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Microprocessors

CPU - The heart of the Microprocessor is the Central Processing Unit (CPU). The CPU controls nearly all functions of the PC.

External Data Bus - Wires on the motherboard used by the CPU to communicate with peripherals and ROM.

Address Bus - Wires on the motherboard used by the CPU to communicate and access memory through the Memory Controller Chip (MCC). How much memory a CPU can access depends on how many wires are in the address bus.

Clock Speed - The speed at which a CPU can perform calculations and access peripherals or memory. This is controlled by the oscillating System Crystal located on the motherboard.

Types of CPU packages

CPU	System
DIPP *(Dual Inline Pin Package*)	8088, 8086, 80286
PGA (*Pin Grid Array)*	80286, 80386, 486 Pentium, P6
PLCC *(Plastic Leaderless Chip Carrier)*	80286, 80386
PQFP *(Plastic Quad Flat Pack)*	80286, 80386, 486

Real Mode - The mode of memory access used by the CPU in DOS. CPU can only access 1MB of memory and can only run one program at a time.

Protected Mode - The mode of memory access used by the CPU to address more than 1MB of memory and run more than one program at a time by "protecting" the part of memory each program is running in from use by another program.

386 Enhanced Mode - Same as protected mode, but added the enhanced features of Virtual Memory and Virtual 8086.

Virtual Memory - When CPU uses a portions of a hard drive storage device as memory. Appears just like regular memory to the operating system.

Math Coprocessor - A processor other than the CPU that is used to perform high level math functions.

Internal Cache - On board RAM built into the CPU. This allows the CPU to store commands internally and execute them when it has time. Also called Level one (L1) cache.

External Cache - The same as L1 cache, only it is a special RAM chip that sits on the motherboard.

CPU Advancements

CPU	Introduced
80286	Protected Mode, Addressed more than 1MB of memory (16MB)
80386DX/SX/SL	Virtual Memory, Virtual 8086, Internal Cache, 386 Protected Mode
486	Built in Math Coprocessor & L1 Cache on same chip
Pentium	Dual Pipelining
Pentium Pro (P6)	Quad Pipelining, Dynamic Processing, L1 &L2 cache on board

Memory

Random Access Memory (RAM) - The working area of your PC where programs are stored while being executed.

DRAM - Dynamic Random Access Memory. Typically the type of RAM accessed by the CPU in most PC. Uses capacitors to store data, so it must be refreshed constantly.

Access Speed - The number of nanoseconds it takes the DRAM chip to respond to the MCC. This is typically 80ns to 50ns. The lower the number, the faster the chip. Access speed can be determined by looking at the last number on the chip. Ex: AAA4M303J - 06, would be 60ns.

Parity - A method of memory error detection. Usually manifests itself as an extra chip on the memory SIMM.

SRAM - Static RAM. Does not use capacitors, so it does not have to be refreshed like DRAM. It is very expensive, so it is only used in small amounts for memory cache.

RAM Memory Packages

Package	Features
SIPP *(Single Inline Pin Package)*	Combined 8 DRAM chips on a single card 8 bits wide
SIMM *(Single Inline Memory Module)*	Eliminated pins, Introduced Banking, 30 or 72 pin flavors
DIMM *(Dual Inline Memory Module)*	168 pins per stick

Conventional Memory - The first 640K of memory addresses used to run applications. Also referred to as Lower Memory.

Reserved Memory - The next 384K of memory address reserved for use by different types of ROM BIOS and Video RAM. Also referred to as Upper Memory.

Extended Memory (XMS) - Any memory addresses above Reserved Memory.

High Memory Area (HMA) - The first 64K of Extended Memory

Expanded Memory (EMS) - Reserved or Extended Memory which is made to act like Conventional Memory. Also known as *LIM* Memory.

Limulation - The act of converting Extended Memory into Expanded Memory.

Shadowing - The process of copying ROM BIOS information into the Reserved Memory area of RAM.

HIMEM.SYS - A device driver created to open up the HMA by unmasking the A20 wire, and act as a gateway to Extended Memory. Directs all applications where to go in Extended Memory to avoid conflicts with other applications using Extended Memory. There is a version for both DOS and Windows. Extended memory cannot be accessed unless HIMEM.SYS is running.

Upper Memory Blocks (UMB) - Unused memory addresses in the Reserved Memory area.

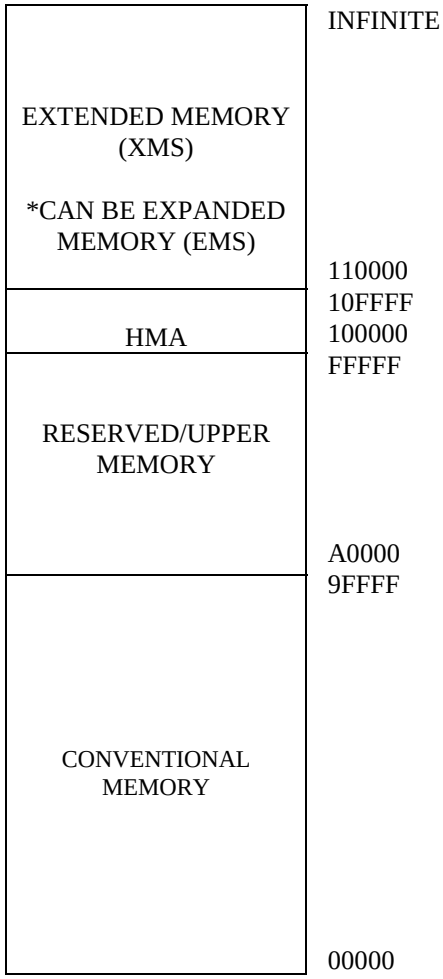
EMM386.EXE - DOS' Memory Manager program. Performs Limulation and opens up the UMBs so that device drivers and programs can be loaded via CONFIG.SYS or AUTOEXEC.BAT.

