Code No.: 9A04603/R09

Set-2

III B.Tech. II Semester Regular & Supplementary Examinations

*April/May - 2013*

# DIGITAL SIGNAL PROCESSING

( Common to EIE, E.Con.E, ECC and ECE )

Time: 3 Hours | Max. Marks: 70

*Answer any **FIVE** Questions*

*All Questions carry **Equal** Marks*

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1. Discuss the classification of discrete systems with the help of examples.

2. Determine the DFT of a sequence x(n) = {1,1,0,0} and check the validity of answer by calculating IDFT.

3. Explain radix-2 DIT-FFT algorithm in detail. Explain how calculations are reduced. **(Unit-III, Topic No. 3.1)**

4. If H(z) has zeros at $z_1 = 0.707 + j0.707$, $z_2 = 2$, determine the lowest order degree H(z) that has linear phase. Also realize it in direct form-II and in cascade form.

5. (a) Explain the features of Butterworth approximation.
   (b) Discuss the location of pole for Butterworth filter.

6. Discuss the type I and II frequency sampling methods of FIR filter design.

7. The signal x(n) is decimated by N to obtain the signal y(n). Sketch X(F) and Y(F) over $-3 \le F \le 3$ for the following cases.
   (i) X(n) = sinc (0.4 n) N = 2
   (ii) X(F) = tri (4 F) N = 2
   (iii) X(F) = tri (6 F) N = 3.

8. (a) Discuss about spectral analysis of non-stationary signals.
   (b) Discuss about frequency response of typical band limited channel.