

Školsko natjecanje iz fizike 2020./2021. 08 veljače 2021.
Osnovna škola – rješenja

1. $F = mg$	1 bod
$F_{1n} = 0,05 \text{ N}$	1 bod
$F = k \Delta x$	1 bod
$k = 2,5 \text{ N/m}$	2 boda
$F_1 = 0,205 \text{ N}$	1 bod
$F_2 = 0,09 \text{ N}$	1 bod
$m_{3 \text{ tablete}} = (F_1 - F_2) / g$ ili $m_{3n} = m_1 - m_2$	1 bod
$m_{\text{tableta}} = m_{3 \text{ tablete}} / 3$	1 bod
$m_{\text{tableta}} = 3,83 \text{ g}$	2 boda

2. $m = \rho V$	1 bod
$m = 1,2 \text{ kg}$	1 bod
$t_2 = 100 \text{ }^\circ\text{C}$ ili $\Delta t = 85 \text{ }^\circ\text{C}$	1 bod
$Q = m c \Delta t$	1 bod
$Q = 428 \text{ kJ}$	1 bod
$P = \frac{W}{t}$	1 bod
$t_{\text{očekivano}} = 214 \text{ s}$	2 boda
$E_{\text{uloženo}} = P (t_{\text{očekivano}} + t_{\text{dodatno}}) = 488 \text{ kJ}$	1 bod
$\eta = \frac{Q_{\text{dobiveno}}}{E_{\text{uloženo}}}$	1 bod
$\eta = 0,877 = 87,7 \%$	1 bod

3. $\frac{1}{R_p} = \frac{1}{R_1} + \frac{1}{R_2}$	1 bod
$R_p = 2,4 \Omega$	1 bod
$R_s = R_3 + R_p$	1 bod
$R_s = 4 \Omega$	1 bod
$I = \frac{U}{R}$	1 bod
$I = 4 \text{ A}$	1 bod
$I = I_1 + I_2$	1 bod
$I_1 R_1 = I_2 R_2$	1 bod
$I_1 = 2,4 \text{ A}$	1 bod
$U_1 = 9,6 \text{ V}$	1 bod

4. $t_L = 0 \text{ }^\circ\text{C}$ $T_L = 20^\circ$	1 bod
$t_v = 100 \text{ }^\circ\text{C}$ $T_v = 150^\circ$	1 bod
$\Delta t_{LV} = 100 \text{ }^\circ\text{C}$ $\Delta T_{VL} = 130^\circ$	1 bod
$\frac{x - T_L}{\Delta T_{LV}} = \frac{t}{\Delta t_{LV}}$	3 boda

$x = 98^\circ$

2

boda

Školsko natjecanje iz fizike 2020./2021. 08. veljače 2021.
Osnovna škola – rješenja

5. $V = A I$	1 bod
$V_1 = V_2$	1 bod
$\frac{l_1}{l_2} = \frac{A_2}{A_1} = \frac{1}{3}$	1 bod
$R = \rho_{el} \frac{l}{A}$	1 bod
$\frac{R_2}{R_1} = \frac{l_2 A_1}{l_1 A_2} = 9$	2 boda
$R_2 = 234 \, \Omega$	1 bod
$P = \frac{U^2}{R}$	1 bod
$U = 230 \, V$	(priznati i 220 V, ali upozoriti učenike) 1 bod
$P = 226 \, W$	1 bod