EMS Page Frame - A 64K block of memory addresses in the Reserved Memory area used to perform Limulation.

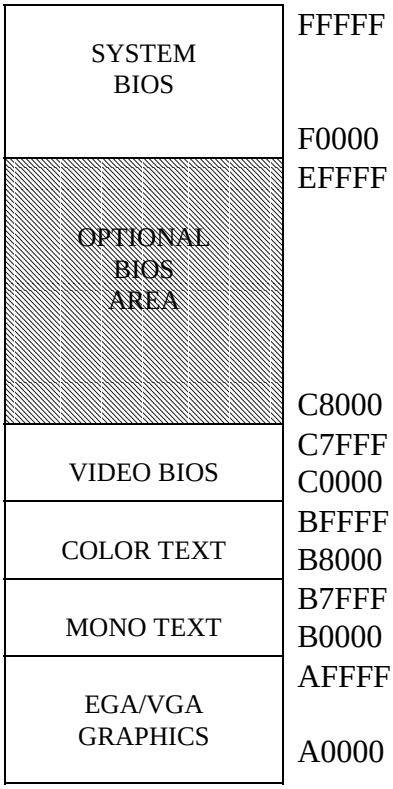
MEMMAKER - DOS utility that will free up Conventional Memory by loading as many devices into UMBs as possible.

MEM - DOS command that lets you view the status of all memory. The /C switch classifies all your memory and shows all programs load in Conventional and Upper Memory.

Map of RAM Memory Addresses



Map of Reserved Memory



EMM386 Common Load Options

Statement	Actions
DEVICE C:\DOS\EMM386.EXE NOEMS	Allows access to Upper Memory, but prevents access to EMS.
DEVICE C:\DOS\EMM386.EXE X=C800-C9FF	Excludes the specified memory addresses for loading device drivers or programs.
DEVICE C:\DOS\EMM386.EXE I=F000-F3FF	Includes memory addresses specified as an area where device drivers and programs can be loaded.

BIOS

Motherboard - Provides common access to the external data and address buses for all devices in the computer.

Basic Input/Output Services (BIOS) - All the small programs used to communicate with the PCs internal devices in order to perform input and output services. These programs are usually stored on a ROM chip.

System BIOS - The BIOS stored on a ROM chip soldered to the motherboard which is never changing and control the core PC devices.

Complimentary Metal-Oxide Semiconductor (CMOS) - A chip located on the motherboard that contains data used by the System BIOS in system configuration. This information is updatable requires constant power to keep it from losing information.

CMOS Battery - A small battery mounted on the motherboard which provides power to the CMOS when the PC is turned off.

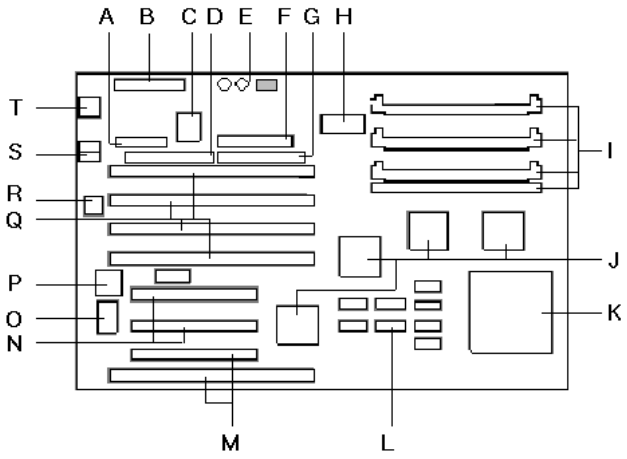
Power On Self Test - A special program initiated when the computer is started or reset. This program performs a self diagnostic on all devices.

Common POST Numeric Error Codes

Error Code	Problem
301	Keyboard Error
1701	Bad Had Drive Controller
7301	Bad Floppy Drive Controller
161	Dead Battery
1101	Bad Serial Card

You may be required to identify the locations of certain components on a motherboard diagram. Be familiar with where the processor, CMOS (Real-time clock), Cache and keyboard controller are located.

Board Level Features



A – Parallel port connector
B – Power connector
C – SMC 37C665 Super I/O
D – IDE connector on PC bus
E – Voltage regulator circuitry
F – Floppy disk connector
G – IDE connector on ISA bus
H – Real-time clock and battery
I – SIMM sockets
J – Intel Neptune chip set
K – Pentium processor
L – 256 KB write-back L2 cache
M – Shared slot for ISA or PCI card
N – Two dedicated PCI connectors
O – RZ1000 PCI IDE controller
P – Keyboard controller
Q – Four dedicated ISA connectors
R – Flash EEPROM System BIOS
S – Serial port connectors
T – AT-style keyboard connector

Figure 2. Premiere/PCI II baseboard components

Hard Drives

Geometry

Geometry is the internal electronic organization of data on the hard drive. This geometry consists of 5 numerical values. Heads, Cylinders, Sectors/Track, Write Precomp, Landing Zone.

