

A) a) Class C 200.1.1

4 Subnets DEPT A - 72 host
 B - 35 hosts
 C - 20 hosts
 D - 18 hosts

Need to use Powers of 2 so for A, $2^7 = 128$
 hosts will be assigned

for B - 2^6 or 64 hosts
 for C 2^5 or 32 hosts
 for D 2^5 or 32 hosts

for a Class C network, there are 256 hosts possible, and the above configuration allocates the 256 hosts to the 4 subnets.

The subnet masks all start with 255.255.255
 to get to the class C network

for A use 255.255.255.0 for subnet mask
 this gives A's 128 hosts the addresses of
 255.255.255.0 to 255.255.255.127

for B use 255.255.255.128 with the 128
 being represented as 10XXXXXX
 X = Don't Care

Therefore host addresses are
 128 to $(128 + 63) = 191$

HW #6B Solution
a cont) for C use 255.255.255.192 with the 192

Page 2 of 4

represented as 110XXXXX

to get host addresses of 192 to $(192+31)=223$

for C use 255.255.255.224 with 224 represented as

111XXXXX

to get host addresses of
224 to 255

for the last 8 bits of the address, the masks are

A: 0XXXXXXXX

B: 10XXXXXXXX

C: 110XXXXX

D: 111XXXXX

b) D grows to 34

still have less than 256 hosts, so we
should be able to get all hosts subnetted.

D now requires 2^6 or 64

A can be served with two subnets - one
for 32 and one for 64

A - 32	001XXXXX	addresses: 32 - 63
64	01XXXXXX	addresses: 64 - 127
B - 64	10XXXXXX	addresses 128 - 191
C - 32	000XXXXX	addresses 0 - 31
D - 64	11XXXXXX	addresses 192 - 255

B) looking at the table we can start at top and go down and first match indicates the hop to take.

$$/23 \equiv FF.FF.FE.00$$

↓ 1110

$$/22 \equiv FF.FF.FC.00$$

$$/19 \equiv FF.FF.E0.00$$

$$/18 \equiv FF.FF.C0.00$$

$$/14 \equiv FF.FC.0.0$$

$$/2 \equiv C0.0.0.0$$

$$/1 \equiv 80.0.0.0$$

mask equivalents

a) C4.4B.31.2E

applying /23 gives C4.4B.30.0 Does not match

applying /22 gives C4.4B.30.0 Does not match

applying /19 gives C4.4B.20.0 Does not match

applying /18 gives C4.4B.0.0 Does not match

applying /14 gives C4.48.0.0 Does not match

applying /2 gives C0.0.0.0 match

Next hop is F

b) C4.5E.05.09

apply /23 gives C4.5E.4.0

/22 gives C4.5E.4.0

match

so next hop is B

B cont)

c) C4.4D.31.2E

Can't be C4.5X.X.X. since 4 ended with
0-F gives 0 or 4 only
So start with /14

/14 gives C4.4C.0.0

NEXT hop is E

d) C4.5E.03.87

/23 gives C4.5E.02.0

match so next

hop is A

e) C4.5E.7F.12

/23 gives C4.5E.7E.0

/22 gives C4.5E.7C.0

/19 gives C4.5E.6.0

/18 gives C4.5E.40.0 match

next hop is D

A) C4.5E.D1.02

/23 gives C4.5E.D0.0

/22 gives C4.5E.D0.0

/19 gives C4.5E.C0.0 match

NEXT hop is C