

## Answers to Exercise 5: Routing

Data Communication

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1. The updated routing table is:

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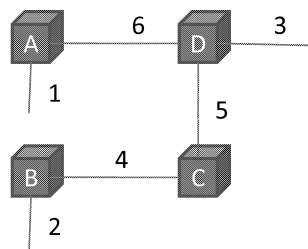
Net 2  5  C
Net 3  5  C
Net 4  3  A
Net 6  3  C
Net 7  3  B
    
```

2. a) 5  
b) 24

3.  $C$ =Cost to reach node,  $R$ =Route to reach node for given  $C$

Iter	$M$	2 $C R$	3 $C R$	4 $C R$	5 $C R$	6 $C R$	7 $C R$
1	1	3 12	2 13	1 14	$\infty$ -	$\infty$ -	$\infty$ -
2	14	3 12	2 13	1 14	$\infty$ -	3 146	5 147
3	143	3 12	2 13	1 14	$\infty$ -	3 146	5 147
4	1432	3 12	2 13	1 14	7 125	3 146	5 147
5	14326	3 12	2 13	1 14	7 125	3 146	4 1467
6	143267	3 12	2 13	1 14	5 14675	3 146	4 1467
7	1432675	3 12	2 13	1 14	5 14675	3 146	4 1467

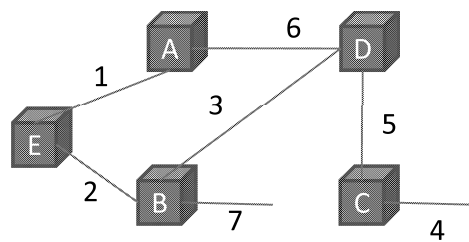
4. a)



b)

Subnet	Cost	Next-hop
1	1	-
2	2	E
3	2	D
4	3	D
5	2	D
6	1	-
7	3	E

c)



5. a) ARP request from MAC(A) to MAC(broadcast): Who has IP(DNS)?  
 ARP reply from MAC(DNS) to MAC(A): I am IP(DNS)  
 DNS request from MAC(A) to MAC(DNS): from IP(A) to IP(DNS):  
 What IP is hostname(D)?  
 DNS reply from MAC(DNS) to MAC(A): from IP(DNS) to IP(A):  
 hostname(D) = IP(D)  
 ARP request from MAC(A) to MAC(broadcast): Who has IP(R1)?  
 ARP reply from MAC(R1) to MAC(A): I am IP(R1)  
 ICMP echo from MAC(A) to MAC(R1): from IP(A) to IP(D)  
 ICMP redirect from MAC(R1) to MAC(A): from IP(R1) to IP(A): redi-  
 rect to IP(R2)  
 ARP request from MAC(R1) to MAC(broadcast): Who has IP(R2)?  
 ICMP reply from MAC(R2) to MAC(A): from IP(D) to IP(A): ICMP  
 echo reply
- b) ARP request from MAC(B) to MAC(broadcast): Who has IP(DNS)?  
 ARP request from MAC(B) to MAC(broadcast): Who has IP(R1)?  
 ARP request from MAC(R1) to MAC(broadcast): Who has IP(R2)?