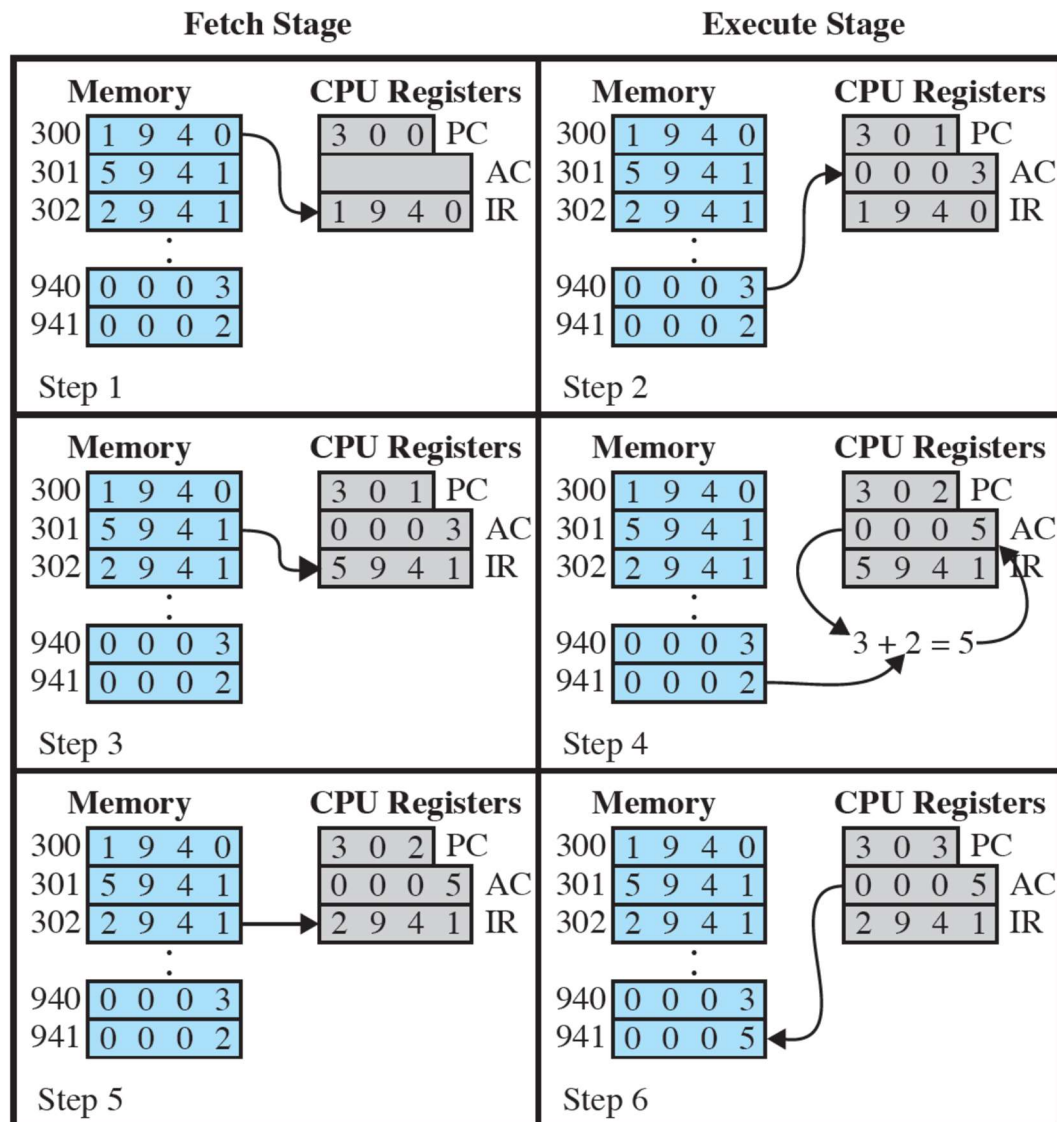1.   **Answer:**

Step 1:   Fetch the first instruction into the IR. (Since the PC contains 300, the address
           of the first instruction.)
Step 2a: Increment the PC to 301.
Step 2b: Load AC from the memory location 940.
Step 3:   Fetch the second instruction into the IR.
Step 4a: Increment the PC to 302.
Step 4b: Add to AC from the memory location 941.
Step 5:   Fetch the third instruction into the IR.
Step 6a: Increment the PC to 303.
Step 6b: Store AC to memory location 941.

2. Answer:

The hit ratio has to be 0.95. Then the average time to access a word is
$(0.95)(0.1\mu s) + (0.05)(0.1\mu s + 1\mu s) = 0.095 + 0.055 = 0.15\ \mu s$

3. Answer:
a)
- Spatial locality can be exploited by using larger cache blocks.
- Temporal locality can be exploited by keeping recently used instruction and data values in cache memory.

b)
(i)   A reference to the first instruction is immediately followed by a reference to the second.
(ii)   The ten accesses to `a[i]` within the inner for loop occur within a short interval of time.

Self-test

1.   D
2.   C
3.   B
4.   D
5.   D
6.   A