Q.P. Code :24269

[Time: Three Hours]   [Marks:80]

Please check whether you have got the right question paper.

N.B: 1. Question.No.1 is compulsory.
         2. Solve any three from remaining five question
         3. Assume suitable data if required.

Q1.   Answer the following any four.   5x4=20
   a) y(n)-5y(n-1)+6y(n-2)=x(n) Determine system function & Impulse response
   b) Explain Block diagram of DSP
   c) Compute DFT of four point sequences x(n)={2,4,5,6}
   d) Write the condition of Hamming and hanning window techniques.
   e) H(s)=1/(s+3)(s+6) find H(z) using impulse invariance techniques

Q2.   a) Prove the circular frequency shift and time shift properties of DFT   (10)
       b) If x(n)={3,0,-2,0,2,1,0,-2,-1,0} and h(n)={2,2,1} perform overlap save method.   (10)

Q3.   a) Find the 8 point DFT using DIT-FFT algorithm.   (10)
          X(n)={1,2,1,2,0,2,1,2}
       b) Derive the relationship of DFT to F.T and Z.T   (10)

Q4.   a) Realize the system using DF-II, cascade and parallel realization   (10)

$$H(z) = \frac{1 + \frac{1}{3} z^{-1}}{1 - \frac{3}{4} z^{-1} + \frac{1}{8} z^{-2}}$$

       b) Obtain the magnitude and phase response of the following system   (10)
          H(n)=(-1/2)^n u(n)

Q5.   a) A low pass Butterworth filter has following specification
          $0.8 \leq |H(e^{jw})| \leq 1$ for $0 \leq w \leq 0.3 \, \Pi$
          $|H(e^{jw})| \leq 0.2$ for $0.7 \, \Pi \leq w \leq \Pi$
          Find the filter order and analog cut off frequency Ωo if
          (i) Bilinear transformation techniques
          (ii) Impulse invariance techniques.   (10)
       b) Prove the derivation of FIR filter when
          (i) N is oven & symmetric
          (ii) When N is odd and anti symmetric   (10)

Q6   a) Write a short note on Comb filter & notch filter.
       b) Write a short note on Decimation by integer factor
       c) Explain any one DSP processor in detail   (6+6+8

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