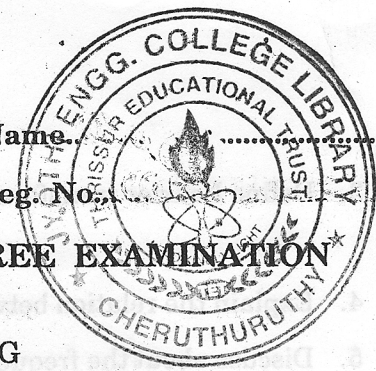


CS
D 20943

(Pages : 2)

Name:

Reg. No:



**FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION
OCTOBER 2011**

CS/PTCS 09 503—SIGNAL PROCESSING

(2009 Admissions)

Time : Three Hours

Maximum : 70 Marks

Part A

*All questions compulsory.
Each question carries 2 marks.*

1. What are the advantages of digital signal processing compared to analog signal processing ?
2. What do you understand by odd and even functions ?
3. State Sampling theorem.
4. What is convolution ?
5. State Final value theorem.

(5 × 2 = 10 marks)

Part B

*Answer any four questions.
Each question carries 5 marks.*

1. How to identify that a system is casual or non-casual ? ✓
2. List the conditions for symmetry.
3. With a block diagram explain the process of analog to digital conversion.
4. Explain about linear constant coefficient difference equation. ✓
5. List the properties of Region of Convergence (ROC). ✓
6. Obtain the relationship between Z-transform and Laplace transform

(4 × 5 = 20 marks)

Part C

1. Explain the conditions for a system to be linear time invariant with BIBO stability.

Or

2. Let the sequence be $x(n) = e^{(0.1 + j 0.3)n}$, $-10 \leq n \leq 10$, plot magnitude and phase.

Turn over

3. Define Fourier transform of a time function and explain under what conditions it exists.

Or

4. Explain the relation between laplace transform and Fourier transform.

5. Discuss about the frequency analysis of discrete time signal.

Or

6. Find the circular convolution of the given data sequences $x_1(n) = \{1, 3, 5, 7\}$ and

$$x_2(n) = \{2, 4, 6, 8\}.$$

7. Explain the properties of Z-transform.

Or

8. Using partial fraction expansion, determine $x(n)$ for $X(Z)$ given by :

$$(a) \quad X(Z) = \frac{(z - 0.5)}{z(z - 0.8)(z - 1)}$$

$$(b) \quad X(Z) = \frac{0.5z}{Z^2 - z + 0.5}$$

(4 × 10 = 40 marks)