Heads - The total number of sides of all the platters used to store data. Three platters would have 6 Heads. The maximum number of Heads in any hard drive is limited to 16 by the System BIOS.

Cylinders - Hard drives store data in circular paths on each platter surface (Head). These paths are called tracks. There are hundreds of circular tracks on each Head. Starting from the inner most track, each outer track is slightly larger in diameter. If you had platters stacked one on top of the other is your hard drive, then a Cylinder would be a set of tracks that were exactly the same diameter on each platter surface (Head). So if you had three platters your Cylinder would consist of 6 tracks. 1024 is the maximum Cylinders you can have on a hard drive according to the System BIOS.

Sectors/Track - A Sector is the smallest portions that a Track can be divided into. The number Sectors that you divide your Tracks into is called the Sectors per Track, or Sectors/Track.. The maximum numbers of Sectors per Track you can have is limited to 63 by the System BIOS. Sectors can only hold 512 bytes of data, no matter how many Sectors you divide your Track into.

Write Precomp - This is now obsolete, but many older hard drives still use it. The Write Precomp value determines the Cylinder where "write precompensation" starts.

Landing Zone - This is also obsolete today. But on older hard drives the Landing Zone value designated an unused Cylinder as a parking place for the read/write head.

Low Level Formatting - The actions performed to actually create all the sectors, tracks, cylinder and head information on a hard drive. The maximum size of hard drive that can be supported by System BIOS is 528 Million Bytes (16 X 1024 X 63).

PIO Mode - Programmable Input/Output Mode is the standardized protocol which ATA drives use to transfer data to and from memory. All ATA drives can use PIO Modes 0, 1, & 2.

PIO Modes

Mode	Transfer Rate per second
0	3.3 MB
1	5.2 MB
2	8.3 MB
3	11.1 MB
4	16.6 MB

IORDY - The CMOS setting that allows the transfer rate to slow down as the head moves across the disk. Only used in conjunction with PIO Mode 3 or 4.

Hard Drive Interface Type

ST506 - This was the first hard drive standard introduced by Seagate in 1980. This type drive had to be physically installed, then you had enter the CMOS configuration. After that you had to low-level format the drive and then partition it. Finally, you had to perform your high level format.

ESDI - Enhanced Small Device Interface hard drive was introduced in 1983. Incorporated the hard drive controller on the drive itself. Configuration was just like the ST506 drives. The high cost made them obsolete.

IDE - Integrated Drive Electronic hard drive, also known as ATA/CAM, standard was introduced in 1989. This was a device that uses a 40 pin cable and required no low level formatting. IDE drives use "sector translation", which allow you to change the drives geometry in CMOS. This allows you to circumvent the System BIOS limitations on the physical size of your hard drive by letting you specify Logical Block Addressing (LBA). IDE drives use PIO Mode 0, 1, or 2.

EIDE - Enhanced IDE hard drives introduced a number of improvements to the IDE standards and has become the standard PC drive type used today. EIDE standard supports up to 4 EIDE devices, including CD-ROMs. Also allowed ATA drives to use PIO Modes 3 and 4.

FAST ATA - Seagate's answer to the EIDE drive. Basically the same standard.

SCSI - Small Computer System Interface drives are the newest type hard drive interfaces to appear. SCSI can allow up to 7 devices (8 of you count adapter card) daisy chained together on one controller.

Partitioning

Any one physical hard drive can be partitioned into up to 24 Logical hard drives. Partitioning makes data storage more efficient and allows you to install more than 1 operating system on your PC.

FDISK - A DOS utility that is used to partition a PC hard drive.

Active Partition - The partition the BIOS will look on for the operating system.

Primary Partition - The partition where DOS is stored. This partition must always be labeled C:.

Extended partition - Any partition that is not a Primary Partition.

High Level Formatting

Commonly called just "formatting", this is where the File Allocations Table (FAT) and root directory are created. The DOS FORMAT.COM utility is used to perform this function.

File Allocation Table (FAT) - A table on the disk that keeps track of which file is stored in which sector. Hard drives use a 16-bit FAT, while Floppy Drives use a 12-bit FAT. The format command will write the status code 0000 to identify all good sectors or status code FFF7 to identify bad sectors to the FAT.

Clustering - A more efficient way of building a FAT by combining a set of contiguous sectors and treating them as a single unit in the FAT. This is now standard practice and makes the cluster the basic unit of storage, instead of the sector.

Fragmentation - When a file is written to several different cluster that are not contiguous on the drive. Fragmentation slows down access time because the read/write heads have to travel all over the drive to reassemble all the different fragments.

Buses

The are basically two types of buses that is used to transfer data and instructions on a PC motherboard. The External Data Bus or System Bus, described above, and the Expansion Bus.

Expansion Bus - The part of the External Data Bus that is connected to the PC expansion slots. The Expansion Bus has its own crystal which allows it to run as a different clock speed than the External Data Bus.

