Q2 (a) Explain D/A Conversion in detail.

Answer Page Number 223 - 225 of Textbook

Q2 (b) Explain how can we reconstruct the CT band limited signal from its samples.

Answer Page Number 176-179 of Textbook

Q3 (b) (i) What are Inverse systems?
(ii) Explain minimum phase systems and discuss their unique fundamental properties.

Answer
(i) Page Number 274-275 of Textbook
(ii) Page Number 306 and 313-315 of Textbook

Q4 (a) Obtain the direct form I and direct form II realization of

$$H(z) = \frac{3 + 3.6z^{-1} + 0.6z^{-2}}{1 + 0.1z^{-1} - 0.2z^{-2}}$$

Answer Page Number 380 of Textbook

Q4 (b) Obtain the cascade and parallel form of realization for

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

Answer Page Number 302-307 of Textbook

Q5 (a) Explain the design of IIR filters using Bilinear transformation with the help of one example.

Answer Page Number 476-478 of Textbook

Q5 (b) Explain Equiripple Approximations for a type I FIR Filter.

Answer Page Number 512-515 of Textbook

Q6 (a) If $x[n] = \cos\left(\frac{\pi n}{2}\right)$**, Find the 4 point DFT X(k).**

Answer Page Number 530-535 of Textbook

Q6 (b) Explain the linearity and circular convolution property of DFT for a finite duration sequence.

Answer Page Number 590 and 597 of Textbook

Q7 (a) Explain DIT- FFT Algorithm using signal flow graphs for N=8. Hence find DFT of sequence [1 -1 1 -1 1 -1 1 -1] using DIT-FFT algorithm.

Answer Page Number 661-665 of Textbook

Q7 (b) Explain linear filtering approach to compute DFT.

Answer Page Number 659-660 of Textbook

Q8 (a) Discuss the Fourier analysis of non-stationary signals.

Answer Page Number 749-750 of Textbook

Q8 (b) Elaborate on computing correlation and Power Spectrum estimates using DFT.

Answer Page Number 772-774 of Textbook

Q9 (a) Consider a real, causal sequence x[n] for which $X_R(e^{j\omega})$, the real part of DTFT is $X_R(e^{j\omega}) = 1 + \cos 2\omega$. Determine the original sequence x[n], its Fourier transform $X(e^{j\omega})$ and the imaginary part of Fourier transform $X_I(e^{j\omega})$.

Answer Page Number 805 of Textbook

Q9 (b) Explain Hilbert Transform relations for complex sequences.

Answer Page Number 815-817 of Textbook

<u>**Text Book**</u>

Discrete-Time Signal Processing (1999), Oppenheim, A. V., and Schafer, R. W., with J. II R.Buck, Second Edition, Pearson Education, Low Price Edition.