(OLD COURSE)

(3 Hours)

QP Code : 12115

[Total Marks : 100

N. B. 1. Question No. 1 is compulsory

2. Attempt any four question from remaining six question.

Q.1 a) Prove differentiation in Z domain property of Z transform.

b) Determine whether each of the signals are periodic. If so find its fundamental period

(i) $\cos\left(\frac{\pi}{20}\right)n + \cos\left(\frac{\pi}{10}\right)n$

(ii) $2\cos(100\,\pi t) + 5\sin 50t$

c) State and Prove linear convolution property of Fourier transform

d) x[n] = { 1, 1, 1,1,0.5, 0.5}

    ↑

Sketch even and odd parts of the signal.

[20]

Q. 2 a) Convolve $x(t) = 1$ $0 \le t \le 1$

      = 0   otherwise

With $h(t) = 1$ $0 \le t < 1$

      = 0   otherwise

[10]

b) Check whether following systems are linear or nonlinear, time variant or invariant, causal or non-causal, static or dynamic.

(i) y(t) = x(t) cos(100πt)

(ii) y[n] = x[n+10] + x^2[n]

[10]

Q. 3 a) Sketch $x(t) = u(t) - r(t-1) + 2r(t-2) - r(t-3) + u(t-4) - 2u(t-5)$

Check whether signal is an energy signal or power signal and determine the same.

[10]

Draw Even and odd parts of the signal

[TURN OVER

LM-Con. 9900-14.

Correction Attached