THE UNIVERSITY OF MELBOURNE

COMP90007 Internet Technologies SM2, 2018
Assignment 2

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1 QUESTION ONE

The expected delay and the outgoing line of C are shown as follows (Table 1.1):

Table 1.1: Expected delay and outgoing line of C

To	Delay	Line
A	8	E
B	5	B
C	0	-
D	4	D
E	3	E
F	8	D

Then we can have C's routing table as follows (Table 1.2):

Table 1.2: Routing table of C

Dest.	Line
A	E
B	B
C	-
D	D
E	E
F	D

And the updated routing vectors for B, D, E repectively (Table 1.3):

Table 1.3: Routing vectors for B, D and E

Dest.	B	D	E
A	5	15	8
B	0	13	5
C	5	4	3
D	11	0	9
E	7	8	0
F	4	4	6

2 QUESTION TWO

A Convert 240.0 to binary we can have 11110000.00000000, there are 12 bits left for subnets, since all 1s and all 0s has special meaning, so the number of subnets allowed is $2^{14} - 2 = 4096 - 2 = 4094$

B See Table 2.1.

Table 2.1: Answer for question 2B

Organisation	Starting Add	Ending Add	Adds Allocated	Mask
A	128.16.0.0	128.16.7.255	2048	128.16.0.0/21
B	128.16.8.0	128.16.11.255	1024	128.16.12.0/22
C	128.16.16.0	128.16.23.255	2048	128.16.23.0/21
D	128.16.32.0	128.16.47.255	4096	128.16.32.0/20

3 QUESTION THREE

According to Carrier Sense Multiple Access Protocol, when station C wants to transmit to station B, it will send a small impulse of signal to check whether there is any other signal currently occupying the channel.

Since C detects no collision, which means currently no one else is transmitting messages.

However, when the propagation delay is extremely high, in such a case even other stations have sent out a transmission (which have not reached its destination yet since the high delay) C can still reach the conclusion that currently the channel is idle. So when C send out a transmission, it will collide with others.

Therefore we can conclude that there is a possibility that B will not recieve the transmission from C.

4 QUESTION FOUR

A To make it easier to distinguish valid frames from garbage.

B When transmitted by Ethernet, the minimum length of Ethernet frame is 64 bytes, including the destination address and the source address, the type/length field, and the checksum, summing up to 18 bytes. Plus the 60-byte packet, the total length of the frame is 80 bytes, which exceeds the minimum length of 64 bytes. Hence there is no need for padding.

5 QUESTION FIVE

11 slots are needed to resolve the contention.
SLOT 1: 1,5,8,10,11,15;

SLOT 2: 1,5,8;
SLOT 3: 1;
SLOT 4: 5,8;
SLOT 5: 5;
SLOT 6: 8;
SLOT 7: 10,11,15;
SLOT 8: 10,11;
SLOT 9: 10;
SLOT 10: 11;
SLOT 11: 15.