(1) If a sufficient condition is not satisfied, what conclusion can we draw?

No conclusion (we can not draw any conclusion), if a sufficient condition is not satisfied.

(2) What are the two primary advantages of learning “computer organization and architecture” by CS majors?

- Develop good debugging skills
- Develop efficient software products

(3) What are three different types of “program files”? Which format do processors understand?

(a) Source-code files in high-level programming languages
(b) Assembly source-code files
(c) Binary executable files

Processors understand only binary executable files.
What is the primary purpose of “assembly source code files”?

Writing programs in an assembly language allows human programmers to:

(a) Apply the best possible code optimizations to programs (programs that fit into small memory space or programs that run as fast as they can).
(b) Fix hard-to-fix software bugs (stack over flow, infinite loops, memory leaks, segmentation faults, and etc.), which are hard or even impossible to be fixed by programmers who do not have assembly programming skills.

What is the relation between “statements” in high-level programming languages and “instructions” in assembly languages? Select the best option that represents their relation in the following options.

(a) one (statement)-to-one (instruction)
(b) one (statement)-to-many (instructions)
(c) many (statements) to-one (instruction)
(d) many (statements)-to-many (instructions)
(e) none of the above

Solution: (b)