Expansion Slots - Expansion slots are used to add adapter cards for new devices to the PC.

I/O Address - A unique range of 16-bit hexadecimal addresses assigned to devices in order for them to communicate with the CPU.

IRQ - A mechanism used by devices to send an interrupt message to the CPU so that it will stop what it is doing and talk to them. This is done by allowing the device to send a message via its Interrupt Request Wire (IRQ) to the CPUs INT wire. Each devices IRQ wire must be assigned a number to uniquely identify that device.

DMA - Direct Memory Access chip is a crude CPU type device that moves data, that the CPU does not need to see, between RAM and peripherals. This relieves the CPU of this routine task so it can function more efficiently. There are 8 DMA channels that can be used on most PCs (0-7).

Device Interface Settings

IRQ	I/O Address	DMA	Device
0	0040-0043		System timer
1	0060-0063		Keyboard
2	*		Cascade to IRQ 9 (map to 9)
3	02F8-02FF		Com2
3	02E8-02EF		Com4
4	03F8-03FF		Com1
4	03E8-03EF		Com3
5	0278-027F		LPT2
6	03F0-03F7	2	Floppy Controller
7	0378-037F		LPT1
8	0070-0071		Real Time Clock (RTC)
9	*		Cascade to IRQ 2 (map to 2)
10			Available
11			Available
12			Available
13	00F0-00FF		Math Co-Processor
14	01F0-01FF		Primary Hard Drive Controller
15	0170-0177		Secondary Hard Drive Controller

Types of Expansion Slots

Slot	**Bus Size**	
ISA *(Industry Standard Architecture)*	8 or 16-bit	Slowest slot used today
MCA *(Micro-Channel Architecture)*	16 or 32-bit	Expensive, Fast, and Dead technology
EISA *(Enhanced ISA)*	32-bit	Compatible with ISA Slots
VL-Bus *(VESA Local Bus)*	32-bit	Bus Mastering, Uses ISA Slots with special connector
PCI *(Peripheral Component Interconnect)*	32-bit	Bus Mastering, Uses PCI Slots, Has a unique additional bus.
PCI-2	64-bit	Bus Mastering, Uses PCI Slots, Has unique additional bus.

Types of PCMCIA CARDS

Card	Size
Type 1	3.5 millimeters
Type 2	5.0 millimeters
Type 3	10.5 millimeters

SCSI

SCSI ID - SCSI devices can be chained together and controlled by a single adapter. Each device must have a unique ID. ID numbers range from 0 to 7 for 8-bit SCSI and 0-15 for 16-bit SCSI.

Termination - A SCSI chain must be terminated at each end. Devices that are not on the ends of the chain must not be terminated. Improper termination can cause damage to SCSI devices and adapters.

ASPI - Advanced SCSI Programmers Interface was developed to provide a standard for uniform compatibility of SCSI devices. If you are running ASPI drivers on your PC, then you can disable the ROM BIOS that is present on most SCSI adapter cards, unless you are booting from a SCSI hard drive.

SCSI Types

Types	Data Bits	Clock Rate	Max Data Rate	IDs
SCSI-1	8	5MHz	5MB	8
SCSI-2	8	5MHz	5MB	8
Wide SCSI	16	5MHz	10MB	16
Wide SCSI	32	5MHz	20MB	16
SCSI-2 Fast	8	10MHz	10MB	8
Fast & Wide SCSI	16	10MHz	20MB	16
Fast & Wide SCSI	32	10MHz	40MB	32
Ultra SCSI	8	20MHz	20MB	8
Ultra Wide SCSI	16	20MHz	40MB	16

Printers

There are basically 3 types of Printers that can be connected to your PC. Early printers used Serial communication (1-bit at a time). However, most all printers today use Parallel communication (8-bits at a time). Most all printers use the same type of parallel cable with a DB25 connector at one end and a 36 pin Centronics connector at the other.

Types of Printers

Printer	Description
Impact	Daisy Wheel or Dot Matrix (9 or 24 pins)
Ink Jet	Spray in on paper
Laser	Write with a laser. Also call Electrographic Printers (EP)

Printer Languages

Language	Description
ASCII	A standard set of commands with limited printer control functions.
PCL (HP Printer Control Language)	HP's own hardware dependent printer language.
Postscript PDL (Page Description Language)	A hardware independent language capable of high resolution graphics.

Parallel Print Modes

Mode	Description
Compatibility	Unidirectional, obsolete
Nibble	Limited Bi-directional (4-bits), obsolete
Byte (SPP)	Bi-directional, most common
EPP (Enhanced Parallel Port)	Fast Bi-directional, eliminates CPU from transfer process
ECP (Extended Capability Port)	Fastest Bi-directional, allows compression

Laser Printing

Laser printing consists of a six step sequence:

1. Cleaning

During the first stage of the image formation process, a ***photosensitive drum***'s surface is prepared to hold an image through a physical and electrical cleaning process. Before a new image is formed on the drum, leftover toner from the previous image must be removed. This is accomplished by a ***rubber cleaning blade*** which scrapes toner off the drum into a debris cavity. The drum is also electrostatically cleaned by ***erase lamps*** which illuminate the drum's photosensitive material to neutralize any electrical charges that remain on the drum.

