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 in all, including Question No. I which is compulsory and selecting two questions from each Unit.

x-x-x

I. 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)

UNIT – I

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)

IV. Given input x(n)= (1,2,3,0) and system function h(n)= (1,2,0,0). Use FFT method to 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.

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

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

x-x-x