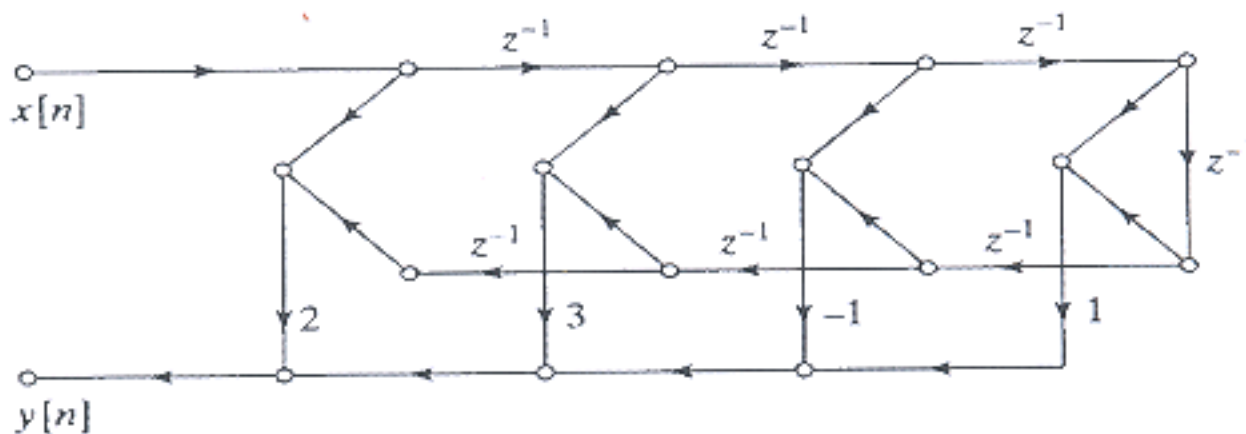


- b) Determine the coefficients of the lattice filter corresponding to FIR filter described by the system function $H(z) = \left(1 + 2z^{-1} + \frac{1}{3}z^{-2}\right)$. Also draw the corresponding second order lattice structure.

[10+10=20 marks]

- 16.a) Determine the transfer function of the system shown below



- b) Explain the characteristics of the limit cycle oscillation with respect to the system described by the difference equation

$$y[n] = 0.95y[n-1] + x[n]$$

Determine the dead band of the filter.

[5+15=20 marks]

Module 4

17. a) For the system given below find an expression for $y[n]$ in terms of $x[n]$.



- b) A CD player operates with a sampling rate of 44.1 kHz while a digital audio tape has a sampling rate of 48 kHz. Draw the complete block diagram for performing the sampling rate conversion. Mention all the required specifications and details for the above system.

- c) Draw the block diagram of a system, that can be used to reduce the sampling rate by a factor of 0.375.

[6+8+6=20 marks]

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