DLD LAB – Assignment #02

**Task 01:**

**AND GATE:**

|  |  |  |
| --- | --- | --- |
| **A** | **B** | **X= A.B** |
| 0 | 0 | 0 |
| 0 | 1 | 0 |
| 1 | 0 | 0 |
| 1 | 1 | 1 |

**OR GATE:**

|  |  |  |
| --- | --- | --- |
| **A** | **B** | **X= A+B** |
| 0 | 0 | 0 |
| 0 | 1 | 1 |
| 1 | 0 | 1 |
| 1 | 1 | 1 |

**NOT GATE:**

|  |  |
| --- | --- |
| **A** | **A’** |
| 0 | 1 |
| 1 | 0 |

**Task 02:**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **A** | **B** | **C** | **A’** | **A’B** | **(A’B)’** | **C’** | **C+(A’B)’** | **C’(C+A’B)’** |
| 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 |
| 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 |
| 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 |
| 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |

**Task 03:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **3** | L | L | H | H |
| **5** | L | H | L | H |

**Task 04:**

**Q1: What are the generations of IC’s?**

**A:** First Generation (1958-1964): Initial ICs with discrete components.

Second Generation (1964-1971): MSI and SSI, hundreds of transistors.

Third Generation (1971-1981): LSI and VLSI, thousands to tens of thousands of transistors.

Fourth Generation (1981-1990s): Millions of transistors, microprocessors, memory chips, ASICs.

**Q2: What is TTL?**

**A:** TTL stands for Transistor-Transistor Logic. It's a type of digital circuitry that was commonly used in the design of integrated circuits and electronic systems. TTL circuits are built using bipolar junction transistors and resistors to implement logic gates, flip-flops, and other digital components. They operate on low voltage levels and are known for their speed and reliability, though they have largely been replaced by CMOS (Complementary Metal-Oxide-Semiconductor) technology in modern electronics.

**Q3: Difference between Analog and Digital?**

**A:** Analog: Analog signals are continuous and can take any value within a range. They are represented by physical quantities such as voltage, current, or sound waves. Examples include traditional audio recordings and analog watches.

Digital: Digital signals are discrete and represented using binary digits (0s and 1s). They are used in computers and modern electronics, offering precise representation and easy processing/storage. Digital signals can be transmitted, stored, and manipulated with high accuracy and efficiency. Examples include digital audio files and data stored on computers.

**Q4: Write the advantages of ETS logic trainer.**

**A:** ETS logic trainers provide university-level students with hands-on exploration of digital logic concepts in a safe and realistic environment. They simulate real-world circuits, supporting experiments from logic gates to flip-flops. Visual aids aid comprehension, and modular designs allow for customization. Through active engagement, students develop practical skills for engineering and technology.

**Q5: Make list of important ICs that we are going to use in DLD lab?**

**A:** AND GATE (74LS08) ~ OR GATE (74LS32) ~ NOT GATE (74LS04).