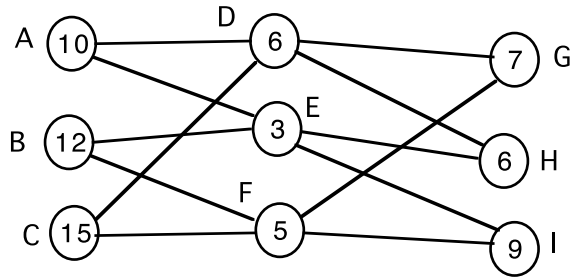
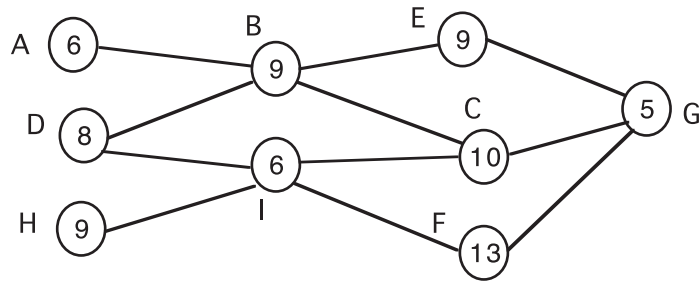


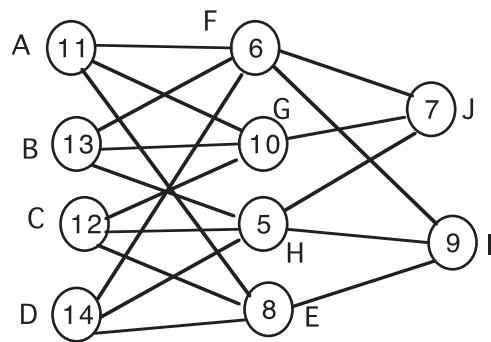
12. 29; C-F-I



14. 33; H-I-F-G



16. 31; D-E-I



18. 20 minutes

**1.2 A MATCHING PROBLEM**

2. 720                      4. 210                      6. 84                      8. 1680
10. 19,958,400            12.  $\frac{1}{8}$                       14. 5040                    16. 126
18. 210                      20. 119                      22. 1320                    24. 5040
26. 240                      28. 1200

**1.3 A KNAPSACK PROBLEM**

2. T                          4. F                          6. F                          8. F
10. T                          12. T                          14. T                          16. no
18. yes; 32
20.  $\emptyset$ , {1}, {2}, {3}, {4}, {1, 2}, {1, 3}, {1, 4}, {2, 3}, {2, 4}, {3, 4}, {1, 2, 3}, {1, 2, 4}, {1, 3, 4}, {2, 3, 4}, {1, 2, 3, 4}; 16
22. 128                      24. 1024                      26. 256                      28. 26
30. {1, 4, 6, 7, 8, 9, 10, 11, 12}

**1.4 ALGORITHMS AND THEIR EFFICIENCY**

2. yes; 0                      4. no
6. no                          8. -1, 9, 84; 3, 17, 84
10. -4, -4, 41, 95; 2, 11, 33, 95            12. 111000
14. 001010

16.

$k$	$j$	$a_1$	$a_2$	$a_3$
3		1	1	1
2		1	1	1
1		1	1	1
0		1	1	1

18.

$k$	$j$	$a_1$	$a_2$	$a_3$	$a_4$
4		1	1	1	0
		1	1	1	1

20. The circled numbers in the table below indicated the items being compared.

$a_1$	$a_2$	$a_3$	$a_4$	$j$	$k$
23	5	17	12	1	3
23	5	12	17		2
23	5	12	17		1
5	23	12	17	2	3
5	23	12	17		2
5	12	23	17	3	3
5	12	17	23		

22. The circled numbers in the table below indicated the items being compared.

$a_1$	$a_2$	$a_3$	$a_4$	$a_5$	$j$	$k$
88	2	75	10	48	1	4
88	2	75	10	48		3
88	2	10	75	48		2
88	2	10	75	48		1
2	88	10	75	48	2	4
2	88	10	48	75		3
2	88	10	48	75		2
2	10	88	48	75	3	4
2	10	88	48	75		3
2	10	48	88	75	4	4
2	10	48	75	88		

24. 6.5 years, 2.7 seconds

26.  $2.3 \times 10^{10}$  years, 12.5 seconds