2. Conditioning

After the photosensitive drum has been physically and electrically cleaned, it must be conditioned. The conditioning process consists of the application of a uniform negative charge on the surface of the photosensitive drum by the ***primary corona wire***. A high negative voltage is applied to the primary corona wire by the high voltage power supply. Negative charges from the wire migrate to the surface of the drum. The primary corona grid is positioned between the primary corona and the drum's surface to regulate the voltage applied to the drum so that a uniform negative charge is applied (-600V to -1000V).

3. Writing

After rotating past the conditioning station, the drum has a uniform high negative charge on it's surface. At the writing station, a sweeping ***laser beam*** is used to discharge this potential in selected areas by focusing laser light on selected portions of the photosensitive drum. This creates what is known as an electrostatic image. This image is later developed into a visible image. Portions of the drum not exposed to the laser still have a high negative charge.

4. Developing

At the developing station, the invisible electrostatic image is developed into a visible image on the photosensitive drum when ***toner*** from a developer cylinder is transferred to discharged areas on the drum. The toner particles acquire a negative charge (-200V to -500V) from the developer cylinder which is connected a negative DC power supply. This electrostatic charge causes the toner particles to be attracted to the areas of the drum which have been exposed to the laser light and repelled to the areas not exposed. An AC potential is applied to the developer cylinder to assist the attraction of the toner from the developer cylinder to the photosensitive drum.

5. Transfer

At the transfer station, the toner image on the photosensitive drum is transferred to the paper. A ***corona wire*** is positioned behind the paper so that the paper, which is traveling the same speed as the drums surface is rotating, contacts the drum. This corona produces a positive charge on the paper. Because the positive

charges on the paper are stronger, they pull the negatively charged toner particles off the drum and on to the paper. As the paper and drum advance, a row of metal teeth with a high negative charge called the static charge eliminator weakens the attractive force between the negatively charged drum and the positively charged paper. This helps separate the photosensitive drum and paper.

6. Fusing

Until the paper reaches the fusing station the toner is held on the paper only by gravity and weak electrostatic forces. At the fusing station, toner is melted and forced into the paper by pressure and heat of the ***fusing roller*** to producer a permanent image. The heat of the fusing roller is maintained by a high intensity lamp inside the fusing roller. At this point the finished print is ejected and the process is restarted from stage one.

RIP - Raster Image Processor translates the raster image sent to the laser printer into commands the printer will understand. The RIP need RAM in order to store data while it is performing the translation. If the size of the raster image is too large you will receive a "Memory Overflow" error. You must install more RAM on your printer to correct this problem.

RET - Resolution Enhancement Technology allows the printer to insert smaller dots among the characters to smooth out the jagged edges along the border of the characters on the raster image.

Modems

A modem is a device the converts digital signals from the CPU into analog signals that can be transmitted via telephone wires and vice versa.

Serial Data - Data transmitted one bit at time. This is the type of data a modem can send and receive.

Parallel Data - Data transmitted 8-bits (byte) at a time. This is the type of data a CPU can send and receive.

UART - Universal Asynchronous Receiver Transmitter is the chip that converts serial data from the modem into parallel data the CPU can understand and vice versa. This is also referred to as the 16550A chip.

Types of Modem Protocols

Protocol	Description
XMODEM	128 byte blocks with checksum error detection
YMODEM	1024 byte blocks
ZMODEM	1024 byte blocks with error detection and file streaming

Handshaking - Also known as Flow Control is the process by which two serial devices verify a conversation. This is accomplished between the Data Communication Equipment (DCE), which sends the data and the Data Terminal Equipment (DTE), which receives the data.

RTS/CTS - Ready to Send and Clear to Sent. This the hardware method of handshaking used between the modem and the COM port on the computer. Also the preferred method of handshaking.

XON/XOFF - Special characters used to perform software handshaking between a modem and the COM port on the computer.

RS232 - Type of serial connector used by modems. This can be 9 or 25 pin.

Common Modem Commands

Command	Action
ATE1	Echoes your command on screen
ATE0	Turns off screen echo
ATM1	Turns the speaker on
ATM0	Turns the speaker off
ATHI	Takes the phone off the hook
ATD	Takes phone off the hook and dials the number specified
ATH or ATH0	Makes the modem hang up
ATZ	Resets the modem

Video

Monitor

The grid voltages of a monitor are in the 15,000 volt range. So remember that opening up a monitor to repair it can be deadly. You should never were a wrist strap while working on a monitor. The monitor is just another name for a Cathode Ray Tube (CRT)

Parts of the CRT

Part	Description
Electron Gun	The device at the back end of the CRT which shoots electrons toward the display end.
Phosphor Coating	The coating at the display end of the CRT which is struck by the electrons and becomes visible light.
Yoke	A ring of electromagnets that controls the impact point of the electrons on the phosphor coating.
Shadow Mask	A thin screen in front of the phosphor coating that precisely defines each dot.

Horizontal Refresh Rate (HRR) - The speed at which the electron beam runs across the screen.

Vertical Refresh Rate (VRR) - The amount of time it takes to draw the entire screen and return to the top left hand corner of the screen .

Dot - Each spot of colored phosphor.

Triad - Each triangle of three dots (one red, one blue, one green).

