

Realization Techniques

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➤ The FIR filter can be realized in many forms. They are

(i) Direct form

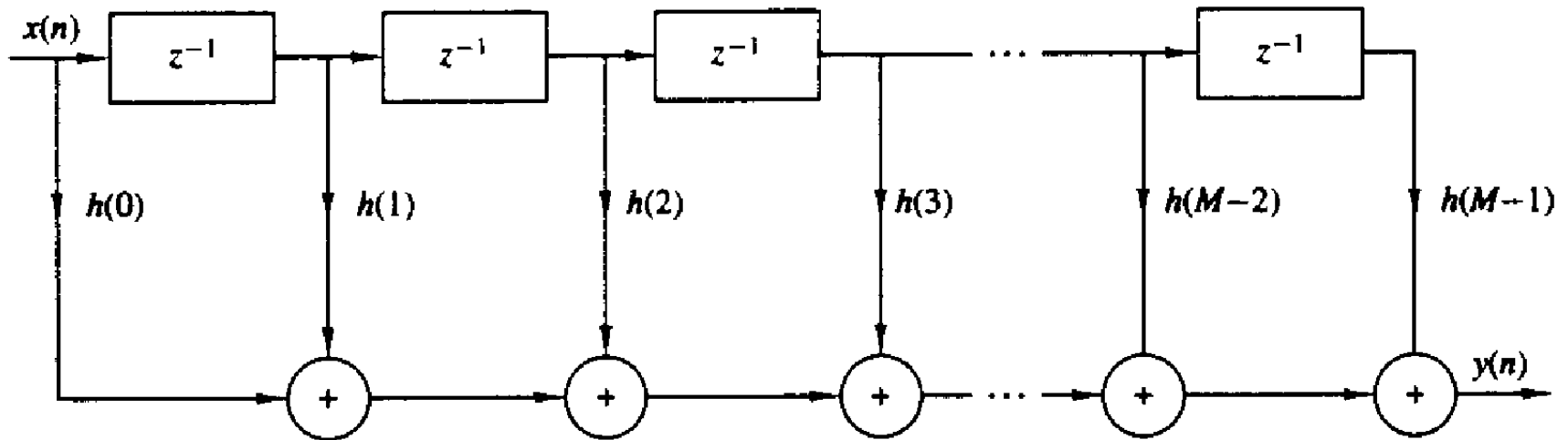
(ii) Cascade form

(iii) Linear Phase realization

(iv) Polyphase realization

Direct Form:

