553.

Problem 41.11 (RHK)

Currently operating neodymium-glass lasers can provide 100 TW *of power in* 1.0-ns *pulses at a wavelength of* $0.26\ \mu\text{m}$. *We have to find the energy contained in a single pulse.*

Solution:

Pulse duration of the waves emitted by the neodymium-glass lasers is

$T = 1.0\ \text{ns} = 1.0 \times 10^{-9}\ \text{s}.$

Therefore, the number of pulses emitted per second by the laser of 100 TW of power will be

$$n = \frac{1}{T} = 1.0 \times 10^{9}\ \text{s}^{-1}.$$

Therefore, energy contained in a single pulse will be

$$E = \frac{W}{n} = \frac{100 \times 10^{12}}{10^{9}}\ \text{J} = 10^{5}\ \text{J} = 100\ \text{kJ}.$$