5	28	30	21	-

Arcs:

Total length=

d)

	A	B	C	D	E	F	G
A	-	23	10	20	7	13	22
B	23	-	2	4	27	9	15
C	10	2	-	18	17	11	25
D	20	4	18	-	1	12	8
E	7	27	17	1	-	29	16
F	13	9	11	12	29	-	6
G	22	15	25	8	16	6	-

Arcs:

Total length=

e)

	A	B	C	D	E	F
A	-	13	21	7	2	22
B	13	-	19	3	26	24
C	21	19	-	9	5	4
D	7	3	9	-	18	10
E	2	26	5	18	-	15
F	22	24	4	10	15	-

Arcs:

Total length=

f)

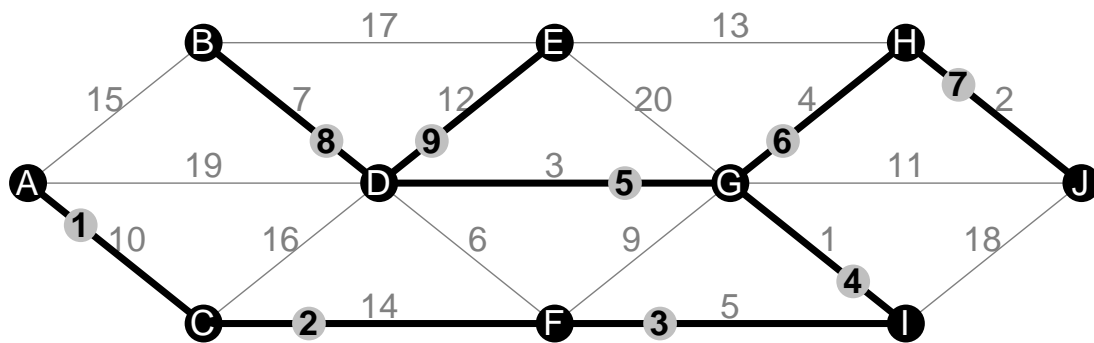
	A	B	C	D	E
A	-	27	14	30	20
B	27	-	17	23	28
C	14	17	-	11	19
D	30	23	11	-	3
E	20	28	19	3	-

Arcs:

Total length=

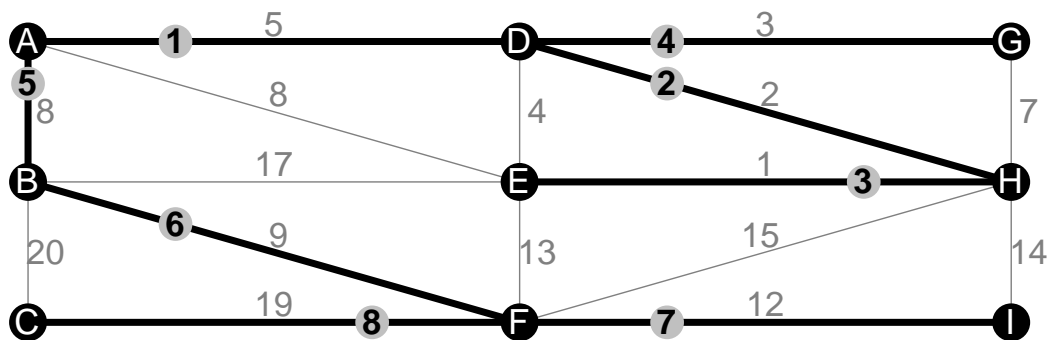
Answers: Discrete - Prim and Kruskal

1: a)



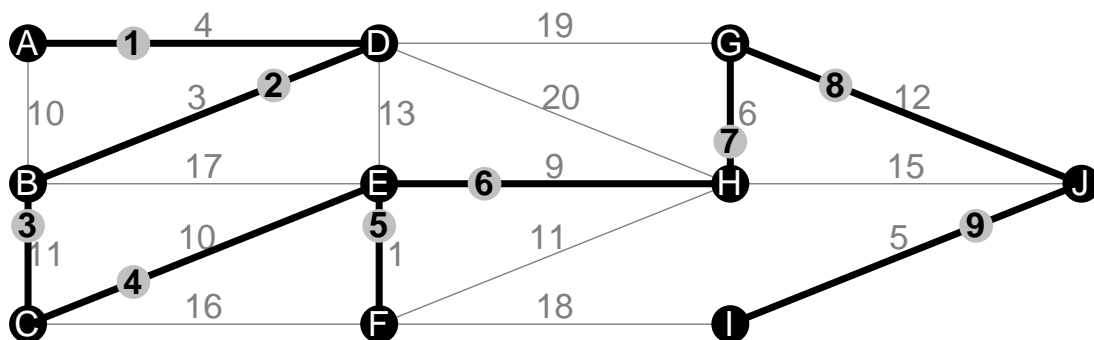
Arcs: AC, CF, FI, IG, GD, GH, HJ, DB, DE. Total length=58

b)



