IIIT-H 2021
Network Theory
HW2:
(Time: 1 Week)

List any assumptions you make in your calculations.
Discussions are ok but submitted work should be your own.
Copied HW will be marked negatively.

1. From text book , chapter 4 (Ed 8)
Solve (find the variables after writing the equations for both KCL & KVL) the following problems:
41, 50, 55.

2. Load R_L is connected to a non-ideal voltage source V_s with source resistance R_s. What will be the power transferred to R_L in terms of known values? What R_L will you select to make this power maximum (V_s and R_s stay constant). Hint: 'optimize/maximize power wrt R_s.' Find this maximum transferred power. You findings have very useful application in power grid etc to maximize power transfer.

3. Circuit shown in figure 3a is a 'π' connected circuit (look at its shape). Circuit shown in figure 3b is a 'Y' connected circuit (look at its shape).
(a) How can you select $R_1, R_2 \& R_3$ values in fig 3b so that the circuit behaves same as fig 3a circuit ?
(b) Can you also find $R_A, R_B \& R_C$ values in fig 3a so that the circuit behaves same as fig 3b circuit ?

4. From text book , chapter 5 (Ed 8)
Solve the following problems:
5, 8, 12, 24, 26, 33, 42

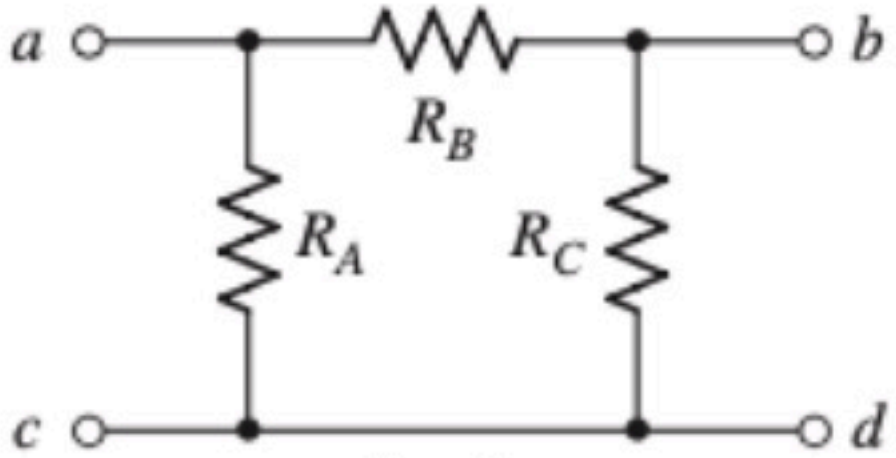

Figure 3a

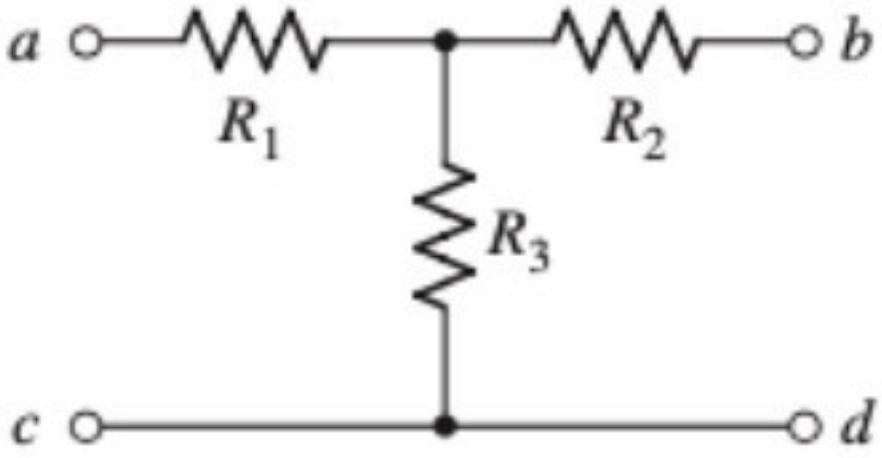

Figure 3b