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COMPUTER ENGINEERING

15/ENG02/041

VHDL ASSIGNMENT

QI.

- ASIC- Application Specific Integrated Circuits
- PAL- Programmable Array Logic
- PLA- Programmable Logic Array
- PLD- Programmable logic device
- CPLD- Complex Programmable Logic Device
- FPGA- Field Programmable Gate Array

Q2.

The granularity of the logic block has a significant effect on the performance of an FPGA. A high level of granularity of the logic blocks will result in a faster implementation. As the granularity of logic block increases, number of levels of logic in critical path decreases, and hence delay in critical path decreases

Q3.

Why would anyone use programmable logic devices (PLD, PAL, PLA, CPLD, FPGA etc.) in place of traditional "hard-wired" logic such as NAND, NOR, AND, and OR gates?

1. The amount of wiring can be reduced by PLD.
2. Simple to manipulate the Input and output logic control.
3. Faster to troubleshoot the faulty components (Sensors).
4. Design checking is easy, and design change is also easy.

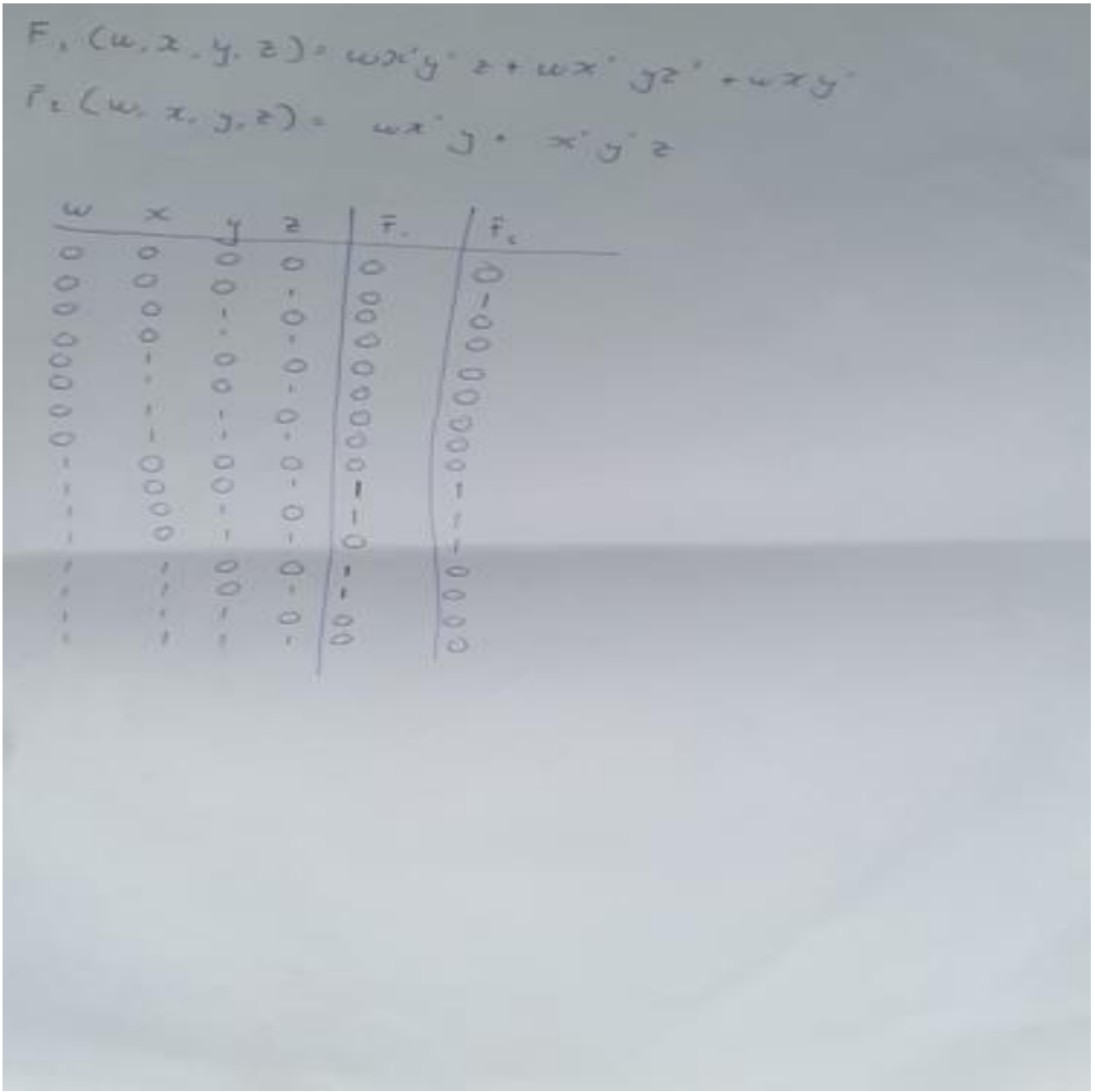
Are there any applications where hard-wired logic would do a better job than a programmable device?

