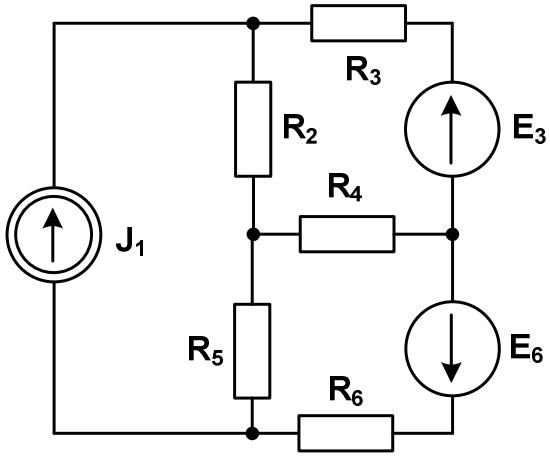
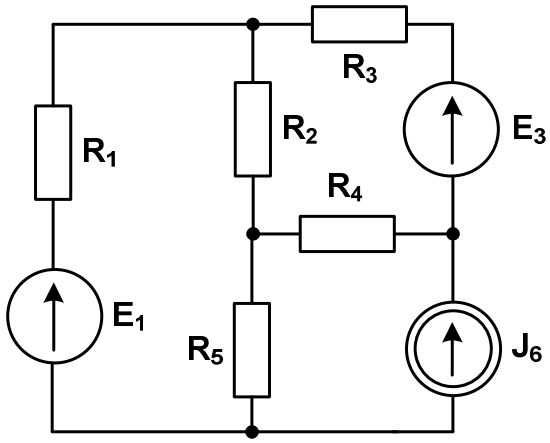
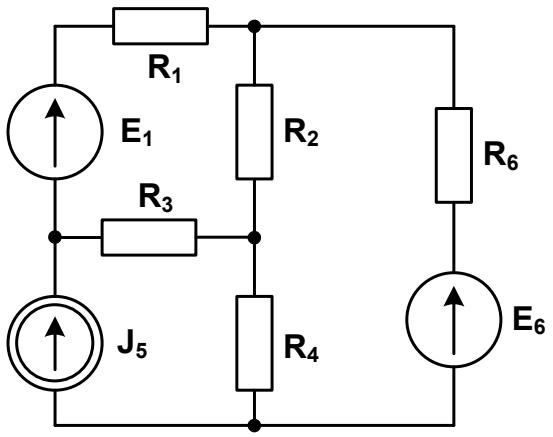
ELECTRICAL CIRCUITS 1 (IS-FEE-10070W) - TEST 1 (GROUP 2) 25.11.2024

PROBLEM TO BE SOLVED IN A GROUP	Points
1. In the circuit shown in the figure, fuses with a rated current of **1 A** are used to protect the voltage sources E_3 and E_6. Determine whether this rated current is sufficient. $R_2 = 25\ \Omega$, $R_3 = 25\ \Omega$, $R_4 = 10\ \Omega$, $R_5 = 10\ \Omega$, $R_6 = 10\ \Omega$, $E_3 = 10$ V, $E_6 = 20$ V, $J_1 = 2$ A 	12

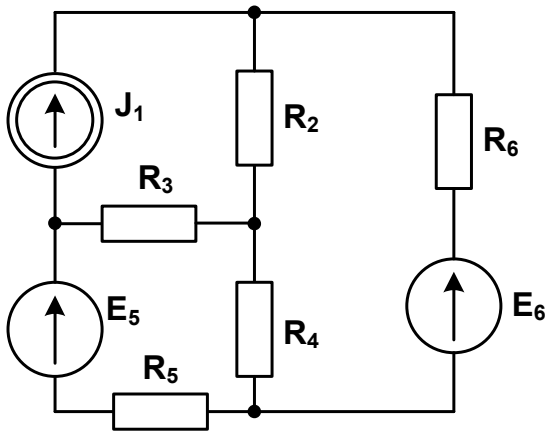
ELECTRICAL CIRCUITS 1 (IS-FEE-10070W) - TEST 1 (GROUP 3) 25.11.2024

PROBLEM TO BE SOLVED IN A GROUP	Points
1. In the circuit shown in the figure, fuses with a rated current of **0.75 A** are used to protect the voltage sources E_1 and E_3. Determine whether this rated current is sufficient. $R_1 = 25\ \Omega$, $R_2 = 20\ \Omega$, $R_3 = 5\ \Omega$, $R_4 = 10\ \Omega$, $R_5 = 15\ \Omega$, $E_1 = 5$ V, $E_3 = 10$ V, $J_6 = 1$ A 	12

