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Discuss

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Exam. Code: 0925 Sub. Code: 6863

## 1129

## B.E. (Information Technology) Seventh Semester

ITE-741: Digital Signal Processing

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions all, including Question in I which compulsory and selecting two questions from each Unit.

- Attempt the following:
  - a) What is sampling?
  - b) What are discrete time signals?
  - c) Types of signals.
  - d) State two applications of Digital Signal Processing.
  - e) State two differences between FIR and IIR filters.
  - f) State bilinear transformation equation between s-plane and z-plane.
  - g) Write the condition for the digital filter to be causal.
  - h) What is the effect of finite word length?
  - i) State the difference between analog and digital filter.
  - j) Fourier series can be calculated for a periodic signal. True/False? (10x1)

## b) the range right based to the and <u>UNIT - I</u>

- II. Given an input sequence  $x(n) = \{1,2,3\}$  is passed through a filter given by  $h(n) = \{1,2\}$ . Find the output y(n). (10)
- III. Explain Fourier series and transform of discrete time signals and their properties.(10)
- Given input x(n) = (1,2,3,0) and system function h(n) = (1,2,0,0). Use FFT method to IV. calculate output y(n), using DIT algorithm for FFT. (10)

## UNIT - II

V. Explain cascade and linear phase FIR structures.

(10)

P.T.O.

VI. Explain impulse invariant method of IIR filter design. An analog filter has the following system function. Convert this filter into a digital filter using backward difference for the derivative.

$$H(s) = \frac{1}{(s+0.1)^2 + 0.9}$$
 (10)

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VII. Explain the architecture and addressing modes of TMS 320CXX processor. (10)

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d) Sund two applications of Digital Stand Pares asing

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37 State the difference between analog and digual filter.
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Given an input soquence x(c) = {1.2.2} is possed through a filter given by that = 11.21. Find the equality(n).

Xplain Fourier series and transform of disordic tank signals and their properties (10

Given impar x(a)=(1,2,3,3) and system function (a,0,0) - (1,2,6,0) Use EFT inclined to calculate output y(a), using IMT algorithm for FFT;

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Esplain cascaite and thiem plans FIR structures.