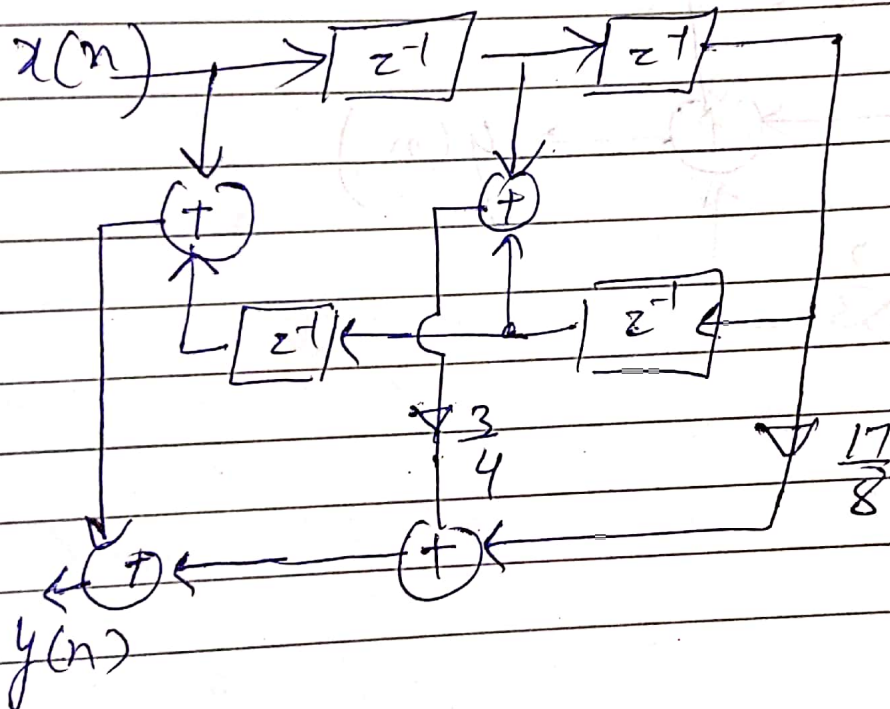


Q Obtain FIR linear phase & cascade realisation of $H(z) = \left(1 + \frac{1}{2}z^{-1} + z^{-2}\right) \left(1 + \frac{1}{4}z^{-1} + z^{-2}\right)$

Soln Linear phase realisation

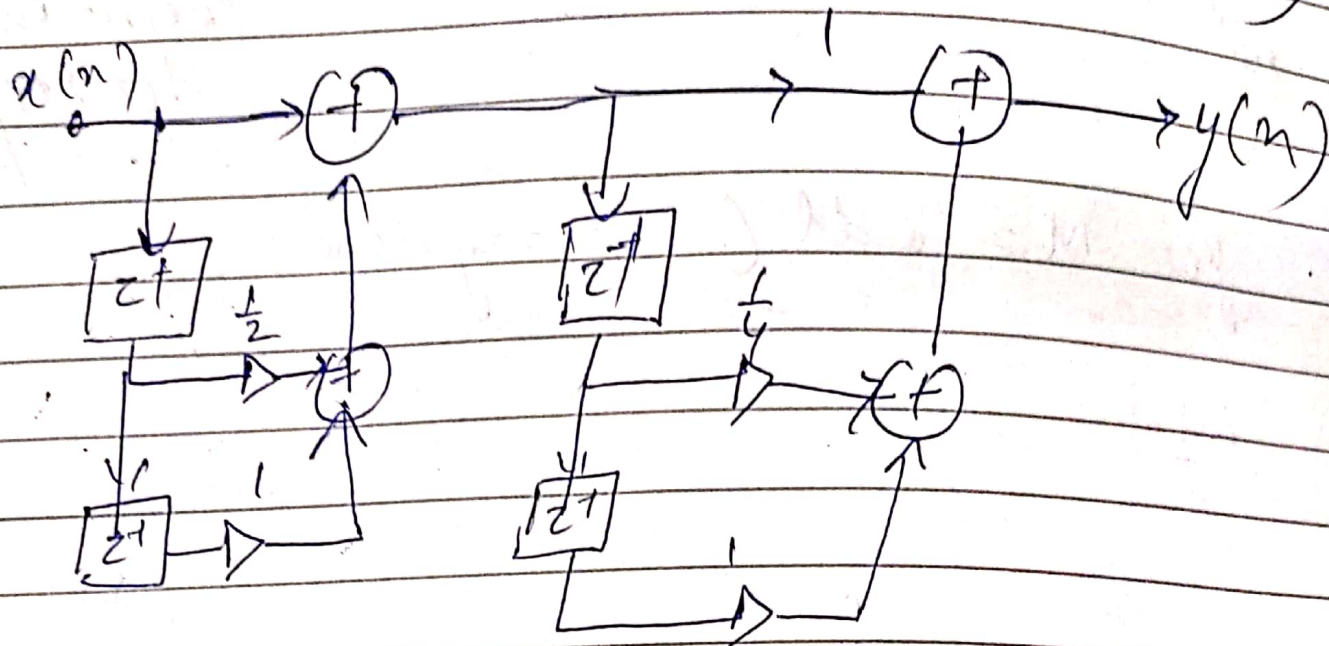
$$H(z) = 1 + \frac{3}{4}z^{-1} + \frac{17}{8}z^{-2} + \frac{3}{4}z^{-3} + z^{-4}$$

$$\therefore M = 5$$



Cascade

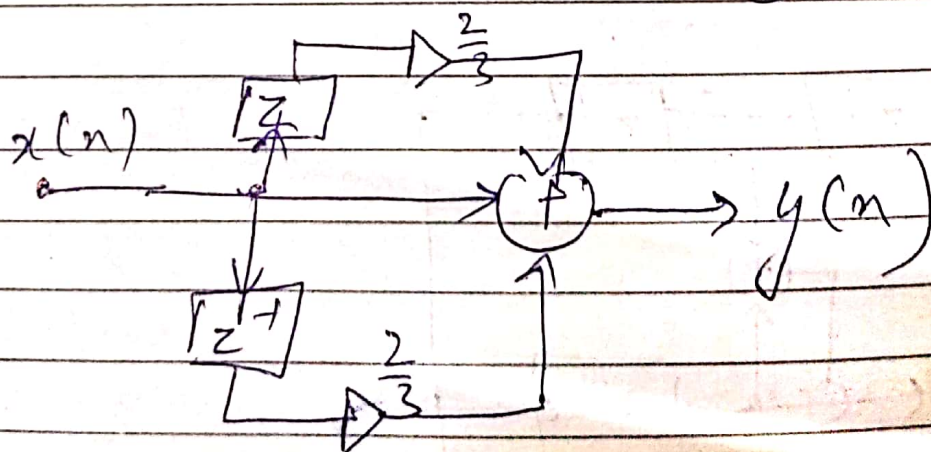
$$H(z) = \left(1 + \frac{1}{2}z^{-1} + \frac{1}{4}z^{-2}\right) \left(1 + \frac{1}{4}z^{-1} + \frac{1}{2}z^{-2}\right)$$



Q $H(z) = \frac{2z + 1 + \frac{2}{3}z^{-1}}{3}$

Realize non-causal linear phase FIR system

Soln $H(z) = 1 + \frac{2}{3}(z + z^{-1})$



Q. Realize causal linear phase FIR system function

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

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

Solu

