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

Total No. of Questions : 09

B.Tech.(Electronics Engineering) (2012 Onwards) (Sem.–6)

DIGITAL SIGNAL PROCESSING

Subject Code : BTEEE-601

M.Code : 72835

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. Define DFT and discuss its significance.

b. Differentiate between energy signals and power signals.

c. Define convolution.

d. Discuss the importance of ROC in z transform.

e. Explain the time reversal property of z transform.

f. List the various factors that are considered for the design of a digital filter.

g. Compare the computational requirements of DFT with different FFT algorithms.

h. Discuss the term *"quantisation of filter coefficients"*.

i. Compare general purpose processor and DSP processor.

j. Why structure realization is required in a system? Explain.

SECTION-B

2. Discuss the basic elements of a DSP system. Also explain the various advantages and disadvantages of DSP over analog processing.

3. What is a signal? Discuss :

   a. Elementary discrete time signals

   b. Manipulation of discrete time signals

4. Find the Z-transform of the following :

   a. $x(n) = n\,u(n)$

   b. $x(n) = (1/3)^n\,[u(n)-u(n-8)]$

5. Discuss the various properties of Discrete Fourier transform in detail.

6. Discuss any one structures for implementation of IIR system by considering an example.

SECTION-C

7. Compute the 16-point DFT of the sequence.

$$x(n) = \begin{cases} 2n+2, & 0 \le n \le 15 \\ 0, & otherwise \end{cases}$$

8. Explain the following :

   a. Applications of Digital Signal Processing

   b. Design of IIR filter by Impulse Invariance

9. Discuss (in detail) the architecture of TMS series of DSP processor.

NOTE : Disclosure of identity by writing mobile number or making passing request on any page of Answer sheet will lead to UMC against the Student.