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

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

Determine the dead band of the filter.

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

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

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.