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Sec: A

Answer the Que: 01

Find the dB if the signal power is 14W and noise power is 2W.

Given that,

$$\text{Signal Power } P_s = 14 \text{ W}$$

$$\text{Noise Power } P_n = 2 \text{ W}$$

$$\therefore \text{SNR}_{\text{dB}} = 10 \log_{10} \text{SNR}$$

$$= 10 \log_{10} \frac{P_s}{P_n}$$

$$= 10 \log_{10} \left(\frac{14}{2} \right)$$

$$= 8.45 \text{ dB (Ans)}$$

Answer the que! 2

A baseband signal with 12 kHz bandwidth has signal to noise ratio 20 dB. What will be the capacity of the channel?

Given that,

$$\text{Band width } B = 12 \text{ kHz}$$

$$\text{SNR}_{\text{dB}} = 20 \text{ dB}$$

$$\therefore \text{SNR} = 10 \log_{10} (\text{SNR})$$

$$= 10 \cdot \frac{20}{10}$$

$$= 100$$

$$\therefore C = 3.32 B \log_{10} (1 + \text{SNR})$$

$$= 3.32 \times (12 \times 10^3) \log_{10} (1 + 100)$$

$$= 79852.16 \text{ bits/second}$$

$$= 79.85 \text{ kbits/second}$$

$$\approx 80 \text{ kbits/second}$$

[Ans]