Pixel - The group of dots distinctly and separately painted as the electron beam sweeps across the screen.

Dot Pitch - The diagonal distance between phosphorous dots of the same color.

Resolution - Identifies the number of pixels on the screen. This is shown in a horizontal by vertical number. If a monitor is running at a resolution where 640 horizontal pixels and 480 vertical pixels are being used, the resolution is said to be 640x480.

Degaussing - Sending an alternating current through the coil of wire surrounding the CRT in order to demagnetize the shadow mask.

Video Cards

Types of Video Cards

Type	Description
MDA (Monochrome Display Adapter)	First video card, designed for monochrome monitors
CGA (Color Graphics Adapter)	First video card designed for a color monitor (4 colors)
EGA (Enhanced Graphics Adapter)	Supported 16 colors
PGA (Professional Graphics Adapter)	First video card capable of 3-D displays
VGA (Video Graphics Adapter)	Replaced PGA and provide 640x480 @ 16 colors
SVGA (Super VGA)	Same as VGA but provides unlimited colors

Power

Current - The amount of electrons moving past any given point on a wire. Current is measured in units called Amperes (Amps).

Voltage - The pressure exerted on the current as it is moving through the wire. Voltage is measured in units called Volts.

Resistance - The measure of how much a wire or component resists the flow of the current. Resistance is measured in units called Ohms.

Wattage - The work the current is capable of performing. Wattage is measured in units called Watts.

UPS - Uninterrupted Power Supply is used to ensure power is maintained to the system in the event of an external power failure. Uses backup battery to accomplish this.

Types of UPS

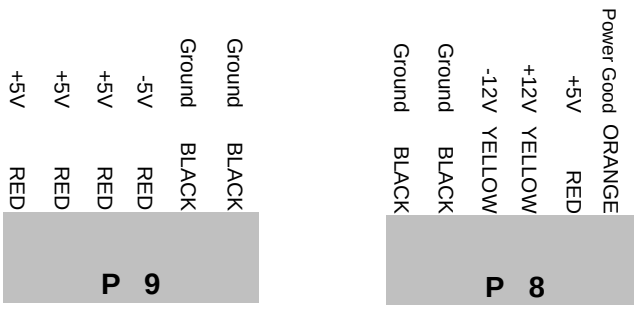
Type	Description
Online	Battery is in the circuit, best for servers
Stand-by (SPS)	Battery not in the circuit
Line-Interactive	Combines best qualities of other two

Power Supply

The only purpose of the power supply on your PC is to convert AC current into DC current. It converts the 115V AC current into +5V, -5V, +12V & -12V DC current.

P8 & P9 Connectors - The Molex type connectors used to connect the power supply to the motherboard. Remember to keep the Black ground wires on each connectors next to each other when you plug it in.

P8 & P9 Connector Wiring



Networking

Universal Naming Convention (UNC) - Universal network pathname which is integrated into Win95. Named as \\computername\sharename. The \\computername will be the name given to your computer in the network properties screen. The \sharename will be the name you give to a directory when you share it.

Security levels:

Share-level security - Used in Windows 95 to share resources. A password is needed to access the resource.

User-level security - Used in Windows NT to share resources. When you attempt to access a shared resource, the server will make sure your user account has been authorized to access the resource. User-level security can be implemented in Windows 95 if specified in the Network Properties menu under the Access Control tab.

TCP/IP - An internet protocol currently used for most networking situations. Each computer using TCP/IP will contain a unique address. TCP/IP is the protocol that must be loaded in Windows 95 to connect to internet.

QUESTIONS

1: 9 bit SIMMs have how many pins?

A: 30

2: How many bits is the system data bus for a Pentium Processor?

A: 64

3: How many bits is the data bus for a 486DX4 processor?

A: 32

4: A serial data port on your PC would have how many pinouts?

A: 9

5: How many wires does the standard IDE drive cable have?

A: 40

6: How big is the conventional memory in a PC?

A: 640K

7: How many bits is the system bus for a 386SX processor?

A: 16

8: How many bits is the system bus for a 386DX processor?

A: 32

9: What is the maximum length for a parallel cable?

A: 15 ft.

10: What IRQ does the real time clock use?

A: 8

11: What form of software can also be called firmware?

A: System BIOS

12: What would you set your multimeter to if you wanted to detect an AC ripple?

A: AC Voltage

13: After you install a new floppy drive and restart the system, the floppy drive light stays on constantly and you get an "FDD Controller Failure" POST error. What is the problem?

A: Floppy cable on backwards

14: What type of port communicates information to a peripheral device one bit at a time?

A: Serial port

15: Should you wear a grounding strap when servicing a CRT monitor?

A: No

16: What are the 4 types of DC voltage usually produced by a power supply?

A: *+5V*
-5V
+12V
-12V

17: If your monitor just shows dots when you turn it on, what is most likely the problem?

A: Bad Video RAM

18: You have 2 hard drives installed on your primary EIDE controller. You install a CD-ROM on your secondary EIDE controller. What jumper setting would you use for the CD-ROM?

A: Master

19: What factor determines the amount of RAM a CPU can control?

A: Width of the Address Bus

20: What would you use to clean a monitor screen?

A: Anti-static spray

21: Missing slot covers on a PC can cause what problem?

