Practice Questions

Q1.Determine the inverse Z-Transform of the following function, by Partial Fraction Expansion Method.

$$X(Z) = \frac{3 + 2Z^{-1} + Z^{-2}}{1 - 3Z^{-1} + 2Z^{-2}}$$

Q2.Determine the inverse Z-Transform of

$$X(Z) = \frac{1}{1 - 0.8Z^{-1} + 0.12Z^{-2}}$$

i) If ROC is, $|Z| > 1$ ii) If ROC is, $|Z| < 0.2$

Q3 .Find Fourier transform of double sided exponential signal. What do you mean by Dirichlet conditions

Q4. Determine the Z-transform and ROC

$$x(n) = n^2 u(n)$$

Q5. Find the initial value, $x(0)$ and final value, $x(\infty)$ of following signal

$$X(Z) = \frac{1}{1 - Z^{-2}}$$

Q6.Find Fourier transform of double sided exponential signal. What do you mean by Dirichlet conditions

Q7. Determine the Fourier Transform of following continuous Time Domain Signal

$$x(t) = e^{-at}\cos\Omega_0 t \, u(t)$$

Q8. Determine Fourier Transform of continuous time domain signals, $x(t)$=Gate impulse signal. Find possible ROC conditions.

Q9. Find out the Fourier Transform of Unit Step Signal and Unit Impulse Signal

Q10. Explain the concept of power spectral density and its use in DTFT

Q11.Determine the Fourier Series coefficient of the signal $x(n)$

$$x(n) = 1 + \sin(2\pi n/N) + 3\cos(2\pi n/N) + \cos(4\pi n/N + \pi/$$

Q12. Apply convolution for the given sequences

$x_1(n) = \{1, -2, 0\}$ and $x_2(n) = \{-3, 1, -1\}$

Q13. Evaluate discrete time fourier transform for the signals

a) $x(n) = \cos(w_0 n)$ where $w_0 = 2\pi/5$

b) $x(n) = a^{|n|}$; $-1 < a < 1$