3 ISA vs. Microarchitecture [30 points]

Circle whether each of the following is an aspect of the ISA or the microarchitecture.

Note: we will subtract 1 point for each ***incorrect*** *answer and award 0 points for unanswered questions.*

1. [2 points] Two-level global branch prediction.

   1. ISA [2. Microarchitecture]

2. [2 points] Location of the bits that identify the destination register in an ADD instruction.

   [1. ISA] 2. Microarchitecture

3. [2 points] Number of instructions fetched per cycle.

   1. ISA [2. Microarchitecture]

4. [2 points] Ratio of the number of floating-point to integer general-purpose registers.

   [1. ISA] 2. Microarchitecture

5. [2 points] Number of integer arithmetic and logic units (ALUs).

   1. ISA [2. Microarchitecture]

6. [2 points] Instruction issue width of the processor core's pipeline.

   1. ISA [2. Microarchitecture]

7. [2 points] SIMD support.

   [1. ISA] 2. Microarchitecture

8. [2 points] L3 cache replacement policy.

   1. ISA [2. Microarchitecture]

9. [2 points] Width of the data bus to memory.

   1. ISA [2. Microarchitecture]

10. [2 points] The size of the addressable memory by programs.

    [1. ISA] 2. Microarchitecture

11. [2 points] Number of cycles it takes to execute an ADD instruction.

    1. ISA [2. Microarchitecture]

12. [2 points] Ability to choose a specific cache replacement policy using operating system code.

    [1. ISA] 2. Microarchitecture

13. [2 points] Number of read/write ports in the physical register file.

    1. ISA [2. Microarchitecture]

14. [2 points] Function of each bit in a programmable prefetcher's configuration register.

    [1. ISA] 2. Microarchitecture

15. [2 points] Number of L3 cache banks.

    1. ISA [2. Microarchitecture]