$$y(n] = \sum_{k=0}^{M-1} h(k)x(n-k]$$



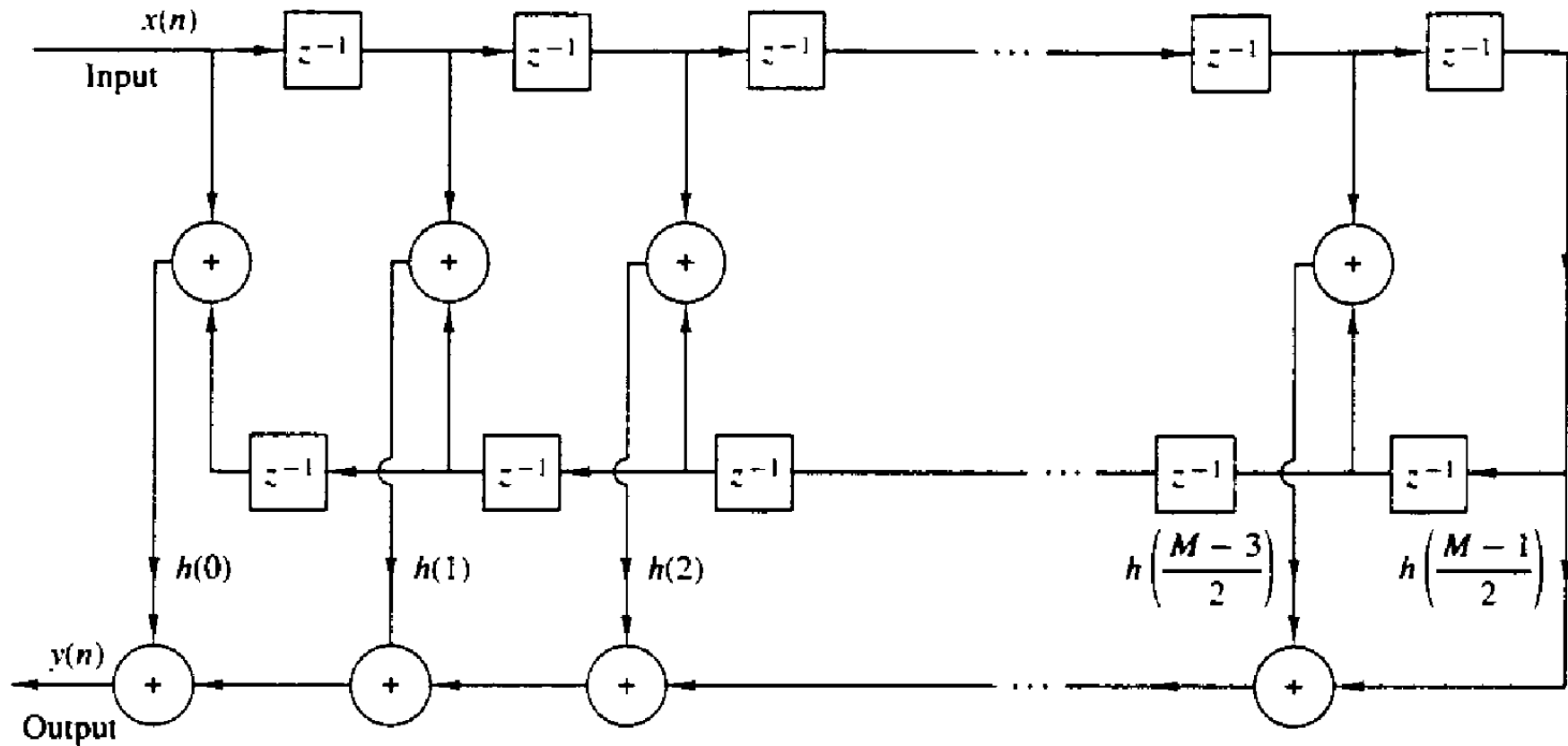


Figure 7.2 Direct-form realization of linear-phase FIR system (M odd).

Cascade form:

