(a) \( T_{avg} = h \cdot t_c + (1 - h) \cdot t_m \)
   \[ = 0.9 \cdot 100 + 0.1 \cdot 1000 = 190 \text{ ns} \]

(b) Block size \( B = 8 \) words
    Main memory to cache connection = 2 words

\[ T_{avg} = h \cdot t_c + (1 - h) \cdot \left( \frac{B}{c} \cdot t_m + \frac{B}{c} \cdot t_m + t_c \right) \]
\[ = 0.9 \cdot 100 + 0.1 \cdot (4000 + 4000 + 100) = 90 + 0.1 \cdot (8100) = 900 \text{ ns} \]

(c) No-write allocate on a Write Miss. Writes = 70%; Reads = 30%.

\[ T_{avg} = h \cdot t_c + (1 - h) \cdot \left( 0.7 \cdot \text{Read Miss Penalty} + 0.3 \cdot \text{Write Miss Penalty} \right) \]
Read Miss Penalty = 8100 ns, as computed in Part (b) above
Write Miss Penalty = \( t_m \), because of No-write allocate

\[ = 0.9 \cdot 100 + 0.1 \cdot (0.7 \cdot 8100 + 0.3 \cdot 1000) = 687 \text{ ns} \]

(d) \[ T_{avg} = h \cdot \left( 0.7 \cdot \text{Read Hit Time} + 0.3 \cdot \text{Write Hit Time} \right) \]
\[ + (1 - h) \cdot \left( 0.7 \cdot \text{Read Miss Penalty} + 0.3 \cdot \text{Write Miss Penalty} \right) \]

Read Hit Time = \( t_c \)
Write Hit Time = \( t_m \), because of Write through policy for write hits

Read Miss Penalty = \( B/c \cdot t_m + t_c = 4100 \)
Write Miss Penalty = \( t_m \), because of No-write allocate

\[ = 0.9 \left( 0.7 \cdot 100 + 0.3 \cdot 1000 \right) + 0.1 \left( 0.7 \cdot 4100 + 0.3 \cdot 1000 \right) \]
\[ = 333 + 317 = 650 \text{ ns} \]