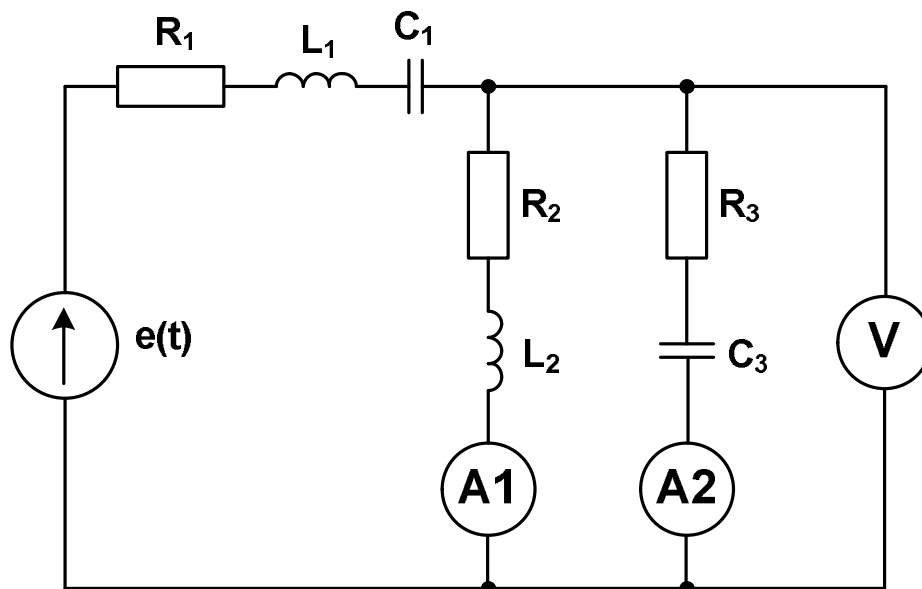


Module name: **Electrical Circuits 1**  
 Module ID: **IS-FEE-10070W**  
 Module type: **Class**  
 Semester: **winter 2024/2025**  
 Instructor: **Jarosław Forenc, [j.forenc@pb.edu.pl](mailto:j.forenc@pb.edu.pl)**

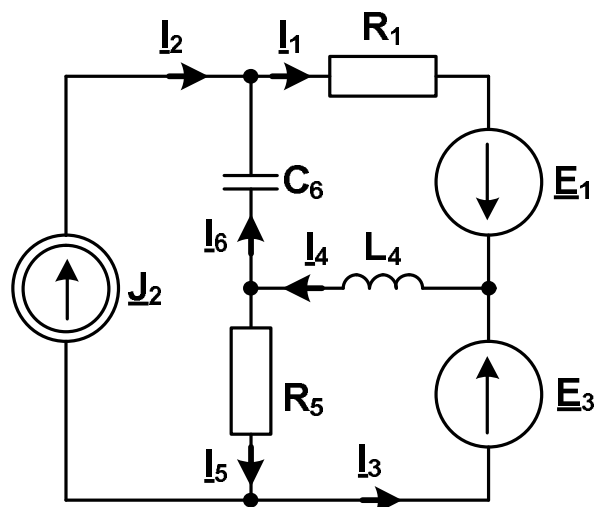
**Class 12 (20.01.2025)**

1. Calculate the meter readings in the circuit shown in the figure using the **Node-Voltage method**. The parameters are as follows:  $e(t) = 141.4\sin(1000t)$  V,  $R_1 = R_2 = R_3 = 50 \Omega$ ,  $L_1 = L_2 = 100$  mH,  $C_1 = 20 \mu\text{F}$ ,  $C_3 = 10 \mu\text{F}$ .



2. Calculate the currents in all branches of the circuit shown in the figure using the **Node-Voltage Method**. The parameters are as follows:

$R_1 = 20 \Omega$ ,  $X_{L4} = 20 \Omega$ ,  $R_5 = 10 \Omega$ ,  
 $X_{C6} = 20 \Omega$ ,  $\underline{E}_1 = j20$  V,  $\underline{E}_3 = 20$  V,  $\underline{J}_2 = 10$  A.



3. Calculate the currents in all branches of the circuit shown in the figure using the **Node-Voltage Method**. The parameters are as follows:

$$j_1(t) = 10\sqrt{2}\sin(\omega t) \text{ A}, e_4(t) = 100\sqrt{2}\sin(\omega t + 90^\circ) \text{ V}, \omega = 1000 \text{ rad/s},$$

$$R_2 = 10 \Omega, R_3 = 10 \Omega, C_3 = 50 \mu\text{F}, C_4 = 50 \mu\text{F}, L_5 = 10 \text{ mH}.$$

