

Enroll No

Q.P. Code
UT 3077

Unit Test -II (2025-26)

T.Y. B.Tech.-Electronics & Telecommunication Engineering

Course Code: EC3014

Course Name: Signal Processing

Day & Date: Thursday 18/09/2025

Time: 10:30 To 12:30

Max Marks- 25

- Instructions:**
- 1) All questions are compulsory.
 - 2) Figures in rounded () brackets within the question, indicate the scheme of marking for respective part of the question, whereas, figures in the first right column indicate total marks for that whole question.
 - 3) CO is the index number of the Course Outcome statement.
 - 4) The Bloom's taxonomy level (BL) for 1,2,3,4,5 and 6 is remember, understand, apply, analyze, evaluate and create respectively.
 - 5) Assume suitable data if necessary.
 - 6) Use of non-programmable calculators is allowed

			Marks	BT Level	COs
Q.1	A	Compute DFT using Radix-2 DIT-FFT Algorithm of the given sequence. $x(n) = [-6, 2, -6, 6]$	06	3	2
	B	Perform Circular Convolution on given sequences using graphical method. $x_1(n) = [1, 1, 2, 2] \text{ and } x_2(n) = [2, 2, 1, 1]$	06	3	2
Q.2	A	Design a highpass filter using windowing method to meet the following specifications. (Use rectangular window) Cutoff frequency = 250 Hz Sampling frequency = 1kHz and filter length = 7	07	5	3
OR					
	A	Design a bandpass filter using windowing method for the following specification. (Use rectangular window) $f_{c1} = 100\text{Hz}, \quad f_{c2} = 200\text{Hz}, \quad F_s = 1000\text{Hz}, \quad N = 9$	07	5	3
	B	Find the filtered output of the system governed by impulse response $h(n)=[1, 1, 1]$ for the input $x(n)=[1, 2, 2, 3, 3, 4, 4, 5, 5, 3, 3]$ (use Overlap Add method)	06	4	2

