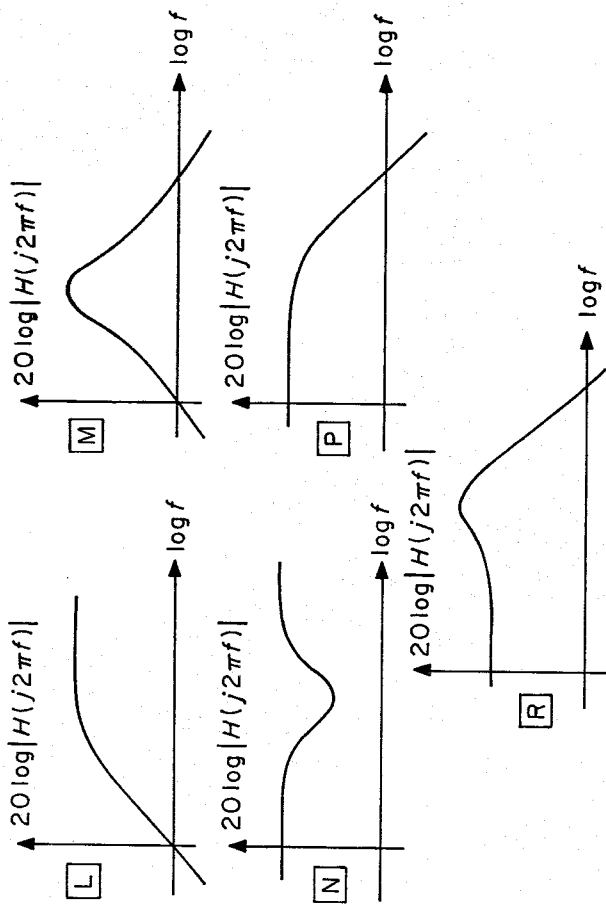
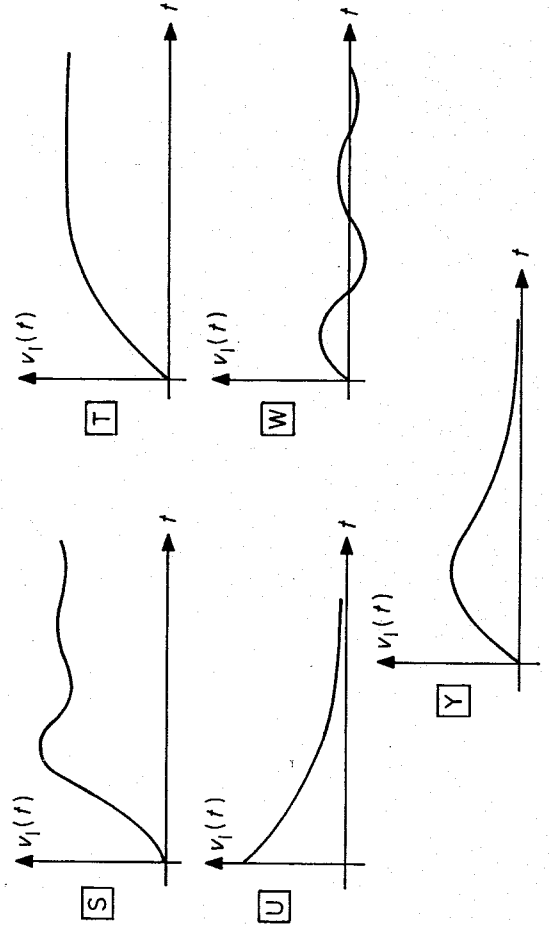


EXERCISES FOR CHAPTER 4

c) Input-output frequency responses, $|H(j2\pi f)| = \frac{V_1(j2\pi f)}{V_0(j2\pi f)}$:

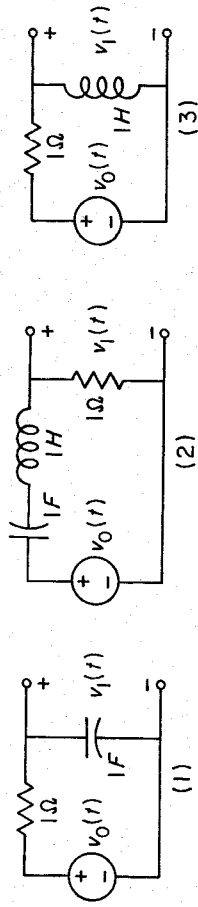


d) Responses to the unit step, $v_0(t) = u(t)$:

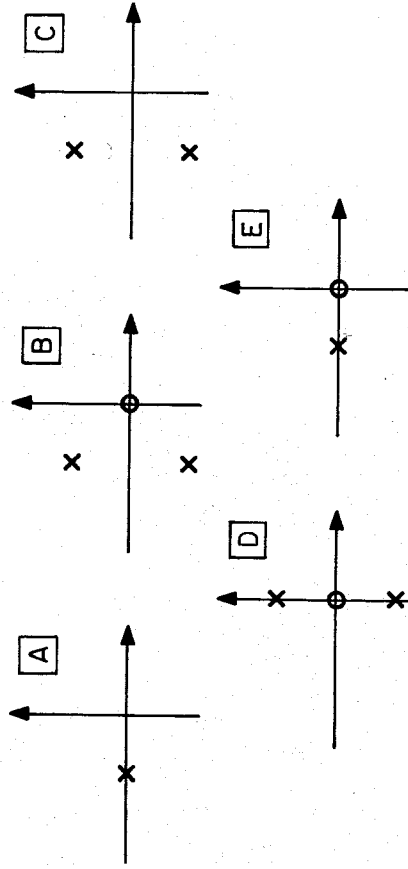


Exercise 4.1

For each of the three circuits below, match a pole-zero plot from (a), an input-output differential equation from (b), a frequency response from (c), and a step response from (d). The correct answers are among those given, and the same answer does not apply to more than one circuit.



a) Pole-zero plots of the input-output system function:



b) Input-output differential equations:

F $\frac{d^2 v_1(t)}{dt^2} + \frac{dv_1(t)}{dt} + v_1(t) = \frac{dv_0(t)}{dt}$

G $\frac{dv_1(t)}{dt} + v_1(t) = \frac{dv_0(t)}{dt}$

H $\frac{d^2 v_1(t)}{dt^2} + v_1(t) = \frac{dv_0(t)}{dt}$

J $\frac{dv_1(t)}{dt} + v_1(t) = v_0(t)$

K $\frac{d^2 v_1(t)}{dt^2} + \frac{dv_1(t)}{dt} + v_1(t) = \frac{dv_0(t)}{dt} + v_0(t)$