6. What is the dynamic range (in dB) for a 12-bit PCM system?

7. Calculate the number of bits required to satisfy a dynamic range of 48dB.

8. The transmit power for a digital communications device is 1 W. The data rate is 28.8kbps. Determine the energy per bit.

9. A 56kbps NRZ-L encoded data stream is used in a digital communication link. Determine the minimum bandwidth required for the communications link.

1. A signal level of 0.4μV is measured on the input to a satellite receiver. Express this voltage in terms of dBμV. Assume a 50–Ω system.

2. A microwave transmitter typically requires a +8dBm audio level to fully drive the input. If a +10dBm level is measured, what is the actual voltage level measured? Assume a 600–Ω system.

3. If an impedance matched amplifier has a power gain (P_{OUT} / P_{IN}) of 15, what is the value of the voltage gain (V_{OUT} / V_{IN})?

4. Determine the deviation ratio for an FM system that has a maximum possible deviation of 5 kHz and the maximum input frequency is 3 kHz. Is this narrow- or wideband FM?

5. A receiver with a 10 MHz bandwidth has a S/N of 5dB and a sensitivityof –96dBm. Calculate the NF.

(Continued on reverse side)