Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(EIE) (2011 Onwards) (Sem.–6)

DIGITAL SIGNAL PROCESSING

Subject Code : EC-310

Paper ID : [A0370]

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. Answer briefly :

a) What is a time invariant system?

b) Given the sequence x(n) = (6-n)[u(n) - u(n-6)] , make a sketch of y(n) = x(2n -3).

c) What is the time shifting property of DFT?

d) Discuss transposition theorem.

e) Explain two applications of DSP.

f) Give the advantages of digital filters over analog filters.

g) What is the role of Barrel shifter in ADSP-21xx?

h) Explain limit cycles in filters.

i) Give the relation between Z-transform and DFT.

j) What are the advantages of representing a digital filter in the block diagram form?

SECTION-B

2. What are the limitations of analog signal processing?

3. Show that the following system is homogeneous.

$$y(n) = \frac{x^2(n)}{x(n-1)}$$

4. Discuss the applications of DFT in discrete signal analysis.

5. Find the four point DFT of the following :

$$x(n) = \delta(n) + 2\delta(n-2) + \delta(n-3)$$

6. Discuss the effect of round off noise in digital filters.

SECTION-C

7. State and prove any four properties of Z- Transform.

8. Discuss bilinear transformation.

9. Write short notes :

   a) Cascade form of FIR filter implementation.

   b) ADSP Processor.