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Computer Engineering

CoE 506

A.

ASIC - An application specific integrated circuit
is an integrated circuit (IC) chip customized for a
particular use rather than intended for general
purpose use

PAL - Programmable Array Logic
used to implement logic functions in digital circuits

PLA - Programmable Logic Array
used to implement combinational logic circuits

PLD - Programmable Logic Device
Electronic component used to build reconfigurable
digital circuits

CPLD - Complex Programmable Logic Device
it is a programmable logic device with
complexity between that of PALs and FPGAs
and architectural features of both

FPGA - Field Programmable Gate Array
Programmable logic device that can have its

Internal Configuration set by software or it enable the FPGA functionality to be updated or even totally changed

2. Granularity of logic block has influence on performance of an FPGA. Typically higher granularity level results in lesser delay between input and output. As the granularity of logic blocks increases, number of levels of logic in critical path decreases and hence delay in critical path decreases

3. They are smaller and use less power in some case they are re-programmable allowing upgrade without changing the PCB. And if you want to build a custom hardwired ASIC you could be on the hook for millions so you better get it right

B. Yes

For example a motor controller where the current in the coils has to be measured in real time. It is easy to do in hardware but impossible to do with current chips in software

4.

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Advantages

- fuse needs zero maintenance
- it affords current limiting effect under short circuit conditions
- operation of fuse is simple and no complexity is involved
- fuse in series line current characteristics has the ability to be for over load protection

Disadvantages

- During short circuit or overload one fuse blows off replacing of fuse takes time. During this period the circuit lost power
- when fuses are connected in series it is difficult to discriminate the fuse when the fuse has significant size difference