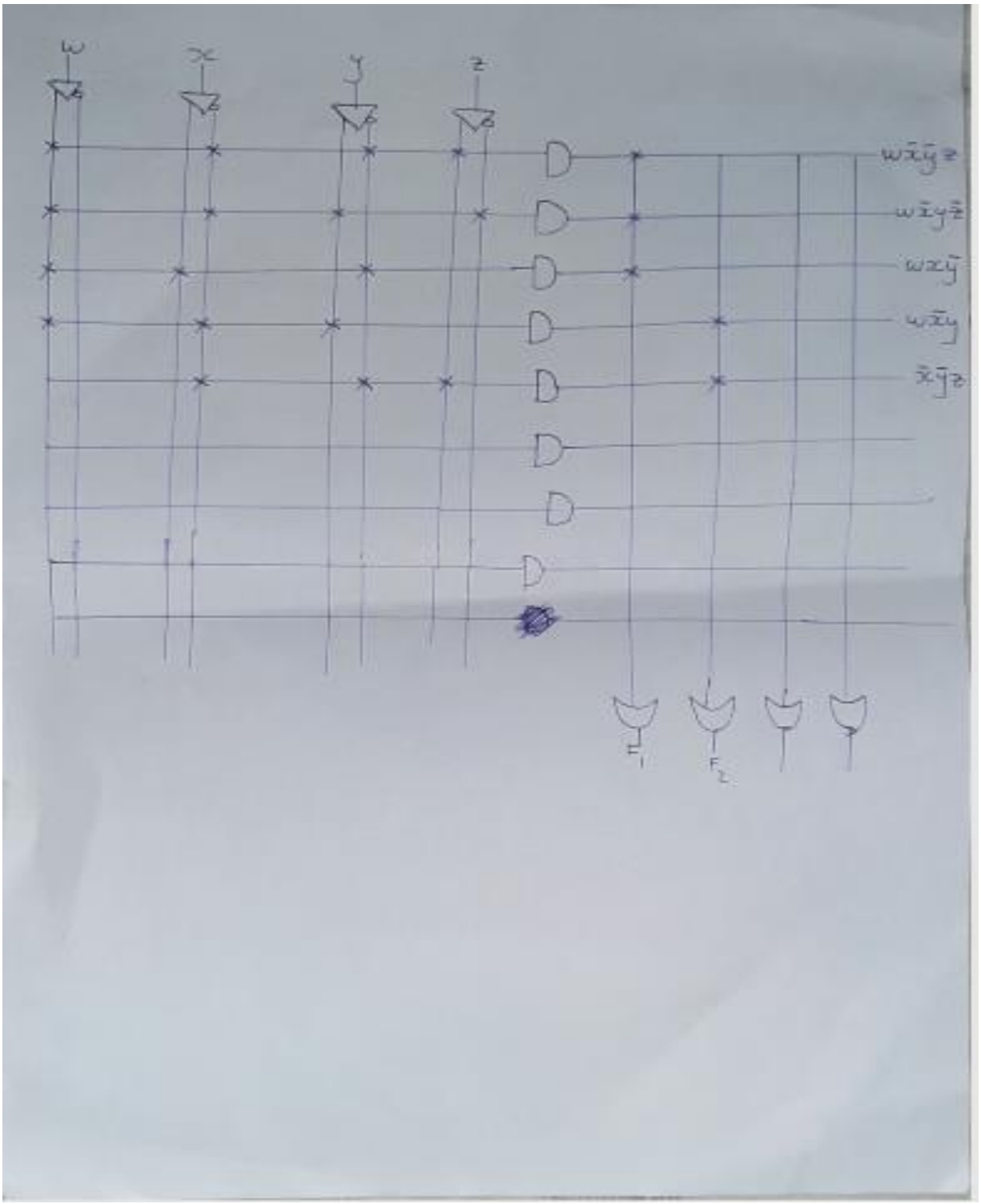
1. For very high-speed requirements such as turbomachinery over speed protection (e.g. gas turbines), a programmable system may also not be advisable design choice due to the speed of response required.
2. For, systems such as HIPPS - High Integrity Pressure Protection Systems where the lack of software makes validation much more straightforward.

Q4.

The stored program will be nonvolatile, but it will also be read-only. This is why fuse-programmed devices are sometimes called OTP which is an acronym for one time programmable and by definition this memory is a special type of non-volatile memory (NVM) that permits data to be written to memory only once. Once the memory has been programmed, it retains its value upon loss of power. OTP memory is used in applications where reliable and repeatable reading of data is required.

Q5.

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