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may-08

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## Paper ID [EC308]

(Please fill this Paper ID in OMR Sheet)

B.Tech. (Sem. - 6<sup>th</sup>)

### DIGITAL SIGNAL PROCESSING (EC - 308)

Time : 03 Hours

Maximum Marks

#### Instruction to Candidates:

- 1) Section - A is **Compulsory**.
- 2) Attempt any **Four** questions from Section - B.
- 3) Attempt any **Two** questions from Section - C.

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#### Section - A

Q1)

(10 × 2 = .

- a) Write two advantages of digital over analog signal processing.
- b) What are symmetric and asymmetric signals?
- c) Define circular convolution.
- d) Define a Causal system.
- e) Differentiate stable from a unstable system.
- f) Write any two areas of applications of DSPs.
- g) What is aperiodic discrete time sequence?
- h) Define a symmetry property of DFT?
- i) Write any two basic features of IIR filters.
- j) Write any two applications of Z-Transforms in signal processing.

## Section - B

(4 × 5 = 20)

Q2) Determine the output  $y(n)$  of a LTI system with impulse response

$$h(n) = a^{nu}(n), |a| < 1$$

when input is a unit step sequence, that is  $x(n) = u(n)$

Q3) What is the physical significance of ROC in Z transform.

Q4) Find out the Z-transform for the following discrete time sequence

$$x(n) = kn, n \geq 0.$$

Q5) Discuss FFT algorithm using decimation in time technique.

Q6) Discuss Linear filtering approach for the computation of DFT.

## Section - C

(2 × 10 = 20)

Q7) Discuss signal flow graph representation and lattice structures for IIR systems.

Q8) Discuss various steps for the design of linear phase FIR filters using window method.

Q9) Discuss basic architecture of TMS series of digital signal processors.

