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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.

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