**Batch: B3 Roll No.: 121**

**Experiment / assignment / tutorial No.\_\_\_1\_\_\_**

**Grade: AA / AB / BB / BC / CC / CD /DD**

**Signature of the Staff In-charge with date**

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| **TITLE:** Study of PCI and SCSI. |

**AIM: To Study and learn PCI and SCSI**

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**Expected OUTCOME of Experiment : (Mention CO/CO’s attained here )**

CO1 – Describe and define the structure of a computer with buses structure and detail working of the arithmetic logic unit and its sub modules.

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1. [**https://www.techopedia.com/definition/8815/peripheral-component-interconnect-bus-pci-bus**](https://www.techopedia.com/definition/8815/peripheral-component-interconnect-bus-pci-bus)
2. [**https://www.techopedia.com/definition/331/small-computer-system-interface-scsi**](https://www.techopedia.com/definition/331/small-computer-system-interface-scsi)
3. [**http://www.csun.edu/~edaasic/roosta/BUS\_Structures.pdf**](http://www.csun.edu/~edaasic/roosta/BUS_Structures.pdf)
4. W.Stallings William “Computer Organization and Architecture: Designing for Performance”, Pearson Prentice Hall Publication, 7thEdition. C.

5. <https://en.wikipedia.org/wiki/Peripheral_Component_Interconnect>

**Pre Lab/ Prior Concepts:**

Microcomputer buses which communicate with a peripheral devices or a memory location through communication lines called buses.

The major parts of microcomputers are central processing unit (CPU), memory, and input and output unit. To connect these parts together through three sets of parallel lines, called buses.  These three buses are  Address bus, data bus, and Control bus.

**Address Bus:**

The address bus consists of 16, 20, 24, or more parallel signal lines, through which the CPU sends out the address of the memory location. This memory location is used for to written to or read from. The number of memory location is depends on 2 to the power N address lines.  Example, a CPU with 16 address lines can address 216 or 65,536 memory locations. When the CPU reads data from or writes data to a port. The port address is also sent out on the address bus. This is unidirectional. This means that the CPU can send data to a memory location or I/O ports.

**Data Bus:**

The data bus consists of 8, 16, 32 or more parallel signal lines. The data bus lines are bidirectional. This means that the CPU can read data from memory or from a I/O port as well as send data to a memory location or to a I/O port. In a system, many output devices are connected to the data bus, but only one device at a time will be enabled to the output.

**Control Bus:**

The control bus consists of 4-10 parallel signal lines. The CPU sends out signals on the control bus to enable the outputs of addressed memory devices or port devices. Typically control bus signals are memory read, memory write, I/O read and I/O write. To read a data from a memory location, the CPU sends out the address of the desired data on the address bus and then sends out a memory read signal on the control bus. The memory read signal enables the addressed memory device to output the data onto the data bus where it is read by the CPU.

**PCI Bus**

Peripheral Component Interconnect (PCI) is a local computer bus for attaching hardware devices in a computer and is part of the PCI Local Bus standard. The PCI Bus supports the functions found on a processor bus but in a standardized format that is independent of any given processor’s native bus. Devices connected to the PCI Bus appear to a bus master to be connected directly to its own bus and are assigned addresses in the processor’s address space. It is a parallel bus, synchronous to as single bus clock. Attached devices can take either the form of an integrated circuit fitted onto the motherboard or an expansion card that fits into a slot. It connects the CPU and expansion boards such as modem cards, network cards and sound cards. It is a parallel transport that, in its most common shape, had a clock speed of 66 MHz, and can either be 32 or 64 bits wide. There are four types of PCI:

* 1. Half duplex: 133 MB/s (32 bit at 33 MHz – the standard configuration)
  2. 266 MB/s (32 bit at 66 MHz)
  3. 266 MB/s (64 bit at 33 MHz)
  4. 533 MB/s (64 bit at 66 MHz)

**SCSI bus:**

It is a fast bus that can connect lots of devices to a computer at the same time, including hard drives, scanners, CD-ROM/RW drives, printers and tape drives. It enables one to put multiple items on a single bus. It works with most computer systems. It is a set of standard electronic interfaces that allow personal computers to communicate with peripheral hardware such as disk drives, tapes, CDs, printers, scanners, etc. The SCSI standards are generally backward compatible. Internal SCSI devices connect using a ribbon cable. External SCSI devices connect using thick, round cables. However, SCSI has limited BIOS support as it has to be configured for each computer. Also, there is no common SCSI software interface. Further, different types of SCSI have different speeds, bus widths and connectors which can be confusing.

**….Post Lab Descriptive Questions**

**Q1. Differentiate between PCI and SCSI Bus**

Ans.

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| --- | --- | --- |
| **Sr. No.** | **PCI** | **SCSI** |
| **1.** | It can be used for a variety of peripherals. | It can be used only for storage devices |
| **2.** | It can have a maximum transfer rate of 533 MB/s. | It can have a maximum transfer rate of 640 MB/s. |

**Q2. List two applications each of PCI and SCSI Bus**

**Ans.**

* + 1. PCI Bus is used for:
       - 1. It is used for attaching hardware devices in a computer.
         2. It is used to add expansion cards such as extra serial or USB ports, network interfaces, sound cards, modems, disk controllers or video cards.
    2. SCSI Bus is used for:
       - 1. It is used for storage devices.
         2. It is used to interconnect optical drives, scanners, printers, etc. to a wide range of computers.

**Date: \_\_05-12-22\_\_\_ Signature of faculty in-charge**