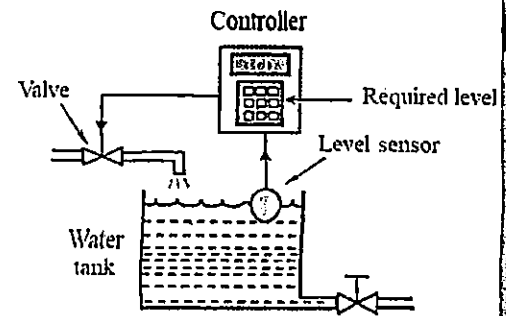
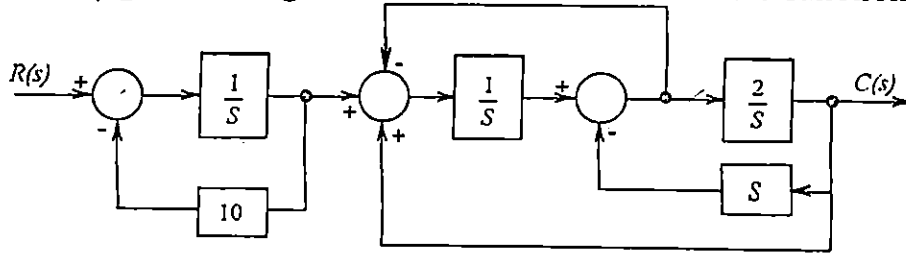


Q1) For the shown system in the figure, draw its equivalent block diagram.

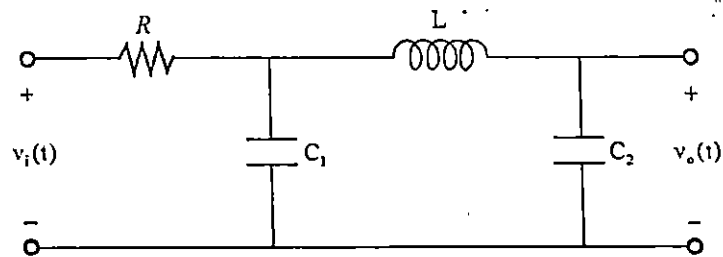


Q2) Solve the shown differential equation:  $\ddot{x} + 2\dot{x} + x = 3te^{-t}$ ,  $x(0) = 4$ ,  $\dot{x}(0) = 2$

Q3) Reduce the following block diagram and find the overall transfer function (Draw your Steps).



Q4) Obtain the overall TF of the circuit shown in the figure below.



5) Drive the transfer function of the field-controlled DC motor.