HUST
School of Electrical Engineering

FINAL EXAMINATION: **LINEAR CIRCUIT 2**
Duration of the exam: ***60 minutes***

Sheet num. 01

9/2021

(*Documents are allowed to use*)

Student's name:.....**Student Code:** .....

Question 1 (3 pts)

A given circuit in figure 1: All sources have the same frequency.

a. Write a set of equation by using mesh analysis (the direction of the mesh currents is given)?

b. Express the branch currents with given direction in term of the mesh currents.

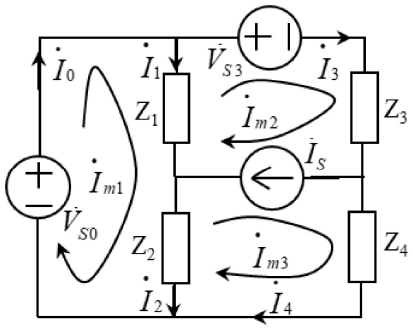

Figure 1

Question 2 (3 pts)

Circuit in Figure 2: $E_3 = 20V(DC)$; $R_1 = 40\Omega$;
$C_2 = 0,01F$; $j_6(t) = \sqrt{2}\sin(10t + 15°)(A)$;
$R_4 = 20\Omega$; $R_5 = 15\Omega$; $R_7 = 30\Omega$; $L_6 = 2H$. Find $u_{C2}(t)$.

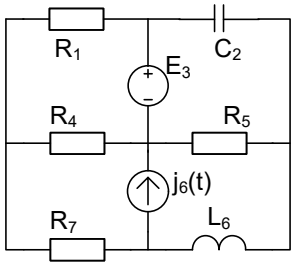

Figure 2

Question 3 (3 pts)

Given a circuit as in figure 3, where: $R_1 = 30\Omega$, $R_2 = 20\Omega$, $C = 0,2F$, $L = 1H$, $I_S = 2A$, $V_S = 10V$. Find the step response $i_L(t)$ when the switch is closed at the time $t = 0$? (Note that, when the switch is open, the circuit is in steady state)

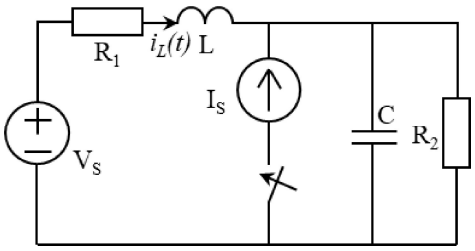

Figure 3

Note: Good representation: 1 pt