c)

A) <u>upstream için</u>

ilk 10 konol için

$$C = 4000 \times \log_2^{(65535+1)} \qquad \rightarrow \underline{65536 \; QAM}$$

$$C = 6000 \times \log_2 2^{16}$$

$$C = 64 \, Kbps$$

Geriye kolon 20 konol için

$$C = 4000 \times \log_2^{(16383+1)} \rightarrow \underline{16384 \, QMA}$$

$$C = 4000 \times \log_2 2^{14} =$$

$$C = 56 \, Kbps$$

Toplam upstream bit hızı $64 + 56 = 120 \, Kbps$

B) <u>DownStream için</u>

<u>26 konal için</u>

$$C = 4000 \times \log_2^{(16383+1)} \rightarrow \underline{16384 \; QAM}$$
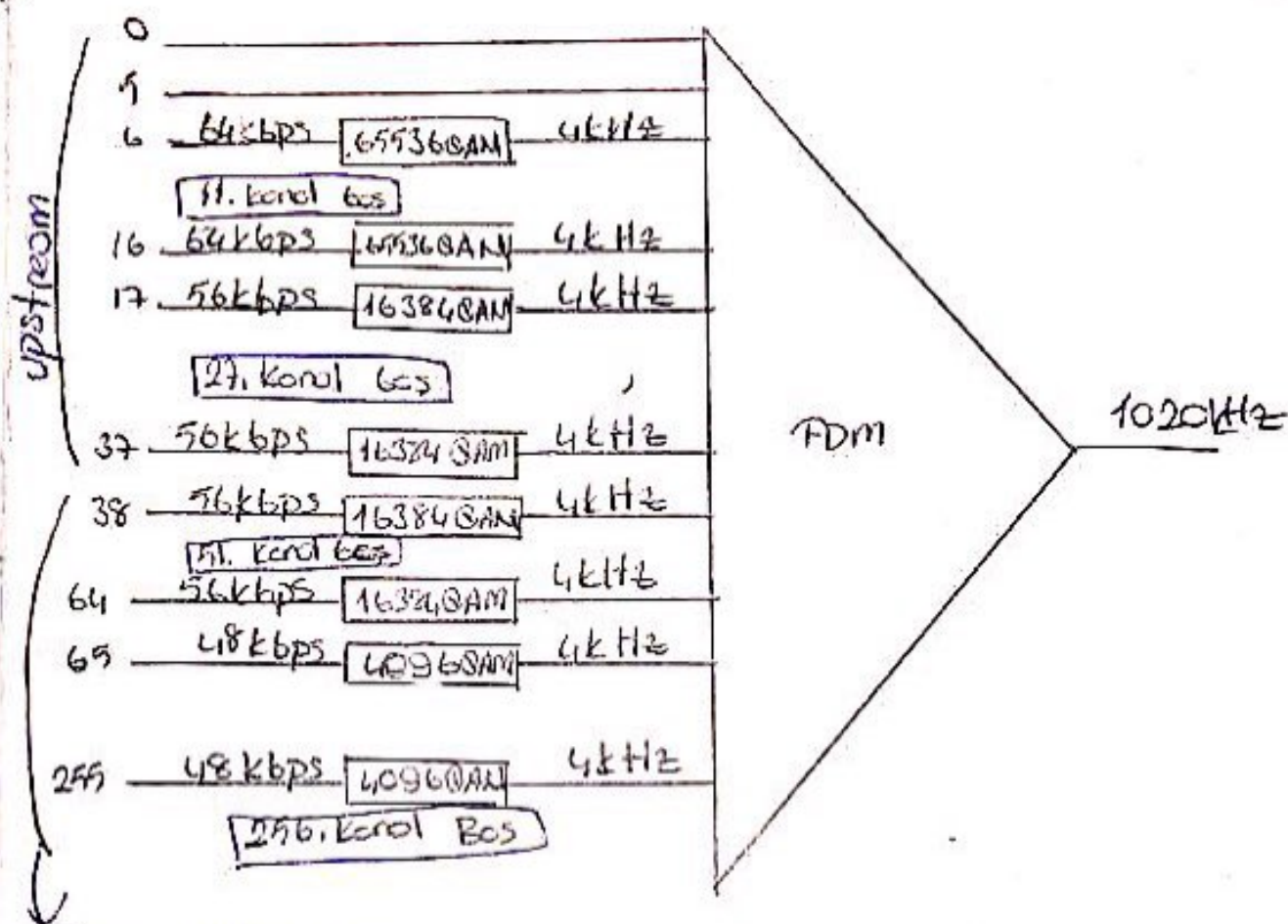
$$C = 4000 \times \log_2 2^{14}$$

