Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
M.Tech I Year I Semester (R16) Regular Examinations January 2017
ADVANCED DSP & APPLICATIONS
(Embedded Systems)
(For Students admitted in 2016 only)

Time: **3 hours**   Max. Marks: **60**

(Answer all Five Units **5 X 12 =60** Marks)

UNIT-I

Q.1 a. Write the different types of linear – phase transfer functions   7M
  b. Derive a single multiplier structure for generating sine-cosine sequences from a general second order digital filter structure.   5M

OR

Q.2 a. Realize the follow) = 1 – 3.5 z-1 + 4.9z ing FIR filter, H(z-2 – 3.43 z-3 + 1.2005 z-4 – 0.16807z-5 as: Cascade of five first order sections.   7M
  b. With an example explain the Tunable IIR Digital filter.   5M

UNIT-II

Q.3 a. Explain the design of an IIR filter using Pads' approximation method   7M
  b. What are the different design techniques available for the FIR filters?   5M

OR

Q.4 a. Discuss how computationally efficient FIR digital filters are designed.   7M
  b. Explain about least square design method   5M

UNIT-III

Q.5 a. What is Chirp z-transform? Develop DFT computation using the Chirp z-transform   7M
  b. Write a short note on Split radix FFT.   5M

OR

Q.6 a. Discuss about Sliding Discrete Fourier transform.   7M
  b. Write a short note on narrow frequency band of DFT   5M

UNIT-IV

Q.7 a. Discuss about quantization process and explain quantization of fixed-point numbers   7M
  b. Explain the influence of filter structure on finite word length effects.   5M

OR

Q.8 a. Explain about round-off errors in FFT algorithms.   7M
  b. How is the product round off errors reduced?   5M

UNIT-V

Q.9 a. Draw and explain the structure of Direct-form realization of FIR filter in sampling rate conversion by factor I/D. 7M

b. Discuss about Oversampling A/D converter. 5M

OR

Q.10 a. Explain the process of spectral analysis of non-stationary signals 7M

b. Explain Decimation by a factor M. 5M

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