$$H(z) = \prod_{i=1}^k H_i(z)$$

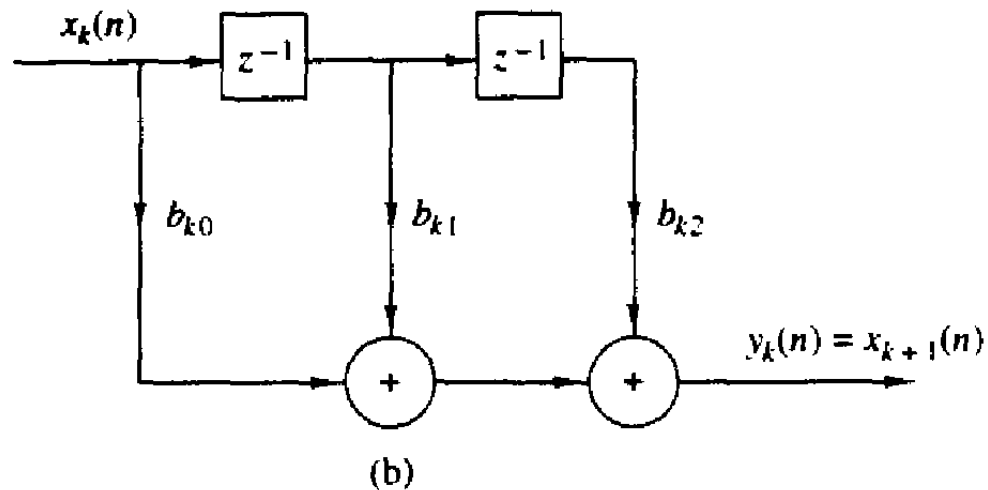
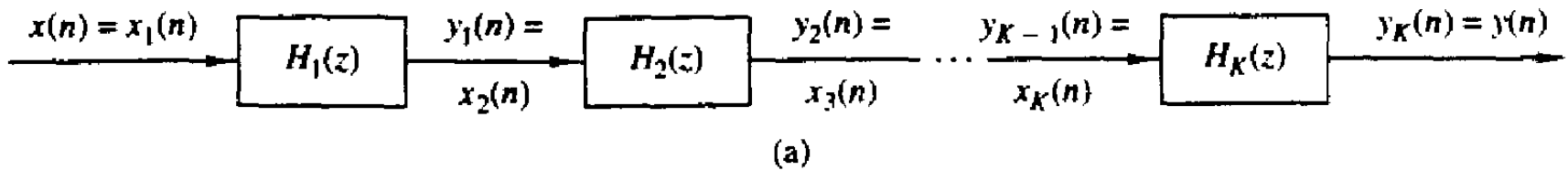