$$C = 56 \, Kbps$$

Ceri kolon 120 konol çin

$$C = 4000 \times \log_2^{(4095+1)} \rightarrow \underline{4096 \; QAM}$$

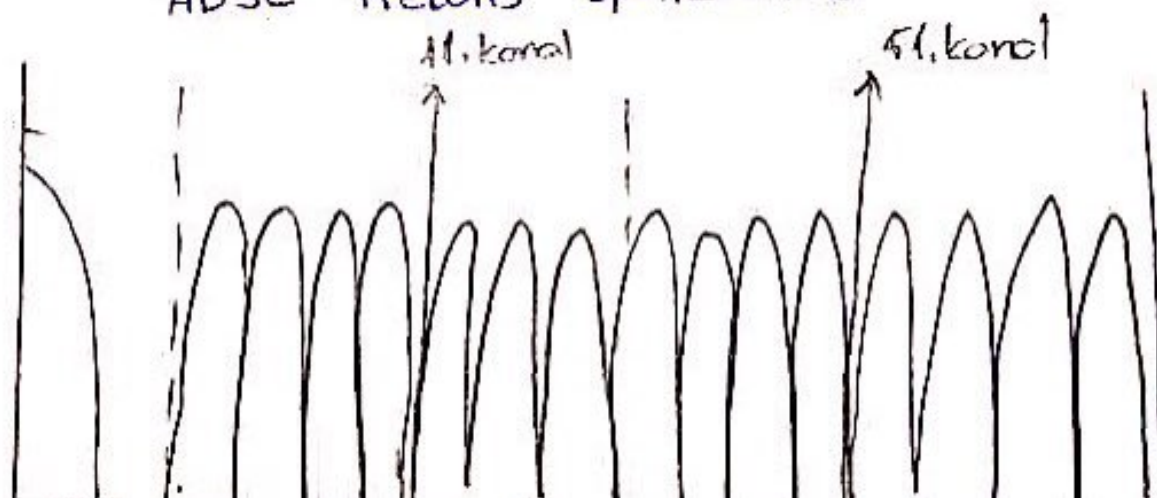$$C = 4000 \times \log_2 2^{12}$$

$$C = 48 \, Kbps$$

Toplam downstream bit hızı $56 + 48 = 104 \, Kbp$

upstream

0			
1			
6	64 kbps	65536 QAM	4 kHz
	11. kanal 6cs		
16	64 kbps	65536 QAM	4 kHz
17	56 kbps	16384 QAM	4 kHz
	27. kanal 6cs		
37	56 kbps	16384 QAM	4 kHz
38	56 kbps	16384 QAM	4 kHz
	51. kanal 6cs		
64	56 kbps	16384 QAM	4 kHz
65	48 kbps	4096 QAM	4 kHz
255	48 kbps	4096 QAM	4 kHz
	256. kanal 8cs		

FDM → 1020 kHz

down stream

ADSL frekons Spenktromu

11. konal   51. konal

255

3) 4000+17

6 kanalses
32 kanal upstream
218 kanal downstream

a)
→ upstream
2^k bant → 32 kanal
65535

$$\boxed{C = B \log_2 (SNR+1)}$$ → 2^{16}

= 4000 $\log_2 (\boxed{65535+1})$

= 4000   16   upstream:
                taşıdığı bit:

C = 64 000 → taşıdığı bit

b)
→ downstream

2 kanal   26 kanal   150 kanal
           16383   4087
                            $\to 2^{14}$

C = 4000 $\log_2 (\boxed{16383+1})$ c = 4000 $\log_2 (\boxed{4095+1})$ $\to 2^{12}$

C = 4000 14 = 56 000 → taşıdığı bit   C = 4000 12 = 48.000
                                                      taşıdığı
                                                      bit.

Down stream
   taşıdığı   = 56000 + 48000