

OPĆINSKO/GRADSKO NATJECANJE IZ FIZIKE 2015/2016

OSNOVNA ŠKOLA

$$1. \quad F_{\text{gsanjke}} = m_{\text{sanjke}} g = 150 \text{ N} \quad 2 \text{ boda}$$

$$F_{\text{gLana}} = m_{\text{Lana}} g = 500 \text{ N} \quad 1 \text{ bod}$$

$$F_p = F_{\text{gsanjke}} + F_{\text{gLana}} + F_{\text{gMirna}} = 1210 \text{ N} \quad 2 \text{ boda}$$

$$F_v = 3 \cdot 120 \text{ N} = 360 \text{ N} \quad 1 \text{ bod}$$

$$F_{\text{tr}} = \mu F_v \quad 2 \text{ boda}$$

$$\mu = 0,3 \quad 1 \text{ bod}$$

$$2. \quad V_{\text{metalna}} = V_{\text{kuglica}} - V_{\text{praznina}} \quad 1 \text{ bod}$$

$$V_{\text{praznina}} = V_{\text{kuglica}} + V_{\text{vode}} - V_{\text{konačno}} = 60 \text{ ml.} \quad 2 \text{ boda}$$

$$V_{\text{metalna}} = 240 \text{ ml.} = 240 \text{ cm}^3 \quad 2 \text{ boda}$$

$$\rho = \frac{m}{V} \quad 1 \text{ bod}$$

$$m = 1,89 \text{ kg} = 1890 \text{ g} \quad 1 \text{ bod}$$

$$\rho = 7,875 \frac{\text{g}}{\text{cm}^3} = 7875 \text{ kg/m}^3 \quad 1 \text{ bod}$$

$$3. \quad I = \frac{U}{R} \quad 1 \text{ bod}$$

$$R_{\text{ukupno}} = 45 \Omega \quad 1 \text{ bod}$$

$$R_{\text{ukupno}} = R_{\text{ž}} + R_{\text{otpornici}} \quad 1 \text{ bod}$$

$$R_{\text{ž}} = 30 \Omega \quad 1 \text{ bod}$$

$$R_{\text{otpornici}} = 15 \Omega \quad 1 \text{ bod}$$

Tri otpornika treba vezati tako da je njihov ukupni otpor  $15 \Omega$ .

$$\frac{1}{R_p} = \frac{1}{R_1} + \frac{1}{R_2} \quad 1 \text{ bod}$$

Ako dva otpornika vežemo paralelno

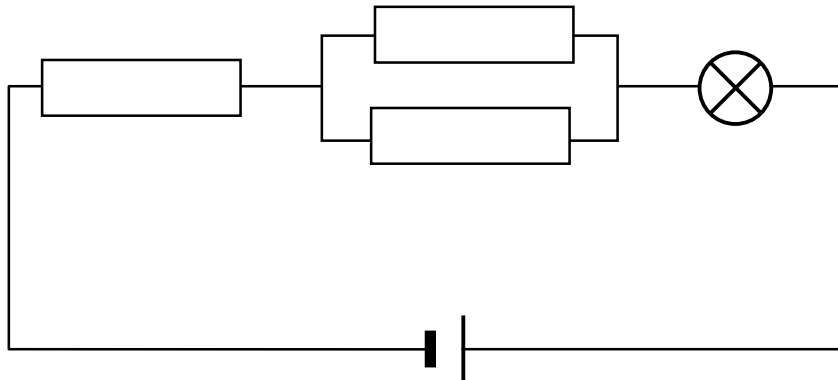
$$R_p = 5 \Omega \quad 2 \text{ boda}$$

Treći otpornik treba vezati serijski.

$$R_{\text{otpornici}} = R_1 + R_p \quad 2 \text{ boda}$$

Skica

3 boda



4.  $W = Pt = Q$

2 boda

$t_1 = 180 \text{ s} + 20 \text{ s} = 200 \text{ s}$

1 bod

$m_1 = \rho V = 0,5 \text{ kg}$

1 bod

$Q_{\text{DOBIVENO}} = m_1 c_{\text{voda}} \Delta T$

1 bod

$Q_{\text{DOBIVENO}} = 115,5 \text{ kJ}$

1 bod

$Q_{\text{ULOŽENO}} = 180 \text{ kJ}$

1 bod

$\eta = \frac{Q_{\text{DOBIVENO}}}{Q_{\text{ULOŽENO}}}$

2 boda

$\eta = 0,64$

1 bod

$\eta = 64 \%$

1 bod

5.  $P = \frac{W}{t}$

1 bod

$W = \Delta E = mgh$

1 bod

$t_M = 2,25 \text{ h}$

1 bod

$t_\xi = 2,75 \text{ h}$

1 bod

$W_M = 881000 \text{ J}$

1 bod

$W_\xi = 1321500 \text{ J}$

1 bod

$P_M = 108,8 \text{ W}$

1 bod

$P_\xi = 133,5 \text{ W}$

1 bod

$P_\xi > P_M$

1 bod