

GE 1354 - Tutorial sheet

Microcomputer interface –
Bandwidth, noise and gain in dB, continuous-time and discrete-time signal

1. Discuss the advantages of digital signals over analog signals.
2. Is it possible to get rid of analog signals.
3. What is the meaning of -20dB per decade?
4. If the gain of an amplifier is 0dB, what is the meaning?
5. An amplifier has the frequency response as shown in Fig. Q5.

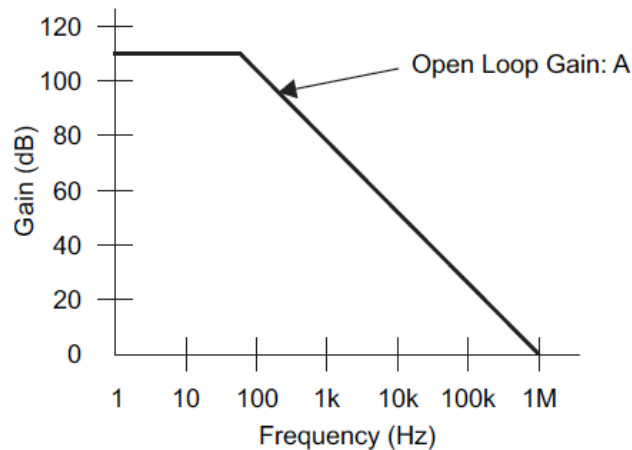


Fig. Q5

What is the amplitude of the output if

- (a) The input voltage is $5\mu\text{V}_{\text{pk-pk}}$ and the frequency is 10Hz.
- (b) The input voltage is $10\text{V}_{\text{pk-pk}}$ and the frequency is 10kHz.

What is frequency roll-off of the amplifier?

6. Explain, with necessary mathematical proof, why the voltage gain is 0.7071 is the half-power point.
7. In the following system, what is the meaning of 4th order bandpass filter? What is the difference as compared with 2nd order bandpass filter?