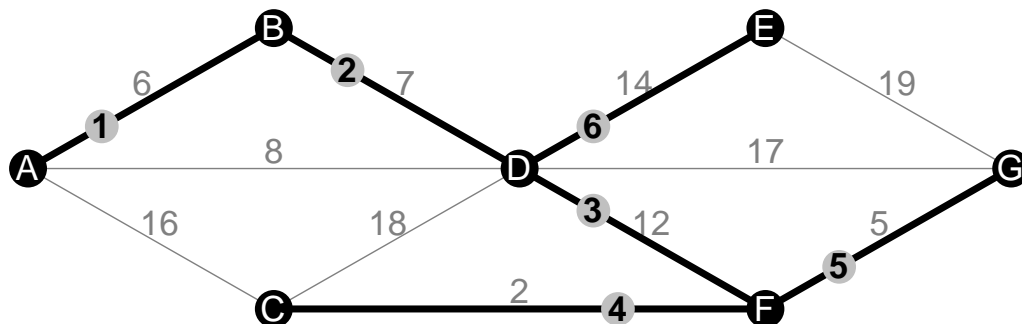
Arcs: AD, DH, HE, DG, AB, BF, FI, FC. Total length=59

c)



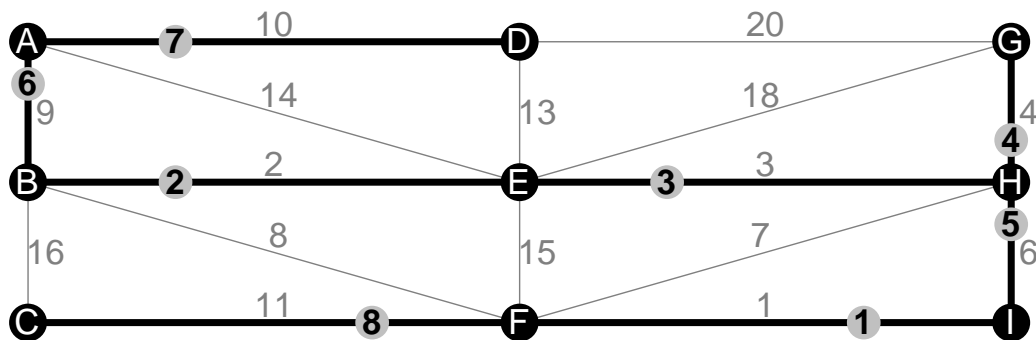
Arcs: AD, DB, BC, CE, EF, EH, HG, GJ, JI. Total length=61

d)



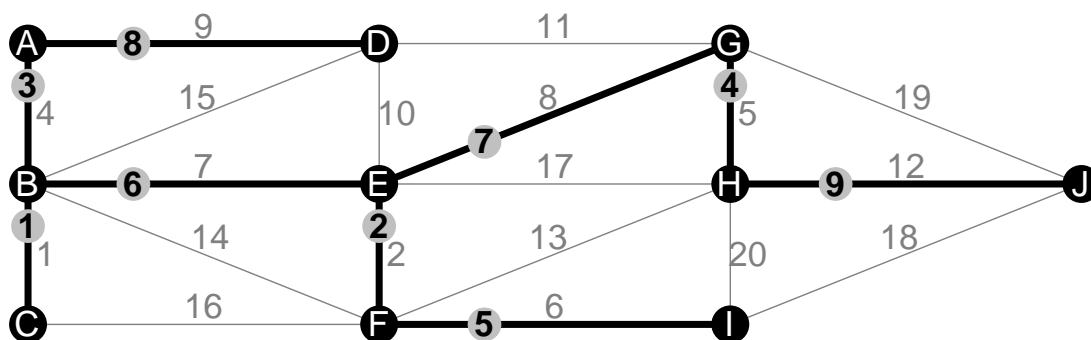
Arcs: AB, BD, DF, FC, FG, DE. Total length=46

2: a)



