

Total No. of Questions : 6]
P511

SEAT No. :
[Total No. of Pages : 2

TE/Insem/APR - 43
T.E. (Computer Engineering)
Digital Signal Processing Applications
(2012 Pattern) (Semester - II)

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates :

- 1) *Attempt Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Assume suitable data if necessary.*

Q1) a) State the sampling theorem. What is aliasing? [5]

b) Write down the form of N^{th} order general difference equation of a DT system and express it for FIR and IIR system. [5]

OR

Q2) a) What do you mean by Impulse Response? Obtain it for the DT system [5]

$$y(n) = 2x(n) - x(n-2)$$

b) Obtain the linear convolution of following DT signals [5]

$$x_1(n) = \{1, -2, 1\} \text{ and } x_2(n) = \{-1, 0, 2\}$$

Q3) a) State and prove the periodicity property of Fourier Transform (FT). [5]

b) Derive the first stage of DIF FFT algorithm. [5]

OR

Q4) a) Obtain 4 point DFT for a DT sequence - [5]

$$x(n) = \{1, 0, 2, -1\}$$

b) Compare between linear and circular convolution. [5]

P.T.O.

Q5) a) Why ROC need to specify along with ZT? What are the possible ROCs of ZT of any finite duration sequences? [5]

b) Obtain ZT of a DT signal using ZT properties where, $x(n) = n.u(n-1)$ Specify the ROC. [5]

OR

Q6) a) Obtain ZT of two standard signals $u(n)$ and $\delta(n)$. Plot its ROCs. [5]

b) What is a pole zero plot of ZT? Write down the steps to obtain the plot using System Function $H(Z)$. [5]