A: Overheating

22: A 15 pin, three row, female connector on the back of a PC would be used for?

A: VGA/SVGA port

23: On a laser printer the primary corona does what?

A: Places a uniform negative charge on the photosensitive drum.

24: The correct AT command to tell a modem to hang up is?

A: ATH

25: Using a portion of hard disk space to serve as RAM is called?

A: Virtual Memory

26: The AT command to tell a modem to dial a number is?

A: ATD{number}

27: How many pins does a Joystick or MIDI port connector have?

A: 15

28: How can you tell that a PC has successfully completed its Power on Self Test (POST)?

A: A single beep at startup

29: Locations in memory are referred to as?

A: Addresses

30: On a laser printer, the laser beam performs what function?

A: Changes the charge on the photosensitive drum

31: Which electrical component will hold a charge even when no voltage is being applied?

A: Capacitor

32: What is the IDE CMOS/BIOS limit for the size of a hard drive?

A: 528 million bytes or 504 MegaBytes

33: You can probably determine that a monitor is working, even though it is not connected to a PC, by performing what action?

A: Turn up the brightness to see if the raster appears.

34: What purpose does the system ROM serve?

A: Starts the system when the computer is turned on.

35: A SIMM stick has 9 DRAM chips. How many bits wide is it?

A: 8 bits + parity

36: What is the difference between SRAM and DRAM?

A: SRAM has built in switches and does not have to be refreshed.

37: What type of printers are considered impact printers?

A: Dot Matrix and Daisy Wheel

38: How does a Pentium Pro processor differ from a Pentium processor?

A: Pentium Pro has onboard L2 cache

39: What is the binary equivalent of decimal 3.

A: 011

40: In order for a device to communicate with the CPU is must have?

A: An I/O Address

41: The lower the SIMM access rate the _____ the memory.

A: Faster

42: Your PC is working perfectly, but you notice the power supply fan has stopped working. What should you do?

A: Replace the power supply

43: What does DMA stand for?

A: Direct Memory Address

44: Capacitance is measured in units called?

A: Farads

45: The default memory address for the monochrome region of memory is?

A: B0000 - B7FFF

46: What does PIO stand for?

A: Programmed Input/Output

47: In serial communication, the setting 8,N,1 means?

A: 8 data bits, no parity, 1 stop bit

48: The 2 most important considerations when selecting a surge suppressor are?

A: Clamping speed and Clamping voltage

49: Your sound card locks up your parallel port tape device when both are running. What is probably the problem?

A: IRQ conflict

50: You apply a password to CMOS but later forget it. What should you do?

A: Clear the CMOS by shorting the CMOS jumper.

51: What should you do before you attempt to discharge a CRT?

A: Turn power off before removing power source.

52: High humidity can cause what type of problem?

A: It can cause electrical current to bleed around the chips causing shorts.

53: When using an anti-static wrist strap, the best place to attach the grounding clip is?

A: To the frame of the PC

54: On a laser printer, what moves the toner from the drum to the paper?

A: Transfer Corona

55: The default I/O address for COM1 is?

A: 3F8

56: ESD occurs between two objects that have?

A: Different electrical potentials

57: How many pins does a serial port connector have?

A: 9

58: What function does the power supply perform?

A: Converts AC current into DC current.

59: On a dot matrix printer, a good image on one side of the page and a poor image on the other side of the page would mean what?

A: Platen out of alignment

60: A mouse begins to move erratically jumping around when moved. What is the problem?

A: Dirty mouse

61: Which AT command is used to reset a modem?

A: ATZ

62: What information is stored in CMOS or PRAM?

A: Date and time.
CPU and memory size characteristics.
Floppy and hard disk configuration data.

63: The term "ESD" refers to?

A: Electrostatic Discharge.

64: How do you dispose of a PC battery?

A: Check the battery label information for special disposal procedures.

65: How can you limit the chance of AC line noise?

A: Install the computer system on its own power circuit.

66: You suspect a virus has entered your computer. What will not be affected by the virus?

A: CMOS or ROMBIOS

67: What will happen when shadowing is enabled in a computers BIOS?

A: Instructions stored in various ROM chips are copied into extended memory.

68: What does an IRQ allow interface cards to do?

A: Interrupt the CPU to request service.

69: Which ports use IRQ4?

A: COM1 and COM3

70: What uses IRQ3?

A: COM2 and COM4

71: What IRQ is assigned to the floppy disk controller?

A: IRQ6

72: How can you tell if the CMOS backup battery is going bad?

A: Computer will start losing the date and time.

73: How many intelligent devices can be daisy-chained together from a standard SCSI controller?

A: Seven (8 if you include the adapter card)

74: If a SCSI card is controlling both external and internal devices where would the terminators need to be located?

A: The terminating resistor must be disabled on the controller, and both the last internal and last external devices on the chain must be terminated.

75: What is the default resolution of a VGA monitor?

A: 640x480

76: What does TSR stands for?

A: Terminate and Stay Resident.

77: Which allows faster access; RAM, ROM, or virtual memory?

A: RAM

78: When installing a high capacity hard disk drive on older machines, what might you have to upgrade?

A: ROM System BIOS

79: What is parity error?

A: Indicates a problem with data stored in memory (Bad RAM).

