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Total No. of Questions : 09] [Total No. of Pages : 02

Paper ID [A0321]

(Please fill this Paper ID in OMR Sheet)

B.Tech. (Sem. - 6th)

DIGITAL SIGNAL PROCESSING (EC - 308)

Time : 03 Hours **Maximum Marks : 60**

Instruction to Candidates:

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

Section - A

Q1) *(10 × 2 = 20)*

a) Write any disadvantage of digital over analog signal processing.

b) Differentiate time variant from time invariant system?

c) Define sampling theorem.

d) Define a Causal system.

e) Differentiate stable from a non-stable system.

f) Write application of FFT algorithm?

g) What is zero padding in DFT?

h) What is linear convolution.

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) Show that h(n) is equal to the convolution of the following signals

$h_1(n) = \delta(n) + \delta(n-1)$

$h_2(n) = (½)^n u(n)$.

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

Q4) Find out the Z-transform for the following discrete time sequence $x(n) = kn^2$, $n \geq 0$.

Q5) Discuss FFT algorithm using decimation in frequency technique.

Q6) Discuss various properties of DFT.

Section - C

(2 × 10 = 20)

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

Q8) Discuss various steps for the design of linear phase IIR filters by impulse invariance technique.

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