

$$R1 = 100 + 2 = 102 \Rightarrow \log_2 102 \approx 7$$

$$32 - 7 = 25$$

$$R2 = 30 + 2 = 32 \Rightarrow \log_2 32 = 5$$

$$32 - 5 = 27$$

$$R3 = 6 + 2 = 8 \Rightarrow \log_2 8 = 3$$

$$32 - 3 = 29$$

$$R4 = 1 + 2 = 3 \Rightarrow \log_2 3 \approx 2$$

$$32 - 2 = 30$$

$$192.168.0.0/24 \begin{cases} 0 \rightarrow 192.168.0.0/25 & (\text{For Router 1}) \\ 1 \rightarrow 192.168.0.128/25 & (\text{Rest of the network}) \end{cases}$$

$$192.168.0.128/25 \begin{cases} 00 \rightarrow 192.168.0.128/27 & (\text{Router 2}) \\ 01 \rightarrow 192.168.0.160/27 & (\text{Rest of the network}) \\ 10 \rightarrow \text{Free} \\ 11 \rightarrow \text{Free} \end{cases}$$

$$192.168.0.160/27 \begin{cases} 00 \rightarrow 192.168.0.160/29 & (\text{Router 3}) \\ 01 \rightarrow 192.168.0.168/29 \\ 10 \rightarrow \text{Free} \\ 11 \rightarrow \text{Free} \end{cases}$$

$$192.168.0.168/29 \begin{cases} 0 \rightarrow 192.168.0.168/30 & (\text{Router 4}) \\ 1 \rightarrow 192.168.0.172/30 & (R1 \text{ and } R2) \end{cases}$$

(A) \Rightarrow

192.168.0. Next page

(A)

192.168.0.10110000 . /29

192.168.0.176 $\begin{cases} \xrightarrow{0} 192.168.0.176 \text{ (R2 and R3)} \\ \xrightarrow{1} 192.168.0.180 \text{ (R3 and R4)} \end{cases}$

(B)

192.168.0.10111000 . /29

192.168.0.184 $\begin{cases} \xrightarrow{0} 192.168.0.184 \text{ (R1 and R5)} \\ \xrightarrow{1} \text{Free } 192.168.0.188 \text{ (R4 and R5)} \end{cases}$