



Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058, India
(Autonomous College Affiliated to University of Mumbai)

Mid Semester Examination

March 2020

Max. Marks: 20

Class: T.E.

Course Code: CE63

Name of the Course: Digital Signal Processing

Duration: 1 Hr.

Semester: VI

Branch: COMP

Instruction:

- (1) All questions are compulsory
- (2) Draw neat diagrams
- (3) Assume suitable data if necessary

Q. No.	Questions	Max. Marks	CO-BL-PI
1	Determine and sketch the linear convolution $y(n)$ of the signals using tabular method $x(n) = \begin{cases} \frac{1}{3}n, & 0 \leq n \leq 6 \\ 0, & \text{elsewhere} \end{cases}$ $h(n) = \begin{cases} 1, & -2 \leq n \leq 2 \\ 0, & \text{elsewhere} \end{cases}$	6	2-3-2.2.3
2	A discrete-time signal $x(n]$ is defined as $\begin{cases} 1 + \frac{n}{3}, & -3 \leq n \leq -1 \\ 1, & 0 \leq n \leq 3 \\ 0, & \text{elsewhere} \end{cases}$ <ol style="list-style-type: none">sketch the signal that result if we,<ol style="list-style-type: none">First fold $x(n)$ and then delay the resulting signal by 4 samples .First delay $x(n)$ by 4samples and then fold the resulting signal.Sketch the signal $x(-n+4)$Compare the results in parts (b) and (c) and derive a rule for obtaining signal $x(-n+k)$ from $x(n)$Can you express the signal ,$x(n)$ in terms of signals $\delta(n)$ and $u(n)$	5	2-3-2.1.3
3	Describe Time Variant and Time Invariant System. Write a procedure to test for time invariance. Test the following system for time invariance $y(n) = x(n^2)$	4	1-2- 1.3.1
OR			



Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058, India
(Autonomous College Affiliated to University of Mumbai)

	Describe Linear and nonlinear system with suitable diagram. Test the following system for linearity $y(n) = x(n^2)$	4	1-2- 1.3.1
4	Discover the Relation between DFT and DTFT. State and explain properties of DFT	5	3-2-1.3.1