

KNOWLEDGE PROBE 4: PROGRAMMABLE LOGIC DEVICES

Complex Programmable Logic Devices and Field Programmable Logic Arrays

Learning Objectives

1. Identify components of CPLD and FPGAs.
 2. Describe features and characteristics of CPLD and FPGAs.
 3. Explain how CPLDs and FPGAs operate.
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1. Most CPLDs are made up of multiple
 - a. LUTs
 - b. PALs
 - c. PLAs
 - d. PROMs
 2. In a CPLD, the logic blocks are individually programmed. Another programmable feature is
 - a. FF or bypass
 - b. PAL interconnect matrix
 - c. XOR
 - d. All of the above
 3. In a logic block figure, the 3-state driver is programmable.
 - a. True
 - b. False
 4. The primary advantage of a FPGA over an ASIC is that the FPGA is
 - a. Faster
 - b. Lower cost in very high volume
 - c. Reprogrammable
 - d. Smaller
 5. In a RAM-based FPGA, programming is lost if power is removed.
 - a. True
 - b. False
 6. To initialize the RAM in an FPGA programming is loaded in from a(n)
 - a. Embedded controller
 - b. External computer
 - c. ROM
 - d. any of the above



7. FPGAs are made up of logic blocks, programmable interconnections, and
 - a. Flash memory
 - b. I/O blocks
 - c. PALs
 - d. PLAs
8. The basic logic block in a FPGA is usually a
 - a. LUT
 - b. PAL
 - c. PLA
 - d. POS
9. Which of the following is NOT usually a part of a FPGA?
 - a. Analog circuits
 - b. Arithmetic circuits
 - c. Core
 - d. SRAM
10. The manufacturer of the FLEX 10K is
 - a. Altera
 - b. Actel
 - c. Lattice
 - d. Xilinx
11. The primary content of an EAB is
 - a. Cores
 - b. LUTs
 - c. PALs
 - d. RAM/registers
12. The maximum EAB size is
 - a. 256 bits
 - b. 512 bits
 - c. 1024 bits
 - d. 2048 bits
13. The main content of a FLEX 10K logic element (LE) is a
 - a. 8-bit LUT
 - b. 16-bit LUT
 - c. PAL
 - d. PROM



14. Which input and output is desirable in a LE to make arithmetic circuits easier to build?
- a. 3-state drivers
 - b. Carry in/carry out
 - c. MUX control
 - d. Registers
15. What circuit in a LE is operated by the clock input?
- a. FF
 - b. LUT
 - c. MUX
 - d. PAL