

Mid-Semester Examination, B.Tech IT 5th Semester 2023
Digital Signal Processing
Answer All Questions

1. (a) What is system? Discuss about the different types of systems.
(b) Prove whether $x(t) = \cos^2(2t - (\pi/3))$ is periodic or not.

8+2=10

2. Define convolution? Find the output $y[n]$ of an LTI System whose impulse response

i. $h[n] = \{ \underset{\uparrow}{3} \ 2 \ 1 \}$ and input signal $x[n] = \{ \underset{\uparrow}{3} \ 1 \ 2 \}$

ii. $h[n] = a^n u[n]$, $|a| < 1$, $x[n] = u[n]$

2+5+3=10

3. What do you understand by discrete Fourier transform? Explain in brief the properties of DFT.

3+7=10

or
DFS