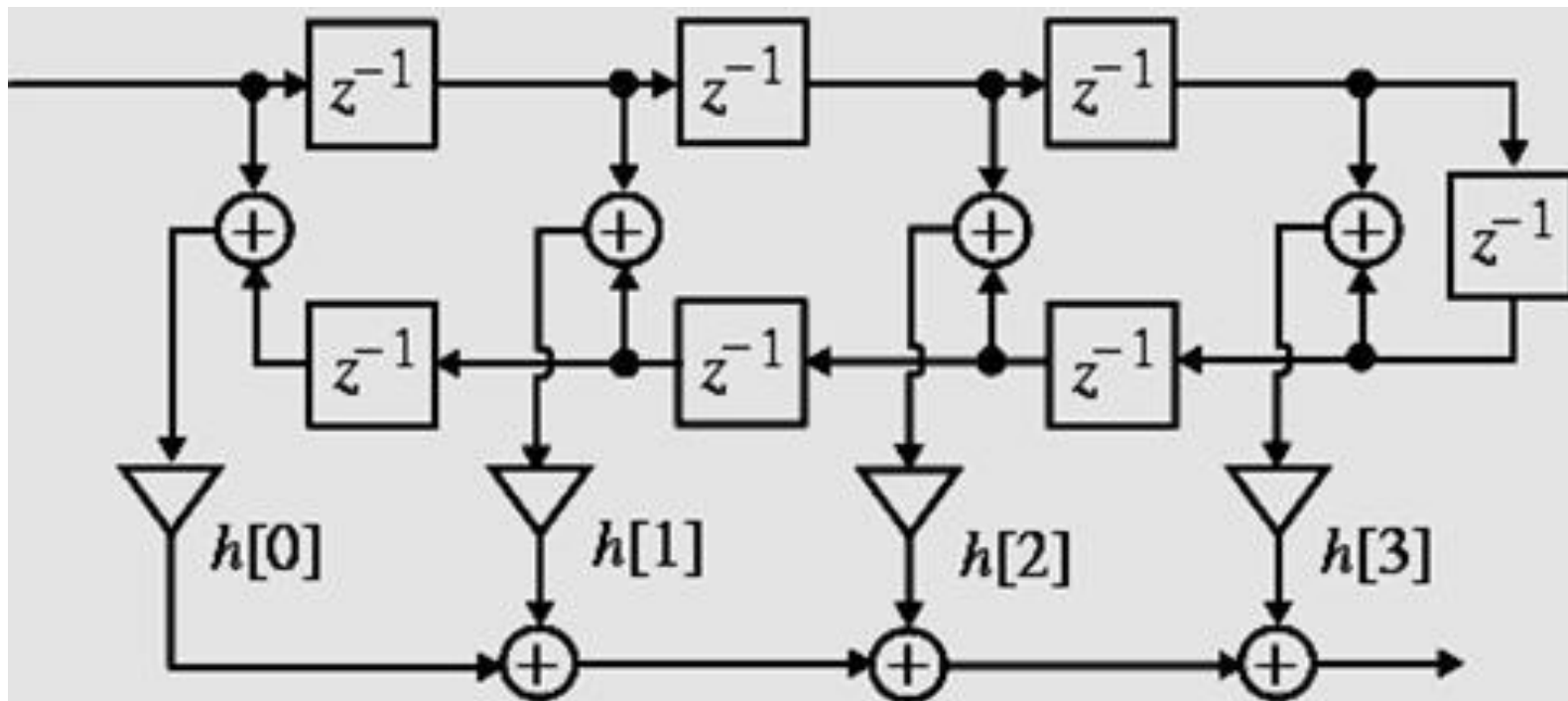
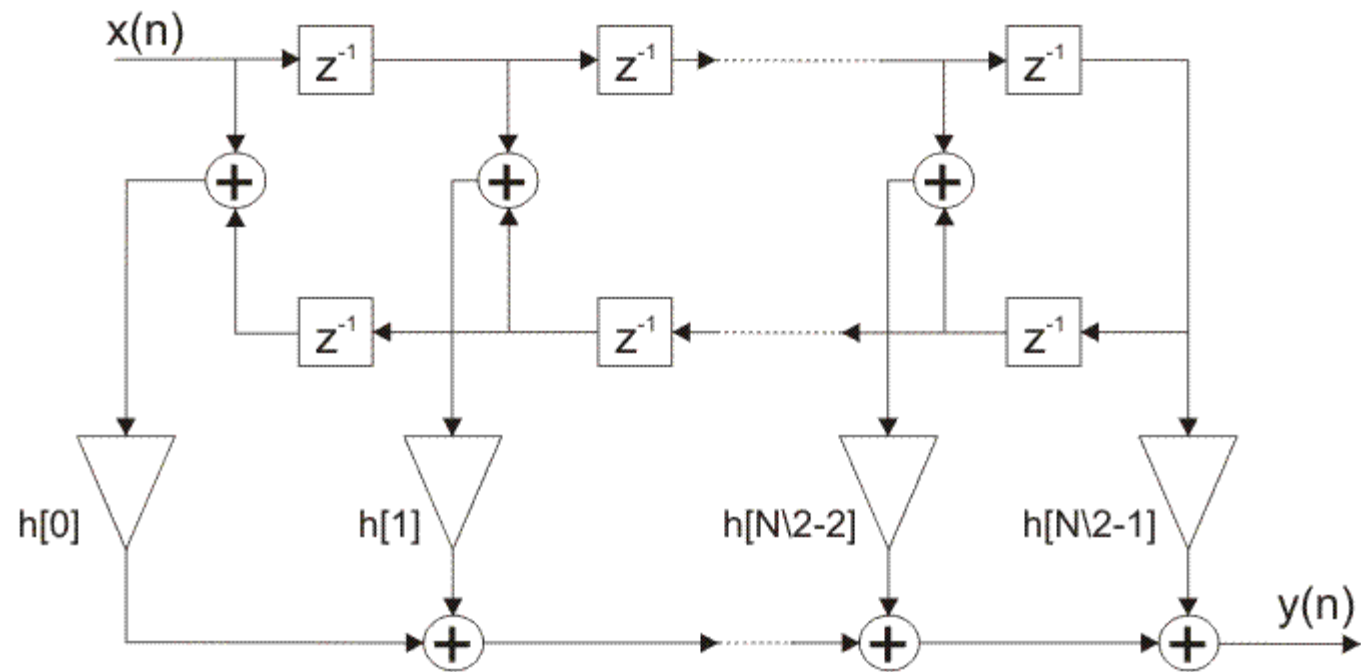
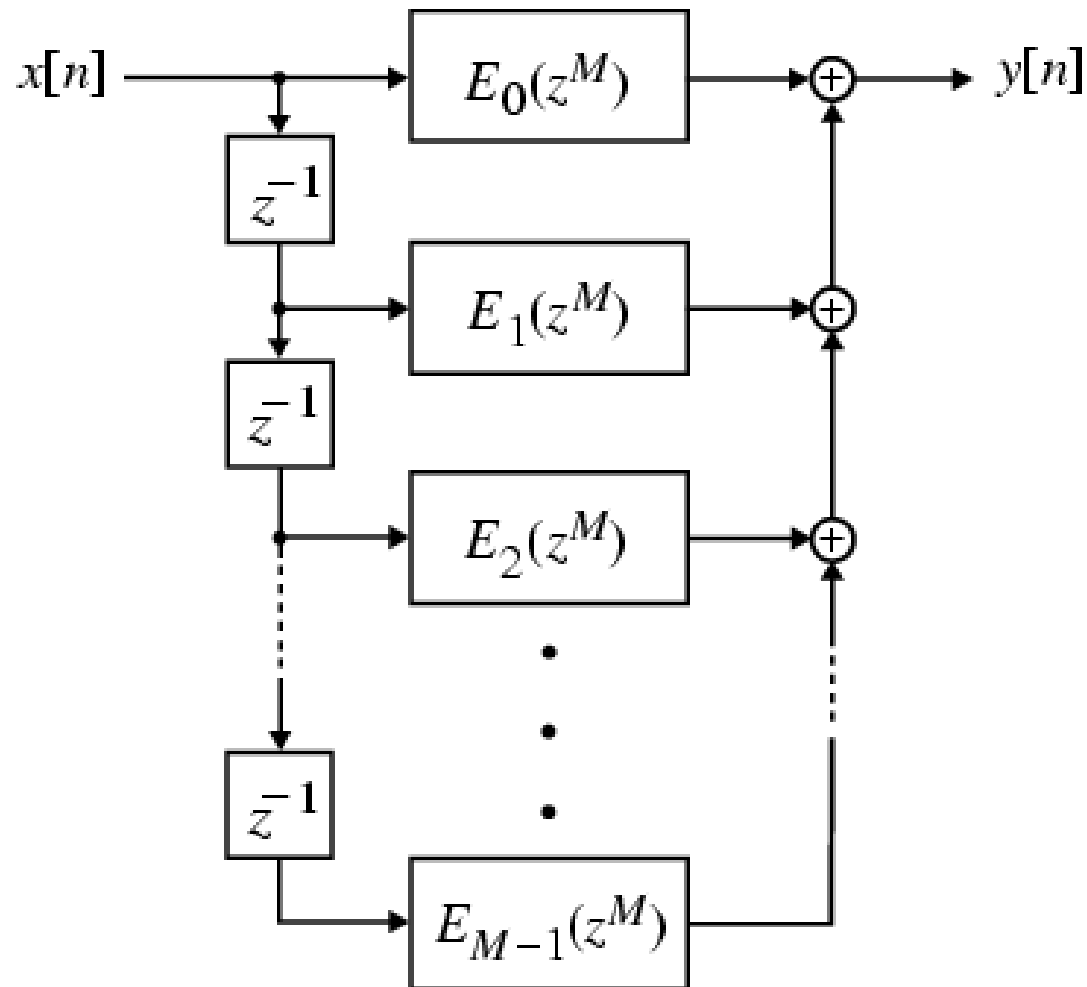


Figure 7.3 Cascade realization of an FIR system.





Polyphase realization:



Polyphase realization:

