

# Practice Questions for Unit 1 of DSP

## Question 1

- (a) Draw graph of discrete unit impulse and discrete unit step signal and also write down its mathematical expression.
- (b) Draw graph of continuous unit step signal and also write down its mathematical expression.
- (c) Draw graph of  $3u(t - 3)$  and  $-3u(t - 3)$
- (d) Draw graph of  $3u(t + 3)$  and  $-3u(t + 3)$
- (e) Draw graph of  $3u(n - 3)$  and  $-3u(n - 3)$
- (f) Draw graph of  $3u(n + 3)$  and  $-3u(n + 3)$
- (g) Draw graph of  $3u(t - 3) - 3u(t - 4)$
- (h) Draw graph of  $3u(t - 3) + 3u(t - 4)$
- (i) Draw graph of  $3u(n - 3) - 3u(n - 4)$
- (j) Draw graph of  $3u(n - 3) + 3u(n - 4)$
- (k) Justify that discrete unit step signal can be obtained after summation of discrete unit impulse signal and its all the delayed version.
- (l) Discuss time delaying, time folding and time scaling with the help of example.

**Question 2:** Explain what is digital signal processing with the help of its block diagram. Also discuss, in which field, digital signal processing can be used.

**Question 3:** Explain following in detail.

- (a) Continuous Signal and Discrete Signal with the help of example.
- (b) Deterministic Signal and Non-Deterministic Signal with the help of example.
- (c) Continuous Periodic Signal and Nonperiodic (Aperiodic) Signal with the help of example.
- (d) Discrete Periodic Signal and Nonperiodic (Aperiodic) Signal with the help of example.
- (e) Continuous Symmetric Signal (Even Signal) and Asymmetric Signal (Odd Signal) with the help of example. Also write down mathematical condition of Continuous Symmetric Signal (Even Signal) and Asymmetric Signal (Odd Signal).
- (f) Discrete Symmetric Signal (Even Signal) and Asymmetric Signal (Odd Signal) with the help of example. Also write down mathematical condition of Discrete Symmetric Signal (Even Signal) and Asymmetric Signal (Odd Signal).
- (g) Derive formula for calculating even part and odd part of any continuous deterministic signal.
- (h) Derive formula for calculating even part and odd part of any discrete deterministic signal.

**Question 4:** Discuss following in detail with the help of its graph and mathematical expression.

- (a) DC Signal
- (b) Sinc Function
- (c) Sin Function
- (d) Cos Function
- (e) Signum Function
- (f) Exponential Signal
- (g) Rectangular Signal