DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Question Bank

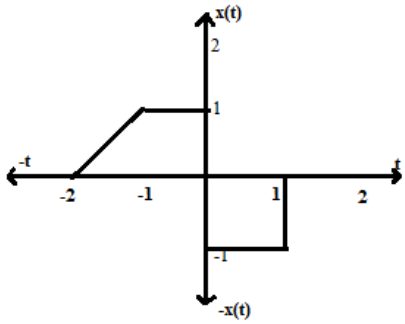
Course: S.Y. B. Tech in Instrumentation Engineering

Sem: IV

BTINPE 405C: Signals and System

UNIT I

1. Define Signal and explain classification of Signals
2. Define and draw graphically represents of following signals
   a) Unit step signal b) Unit Impulse signal c) Ramp Signal
3. Given signal is X(n) ={1,1,1,1,2}, sketch the following signals
   a) x(-n)
   b) x(n-2)
   c) x(n+1)
   d) 2x(n)
4. Find and sketch the even &odd part of given signal $x(t) = t\,,\ for\ 0 \le t \le 1$
5. Explain Arithmetic operation of signal.
6. The signal show in below, sketch the following signal



   a) x(2t) b) x(2t-2) c) x(-2-2t)
7. If the given signal is $x(t) = e^{-at}.u(t)$ then draw the signal x(t+2) and x(t-3).

Unit-II

1. Determine the following system is Invariance or not y(t)= t.x(t)
2. Check the following system is static or dynamic
   a) y(n) = n.x(n)
   b) y(n) = 3.x(n)+5
   c) y(n) = x(n) – 3 x(n-3)

3. Check the following system is Linear or not $y(n) = x(n) + n.x(n+1)$

4. Check the following system is Linear or not $y(n) = \cos(x(n))$

5. Explain Basic properties of system.

6. Define system and explain classification of system.

Unit-III

1. Explain properties of Fourier Transform.

2. Explain properties of Fourier Series.

3. Explain properties of Laplace Transform.

4. Find Fourier Transform of Unit step function.

5. Sketch the Line spectrum of given signal
$m(t) = 3-5\cos(40\pi t - 30^0)+4\sin(120\pi t)$

6. Find Fourier Transform of given signal

$$x(t) = \begin{cases} e^{-at}, & t \geq 0 \\ 0, & t < 0 \end{cases}$$

Unit-IV

1 Explain properties of Convolution Integral.

2 Define State, State Variable, State Vector, State space.

3 Find Linear Convolution of given signal $x(n) = \{2,3,1,4\}$ & $h(n) = \{1,2,3\}$

4. Find Convolution of given signal by using Z Transform $x(n) = \{2,5,2\}$ & $h(n) = \{4,1,2,3\}$

5. Draw block diagram representation of Direct Form –I Structure for discrete time system.

Unit-V

1. What is sampling process and Aliasing of signals?

2 Explain properties of Z Transform.

3 Explain properties of Discrete time Fourier transform (DTFT).

4 Obtain DTFT of Unit Impulse signal.

5 Obtain DTFT of Unit step signal.

6 Find Z Transform of given signal $x(n) = \{2,3,1,2,5,7\}$

***** End *****