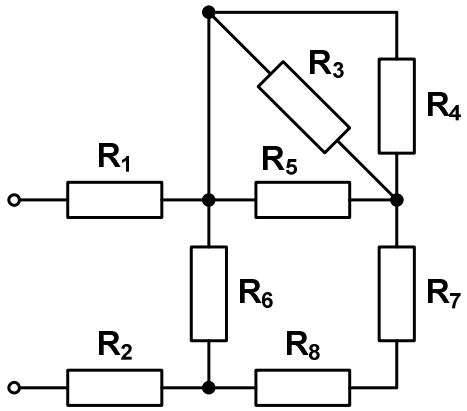
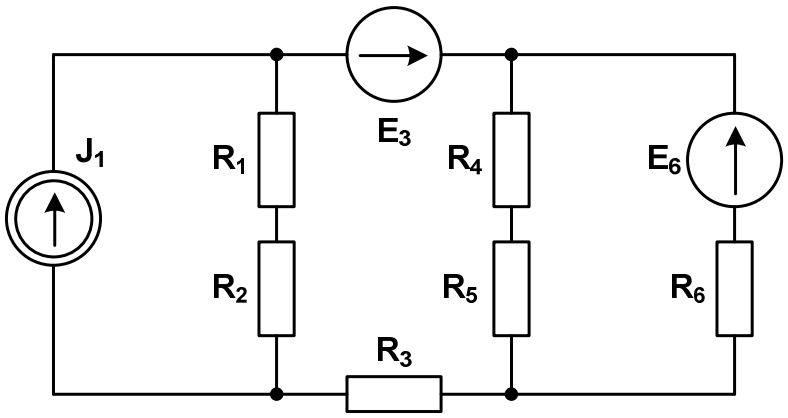
ELECTRICAL CIRCUITS 1 (IS-FEE-10070W) - TEST 1 (GROUP 4) 25.11.2024

PROBLEM TO BE SOLVED IN A GROUP	Points
1. In the circuit shown in the figure, fuses with a rated current of **2 A** are used to protect the voltage sources E_1 and E_6. Determine whether this rated current is sufficient. $R_1 = 10\ \Omega$, $R_2 = 25\ \Omega$, $R_3 = 25\ \Omega$, $R_4 = 15\ \Omega$, $R_6 = 25\ \Omega$, $E_1 = 5$ V, $E_6 = 5$ V, $J_5 = 4$ A 	12

ELECTRICAL CIRCUITS 1 (IS-FEE-10070W) - TEST 1 (GROUP 5) 25.11.2024

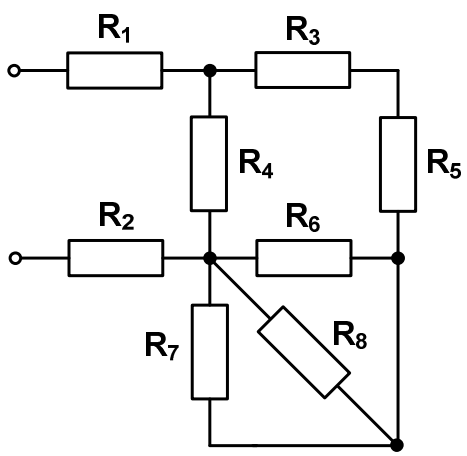
PROBLEM TO BE SOLVED IN A GROUP	Points
1. In the circuit shown in the figure, fuses with a rated current of **1.5 A** are used to protect the voltage sources E_5 and E_6. Determine whether this rated current is sufficient. $R_2 = 10\ \Omega$, $R_3 = 20\ \Omega$, $R_4 = 5\ \Omega$, $R_5 = 10\ \Omega$, $R_6 = 10\ \Omega$, $E_5 = 10$ V, $E_6 = 5$ V, $J_1 = 2$ A 	12

