

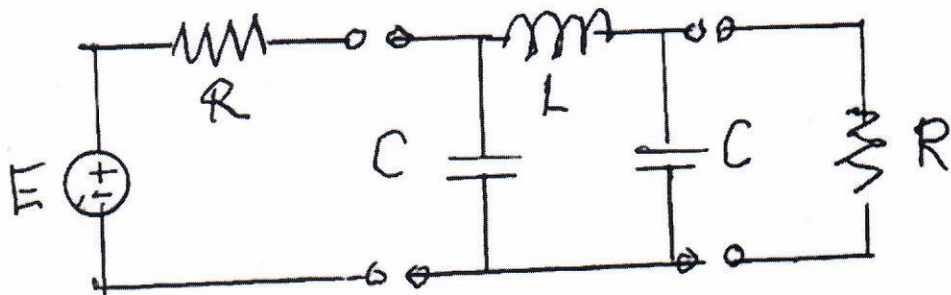
## MIDTERM EXAMINATION

October 25, 2023

Open Book

1. Find the chain matrix of the two-port shown below.

*Extra Credit:* Find the voltage gain  $V_2/E$  if the two-port operates between two equal resistors  $R$ .



2. Construct the MNA matrix equations for the circuit shown below.

*Extra Credit:* Find all voltages and currents in the circuit. The element values are  $R_1 = 1 \text{ k}\Omega$ ,  $R_2 = 2 \text{ k}\Omega$ ,  $V = 3 \text{ V}$  and  $I = 1 \text{ mA}$ .

