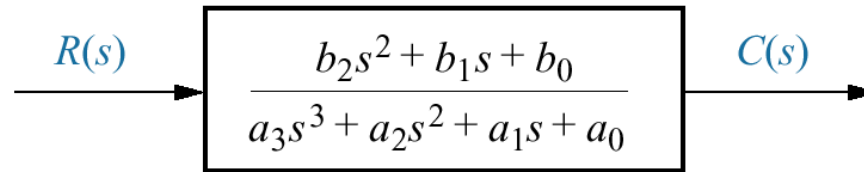


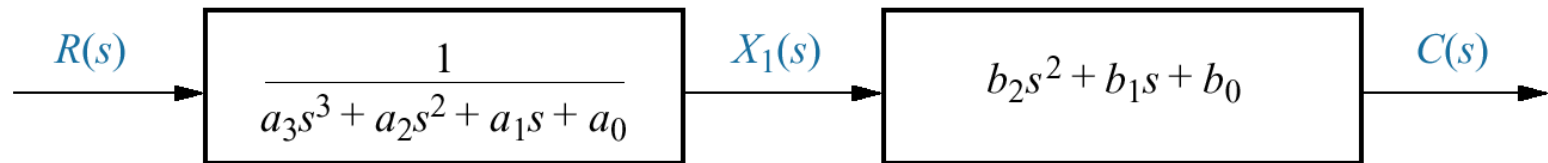
UNIT-2

(Lecture-5)

Decomposing a Transfer Function



(a)



Internal variables:
 $X_2(s), X_3(s)$

(b)

$$Y(s) = C(s) = (b_2 s^2 + b_1 s + b_0) X_1(s)$$

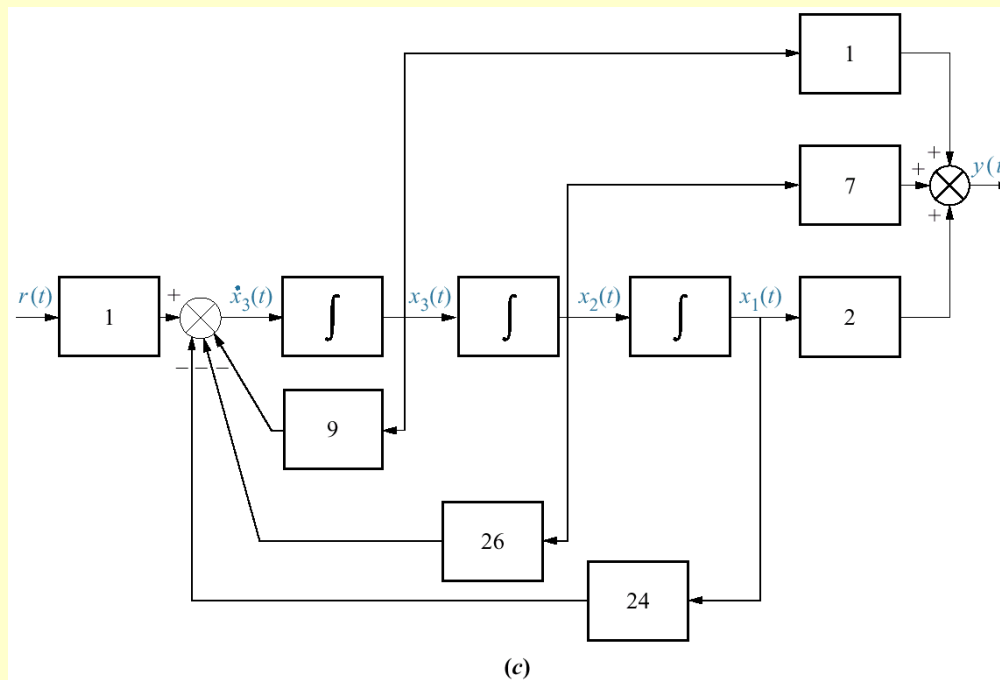
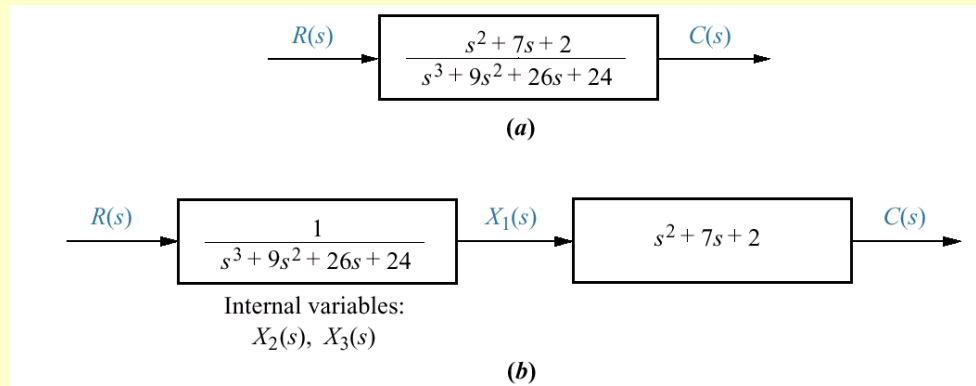


$$y(t) = b_2 \frac{d^2 x_1}{dt^2} + b_1 \frac{dx_1}{dt} + b_0 x_1$$



$$y(t) = b_0 x_1 + b_1 x_2 + b_2 x_3$$

Example



$$y(t) = 2x_1 + 7x_2 + x_3$$



$$y = \begin{bmatrix} 2 & 7 & 1 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix}$$