ELECTRICAL CIRCUITS 1 (IS-FEE-10070W) - TEST 1 **25.11.2024**

PROBLEMS TO BE SOLVED INDIVIDUALLY		POINTS
1. Calculate the **equivalent resistance** of circuit shown in the figure. $R_1 = 4\ \Omega$, $R_2 = 4\ \Omega$, $R_3 = 10\ \Omega$, $R_4 = 15\ \Omega$, $R_5 = 12\ \Omega$, $R_6 = 8\ \Omega$, $R_7 = 15\ \Omega$, $R_8 = 5\ \Omega$		8
2. The circuit shown in the figure uses resistors with a rated power of **0.5 W**. Determine whether this power rating is sufficient for the circuit to operate. If not, specify the required power rating for the individual resistors. The standard resistor power ratings are: 0.125 W, 0.25 W, 0.4 W, 0.5 W, 0.6 W, 0.75 W, 1 W, 2 W, 3 W, 5 W, 7 W. $R_1 = 100\ \Omega$, $R_2 = 200\ \Omega$, $R_3 = 400\ \Omega$, $R_4 = 250\ \Omega$, $R_5 = 50\ \Omega$, $R_6 = 200\ \Omega$, $J_1 = 0.1$ A, $E_3 = 2$ V, $E_6 = 1$ V 		20

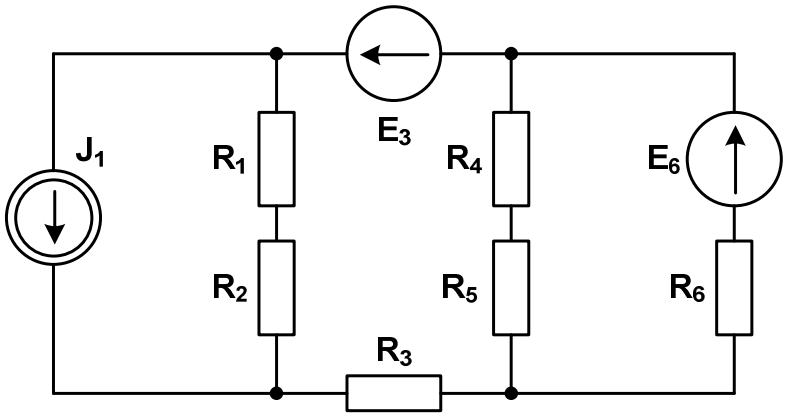
Note: 21 points from both parts are required to pass the test.

ELECTRICAL CIRCUITS 1 (IS-FEE-10070W) - TEST 1 **25.11.2024**

PROBLEMS TO BE SOLVED INDIVIDUALLY		POINTS
1. Calculate the **equivalent resistance** of circuit shown in the figure. $R_1 = 5\ \Omega$, $R_2 = 6\ \Omega$, $R_3 = 18\ \Omega$, $R_4 = 6\ \Omega$, $R_5 = 6\ \Omega$, $R_6 = 15\ \Omega$, $R_7 = 30\ \Omega$, $R_8 = 15\ \Omega$		8

2. The circuit shown in the figure uses resistors with a rated power of **1 W**. Determine whether this power rating is sufficient for the circuit to operate. If not, specify the required power rating for the individual resistors. The standard resistor power ratings are: 0.125 W, 0.25 W, 0.4 W, 0.5 W, 0.6 W, 0.75 W, 1 W, 2 W, 3 W, 5 W, 7 W.

   $R_1 = 100\ \Omega$, $R_2 = 200\ \Omega$, $R_3 = 400\ \Omega$, $R_4 = 250\ \Omega$, $R_5 = 50\ \Omega$, $R_6 = 200\ \Omega$,
   $J_1 = 0.2$ A, $E_3 = 2$ V, $E_6 = 2$ V



20

Note: 21 points from both parts are required to pass the test.