

Section - 1

Ans 1 Advantages - one advantage of digital circuit when compared to analog circuit is that signals represented digitally can be transmitted without degradation due to noise. For example, a continuous audio signal, transmitted as a sequence of 1s and 0s, can be reconstructed without error. Provided the noise picked up in transmission is not enough to prevent identification of the 1s and 0s. An hour of music can be stored on a compact disc as about 6 billion binary digits. In a digital system, a more precise representation of a signal can be obtained by using more binary digits to represent it. While this requires more digital circuits to process the signal, each digit is handled by the same kind

of hardware. In an analog system, additional resolution requires fundamental improvements in the linearity and noise characteristics at each step of the signal chain.

Disadvantage

In some cases, digital circuits use more energy than analog circuit to accomplish the same task, thus producing more heat. In portable or battery-powered systems, this can limit use of digital systems. For example, battery-powered cellular telephones often use a low power analog front-end to amplify and tune in the radio signals from the base stations. However, a base station has grid power and can use power hungry, but very flexible software radios. Such base stations can be easily reprogrammed to process the signals used in new cellular standards. Digital circuits are sometimes more expensive, especially in small quantities.