

ANSWERS TO THE QUANTITATIVE PROBLEMS

2. Number of ball revolutions:

$$n = \frac{n_2 R - n_1 r}{R - r}$$

3. Bell mass:

$$M = \frac{\pi \rho R^3}{3}$$

4. Depth of the pool:

$$x = n \left(\frac{LF}{L - F} - H \right) = 40 \text{ cm}$$

5. Measurement of the 2nd voltmeter:

$$U_2 = \frac{\sqrt{4U_1U_3 + 5U_3^2} - U_3}{2} = 8,65 \text{ V}$$

6. Mass of the water:

$$m = \frac{N \tau_1}{c \left(t_2 - t_1 + \Delta t \frac{\tau_1}{\tau_2} \right)} = 2,0 \text{ kg}$$

7. Traveled distance:

$$\begin{aligned} a) S_1 &= \frac{m v_0}{2k} = 5 \text{ m} \\ b) S_2 &= \frac{m v_0}{k} = 10 \text{ m} \end{aligned}$$

8. Molar heat capacity:

$$C = 3R$$

9. Required work:

$$W = q E \times 2d$$