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Section: A (Evening)

Answer to the question no-1

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

Given that,

Signal Power $P_s = 14W$

Noise Power $P_n = 2W$

$$SNR_{dB} = 10 \log_{10} SNR$$

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

$$SNR_{dB} = 10 \log_{10} \frac{14}{2}$$

$$= 8.4509 \text{ dB} \text{ Or.}$$

(2)

Answer to the question no-2

A baseband signal with 12 KHz bandwidth has Signal-to-Noise ratio 20dB, What will be the capacity of that channel?

Given that,

$$\text{Bandwidth, } B = 12 \text{ KHz}$$

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

$$\begin{aligned} \therefore \text{SNR} &= 10 \log (\text{SNR}) \\ &= 10^{20/10} \\ &= 100 \end{aligned}$$

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

$$= 3.32 \times 12000 \times \log_{10} (1 + 100) \text{ bits/Sec}$$

$$= 79852.1635 \text{ bits/Sec}$$

$$= 79.8521 \text{ Kbits/Sec}$$

$$= 80 \text{ Kbits/Second Ans.}$$