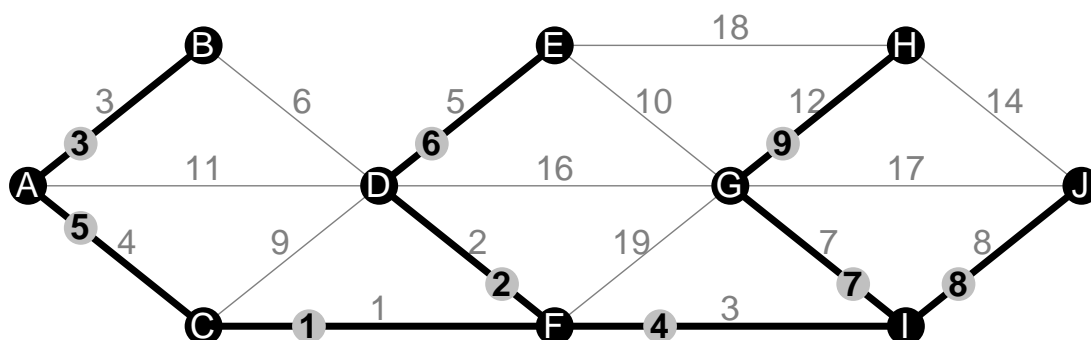
Arcs: IF, BE, EH, HG, HI, AB, AD, FC. Total length=46

b)



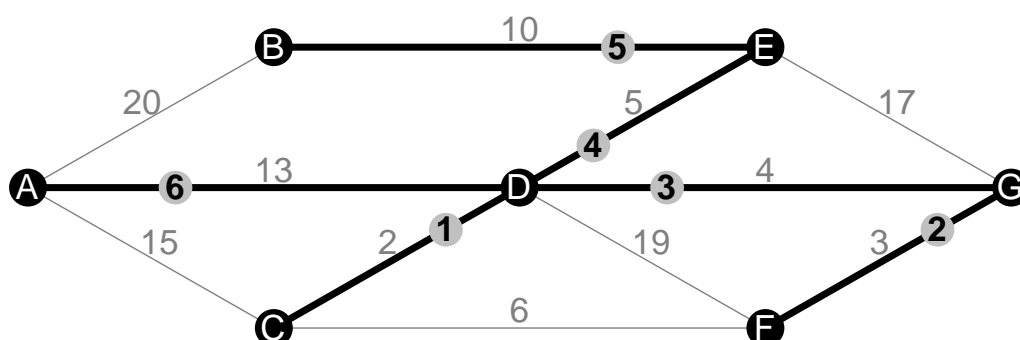
Arcs: BC, EF, AB, GH, FI, BE, EG, AD, HJ. Total length=54

c)



Arcs: CF, FD, AB, FI, AC, DE, IG, IJ, GH. Total length=45

d)



Arcs: DC, GF, DG, DE, EB, AD. Total length=37

3: a)

	A ₁	B ₅	C ₂	D ₃	E ₄	F ₆
A	—	29	7	12	17	18
B	29	—	24	⑨	19	6
C	⑦	24	—	26	14	21
D	⑫	9	26	—	3	28
E	17	19	14	③	—	16
F	18	⑥	21	28	16	—

Arcs: AC, AD, DE, DB, BF.
Total length=37

b)

	A ₁	B ₂	C ₃	D ₅	E ₆	F ₇	G ₄
A	—	5	11	30	25	27	8
B	⑤	—	1	15	22	13	2
C	11	①	—	10	23	20	4
D	30	15	10	—	12	26	③
E	25	22	23	⑫	—	24	19
F	27	⑬	20	26	24	—	14
G	8	②	4	3	19	14	—

Arcs: AB, BC, BG, GD, DE, BF.
Total length=36

c)

	A ₁	B ₄	C ₅	D ₂	E ₃
A	—	6	16	1	5
B	⑥	—	25	29	28
C	16	25	—	⑧	30
D	①	29	8	—	21
E	⑤	28	30	21	—

Arcs: AD, AE, AB, DC.
Total length=20

d)

	A ₁	B ₄	C ₅	D ₃	E ₂	F ₇	G ₆
A	—	23	10	20	7	13	22
B	23	—	2	④	27	9	15
C	10	②	—	18	17	11	25
D	20	4	18	—	①	12	8
E	⑦	27	17	1	—	29	16
F	13	9	11	12	29	—	⑥
G	22	15	25	⑧	16	6	—

Arcs: AE, ED, DB, BC, DG, GF.
Total length=28

e)

	A ₁	B ₆	C ₃	D ₅	E ₂	F ₄
A	—	13	21	7	2	22
B	13	—	19	③	26	24
C	21	19	—	9	⑤	4
D	⑦	3	9	—	18	10
E	②	26	5	18	—	15
F	22	24	④	10	15	—

Arcs: AE, EC, CF, AD, DB.
Total length=21

f)

	A ₁	B ₅	C ₂	D ₃	E ₄
A	—	27	14	30	20
B	27	—	⑬	23	28
C	⑭	17	—	11	19
D	30	23	⑪	—	3
E	20	28	19	③	—

Arcs: AC, CD, DE, CB.
Total length=45