Subnet A: 14 + 2 = 16 -> 2^4 -> need 4 bits for H

Subnet B: 28 + 2= 30 < 2^5 -> need 5 bits for H

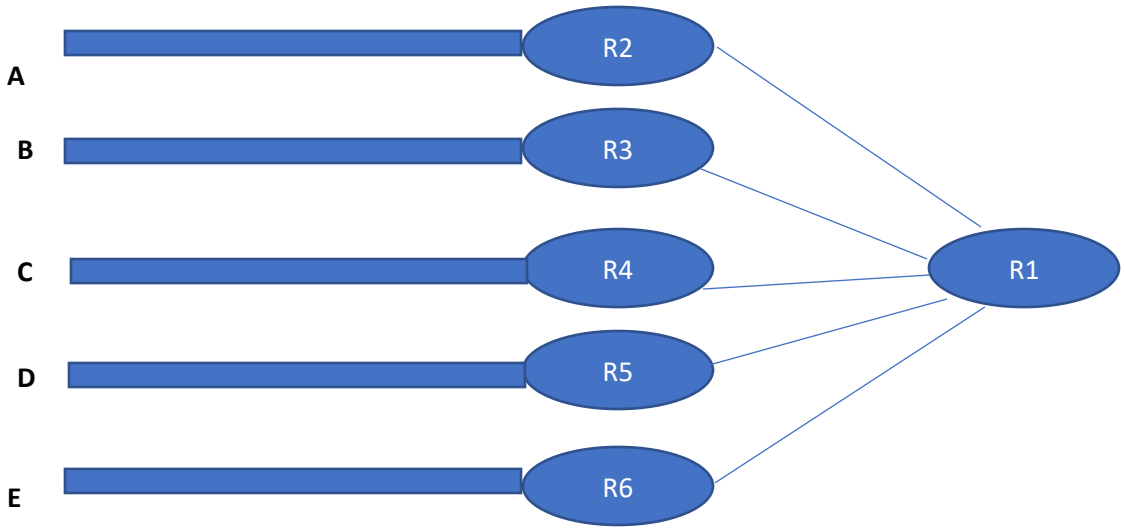
Subnet C: 2 + 2 = 4 = 2^2 -> need 2 bits for H

Subnet D: 10 + 2 = 12 < 2^4 -> need 4 bits for H

Subnet E: 45 + 2 = 47 < 2^6 -> need 6 bits for H

Subnet number	#Hostid	Subnet id bits assignment	Subnet address pattern and mask
Subnet E	6/2	SS= 00	201.45.68.0/26
Subnet B	5/3	SS= 010	201.45.68.64/27
Subnet A	4/4	SS= 0110	201.45.68.96/28
Subnet D	4/4	SS= 0111	201.45.68.112/28
Subnet C	2/6	SS= 100000	201.45.68.128/30
R1 – R2	2/6	SS= 100001	201.45.68.132/30
R1- R3	2/6	SS= 100010	201.45.68.136/30
R1 - R4	2/6	SS= 100011	201.45.68.140/30
R1- R5	2/6	SS= 100100	201.45.68.144/30
R1 – R6	2/6	SS= 100101	201.45.68.148/30

Subnet number	Subnet address/mask	Host ranges	Broadcast address
Subnet E	201.45.68.0/26	201.45.68.1 - 201.45.68.62	201.45.68.63
Subnet B	201.45.68.64/27	201.45.68.65 - 201.45.68.94	201.45.68.95
Subnet A	201.45.68.96/28	201.45.68.97 - 201.45.68.110	201.45.68.111
Subnet D	201.45.68.112/28	201.45.68.113 - 201.45.68.126	201.45.68.127
Subnet C	201.45.68.128/30	201.45.68.129 - 201.45.68.130	201.45.68.131
R1 – R2	201.45.68.132/30	201.45.68.133 - 201.45.68.134	201.45.68.135
R1 – R2	201.45.68.136/30	201.45.68.137 - 201.45.68.138	201.45.68.139
R1 – R3	201.45.68.140/30	201.45.68.141- 201.45.68.142	201.45.68.143
R1 – R4	201.45.68.144/30	201.45.68.145 - 201.45.68.146	201.45.68.147
R1 – R5	201.45.68.148/30	201.45.68.149 - 201.45.68.150	201.45.68.151



Q2

Subnet A: 29 + 2 = 31 -> 2^5-> need 5 bits for H

Subnet B: 10 + 2= 12 < 2^4 -> need 4 bits for H

Subnet C: 45 +2 = 47 <2^6 -> need 6 bits for H

Subnet D: 7+ 2 = 9 < 2^4 -> need 4 bits for H

Subnet E: 2 = 2^1 =2 -> need 2 bits for H

SA to R1 = 2+2 =4 -> need 2 bits for H

SB to R2 = 2 + 2 = 4 -> need 2 bits for H

SC to R1 = 2 + 2 = 4 -> need 2 bits for H

SD to R1 = 2 + 2 = 4 -> need 2 bits for H

SE to R1 = 2+ 2 = 4 -> need 2 bits for H

SE to R2 = 2 + 2 = 4 -> need 2 bits for H

Subnet number	Number of hosts	#Hostid	Subnet id bits assignment	Subnet address pattern and mask
Subnet C	45	6/2	SS= 00	209.78.32.0/26
Subnet A	29	5/3	SS= 010	209.78.32.64/27
Subnet B	10	4/4	SS= 0110	209.78.32.96/28
Subnet D	7	4/4	SS= 1000	209.78.32.128/28
Subnet E	2	2/6	SS= 100100	209.78.32.144/30

SA to R1	2	2/6	SS =110101	209.78.32.148/30
SB to R2	2	2/6	SS= 110110	209.78.32.152/30
SC to R1	2	2/6	SS= 100111	209.78.32.156/30
SD to R2	2	2/6	SS= 101000	209.78.32.160/30
SE to R1	2	2/6	SS= 101001	209.78.32.164/30
SE to R2	2	2/6	SS= 101010	209.78.32.168/30

Q3 a.

N1	3	A
N3	2	C
N4	4	E
N5	1	E
N6	2	E
N2	0	direct

Q3. B

N1	3	A
N3	2	C
N4	5	A
N5	4	F
N6	3	F
N2	0	direct

Q3.c

N1	3	A
N3	2	C
N4	5	A
N5	5	C
N6	3	F
N2	0	direct

Q4.

R1	R2	R3	R4	R5	R6
N1 0	N2 0	N3 0	N4 0	N5 0	N6 0

R2 1	R1 1	R2 4	R5 6	R1 3	R3 5
R5 3	R3 4	R6 5	R6 7	R2 2	R4 7
	R5 2			R4 6	R5 8
				R6 8	