Module name: **Electrical Circuits 2**
Module ID: **IS-FEE-10085S**
Module type: **Class**
Semester: **summer 2023/2024**
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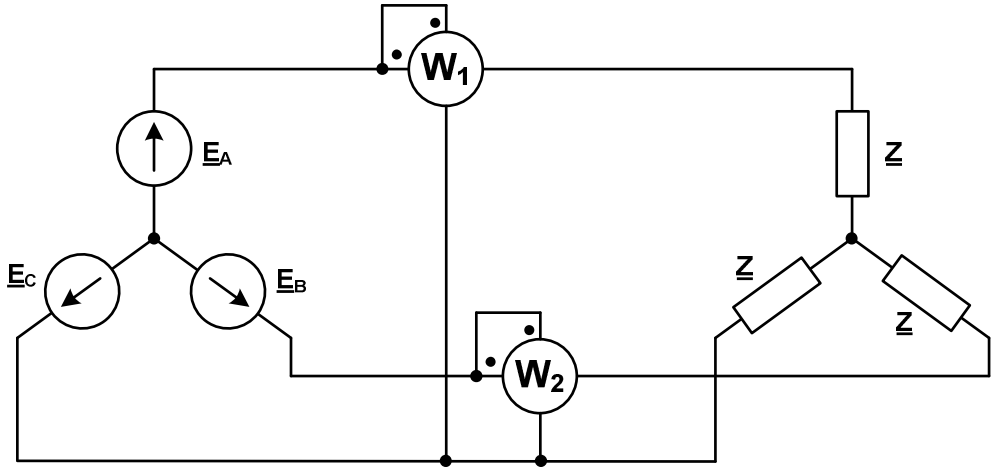
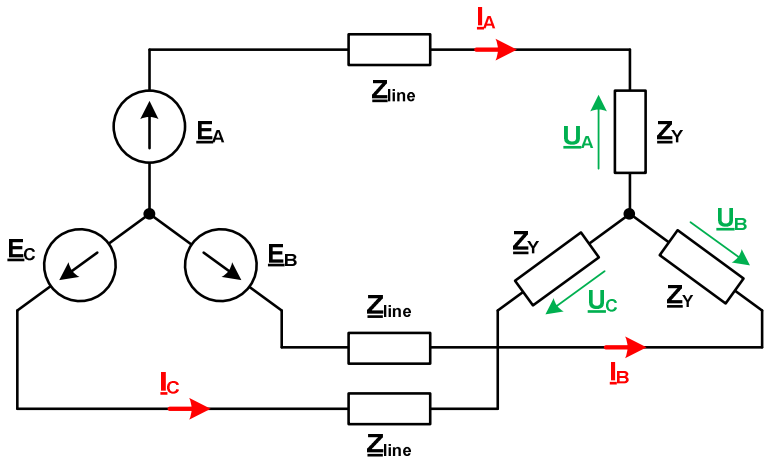
Class 6 (16.04.2024)

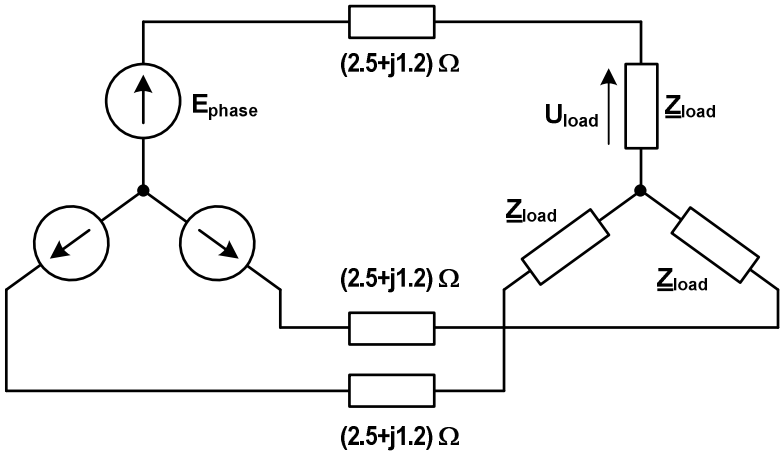
1. In a 3-phase balanced Y-Y system, the source voltage is E_{phase} = 230 V rms. The impedance per phase is $\underline{Z}$ = (8+j6) Ω. Check whether an overcurrent circuit breaker with a rated current of 10 A is sufficient to protect this circuit. Also, find the active power of the load and the readings of the wattmeters.



2. In a 3-phase balanced Y-Y system, the source voltage is E_{phase} = 230 V rms. The impedance per phase is $\underline{Z}_Y$ = (9+j9) Ω and the line impedance per phase is (0.5+j0.4) Ω. What should be the rated current of the overcurrent circuit breakers protecting this circuit? Standard rated currents are: 6 A, 10 A, 16 A, 20 A, 25 A, 32 A, 40 A, 50 A, 63 A, 80 A, 125 A. Calculate the active power losses in the power line. Also, calculate the percentage voltage drop across the load compared to the rated voltage.

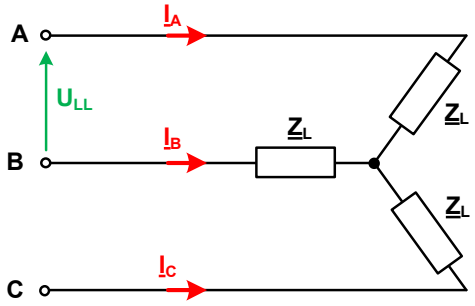


3. In the 3-phase balanced Y-Y system, the load voltage is U_{load} = 400∠-20° V rms, the line impedance is (2.5+j1.2) Ω, and the source voltage is E_{phase} = 440 V rms. Find the load impedance, its power, and the value of supplying current.

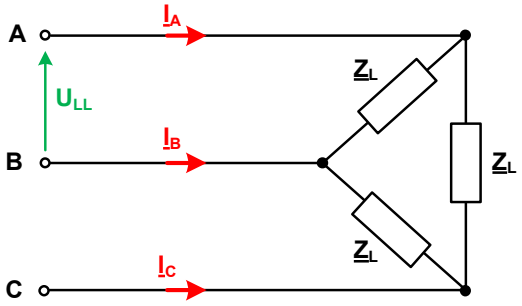


4. The line-to-line voltage of a balanced 3-phase distribution line is U_{LL} = 380 V rms. The load impedance per phase is $\underline{Z}_L$ = (30+j20) Ω. Calculate the line currents and the active power of the load for the following configurations of load impedance: a) a wye-connected system, b) a delta-connected system.

a)



b)



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