c) 20μs … 21μs , shifted to origin

$i_c(t) = 10 - \frac{10}{1\mu s} \cdot t$; $v_{CE} = 2 + \frac{498}{1\mu s} \cdot t$

$p_c = i_c(t) \cdot v_{CE}(t)$;

$W_c = \int_0^{1\mu s} (10 - 10^7 t)(2 + 498 \cdot 10^6 t)\, dt =$

$= \int_0^{1\mu s} 20\, dt - \int_0^{1\mu s} 2 \cdot 10^7 t\, dt + \int_0^{1\mu s} 498 \cdot 10^7 t\, dt - \int_0^{1\mu s} 498 \cdot 10^{13} t^2\, dt =$

$= 20 \cdot 10^{-6} - 2 \cdot 10^7 \frac{(10^{-6})^2}{2} + 498 \cdot 10^7 \cdot \frac{(10^{-6})^2}{2} - 498 \cdot 10^{13} \cdot \frac{(10^{-6})^3}{3} =$

$= 2\mu J - 10\mu J + 2{,}49\, mJ - 1{,}66\, mJ = \underline{822\mu J}$

d) 21μ … 49μs

$\underline{i_d = 0 \Rightarrow p_d = 0 \; ; \; W_d = 0 .}$

$W = W_a + W_b + W_c + W_d = 420\mu J + 390\mu J + 822\mu J$

$W = 5142\mu J$

$\bar{P} = \frac{W}{T} = \frac{5142\mu J}{40\mu s} = \underline{128{,}55\, W}$

$\frac{10A}{2} \cdot \frac{500V}{2} = \underline{1250W}$