80: What type of a connector does a parallel cable have?

A: DB25

81: A parallel printer cable has a DB25 connector on one end and a _____ connector on the other end.

A: Centronics

82: Software or firmware embedded in chips on the circuit board which determines compatibility.

A: BIOS

83: The design of the ISA bus only allows for support of 16 MB of memory. If that is the case, how can a computer support 64MB of memory?

A: By page swapping

84: Hard drives start out essentially blank. They need to have their sectors defined on each track. In addition, the sectors have to be marked so that data can later be found and retrieved. This process is called?

A: Low level formatting

85: LPT2 uses what I/O address?

A: 278

86: What are I/O addresses and what do they do?

A: Communication ports between a device and the CPU.

87: An error detection technique consisting of a cyclic algorithm performed on each block or frame of data by both sending and receiving modems.

A: Cyclic Redundancy Checking (CRC)

88: How many programs may reside in the HMA?

A: Only One at a time.

89: This step of the Electrographic Printing process puts a uniform negative charge on the drum, erasing the electrical image of the previous page.

A: Conditioning

90: Serial cables can be longer than parallel ones, with the maximum recommended length for a serial cable being?

A: 50 ft.

91: This topology uses a hub instead of a single trunk cable. Individual workstations extend from the hub, each connected by its own cable. Signals are broadcast to all stations or passed from station to station.

A: Star

92: How many transceivers can be integrated onto a Thicknet backbone?

A: 100

93: Consider the following scenario: You are looking at a laser printer that prints perfectly formed letters that smear easily. Using what you know about the EP process, what assembly would you suspect?

A: Fuser

94: What was the first CPU to come with a built-in coprocessor?

A: 486DX

95: DC2000, DAT, and QIC80 are all examples of what?

A: Tape media

96: What type of motherboard has a soft power-on switch?

A: ATX

97: What occurs during the writing part of the EP print process?

A: An image of 0Vdc charge is 'written' to the drum with a laser

98: The first CPU to have a 64bit data path was?

A: 586

99: What are the 6 steps of Laser Printer process?

A: cleaning
charging
writing
developing
transfer
fusing

100: Where do you terminate SCSI?

A: At both ends

101: Which bus supports both 8 & 16 bit cards?

A: ISA

102: What should the resistance of a good 15amp fuse be?

A: 0

103: How do you disable bus mastering on a notebook?

A: in CMOS

104: What would cause your IP address to change each time you log onto the network?

A: A DHCP server has been installed.

105: Software embedded on motherboard is referred to as?

A: firmware

106: What are the jumpers on a network card used to set?

A: I/O address

107: You want to be sure your PC is connected to the network. What you should do?

A: ping the server

108: Which is not a form of a network?

A: NAN (National area Network:)

109: Which of the following is not a kind of virus?

A: directory

110: What must never be connected to the same UPS the PC is using?

A: laser printer

111: Which of the following is a type of parallel port?

A: ECP

112: Which one of the following uses a DMA channel?

A: Sound Card.

113: When you boot up your computer you get a "Fixed disk" error. What is the cause?

A: Incorrect CMOS settings.

114: What is do you need to connect to a networks resources?

A: access rights

115: What is another name for twisted pair cable?

A: 10baseT

116: What protocol do you use to transfer a file over the Internet?

A: FTP

117: What is ATAPI?

A: Mass storage hard drive

118: What must you have for a PCMCIA card to work?

A: Software Enabler

119: What does LBA do on older PCs?

A: Allows them to access drives over 504 MB.

120: What should you do before taking case off your computer?

A: Unplug all cables.

121: What is the I/O address for the hard disk controller?

A: 1F0h

122: What is the 34 pin connector used for on an I/O card?

A: Floppy

123: When do you need to discharge a CRT?

A: When you're replacing an internal component

124: What is the I/O address for COM2?

A: 2f8h

125: What is the I/O address for COM4?

A: 2e8h

126: Which connector cannot be used for SCSI cabling?

A: 15 pin Centronics

127: In Peer-to-peer networks which of the following statements is true?

A: Each PC can access any other PCs data.

128: Which bus has up to a 16bit path?

A: ISA

129: What sort of chip has 168 pins?

A: DIMM

130: Which port can you plug an ISA card or device into?

A: ISA, EISA, VL

131: The Pentium II chip has a cache size of?

A: 512K, 256K

132: How many pins does a SVGA monitor cable have?

A: 15

133: A series 300 error is a problem with the _____.

A: Keyboard

134: At the end of a SCSI chain you should use a terminator. This terminator is actually what?

A: a resistor

135: What does the acronym SCSI stands for?

A: Small Computer Systems Interface

136: A label with the term "WARNING!" on it means what?

A: A Potential for personal injury

137: A path of circuitry that connects the CPU to the expansion slots is called?

A: A Bus

138: What type of measurement is used for CPU speed?

A: MHz

139: When you begin to diagnose a computer problem, what is the best way to differentiate between a hardware and a software problem?

A: Boot from a "clean boot" diskette.

140: Which is a feature of EIDE devices?

A: ATAPI compliant

141: What data access width is used by Micro Channel Architecture (MCA)?

A: 16 & 32 bit

142: Which system board has a 64-bit bus?

A: PCI

143: On a hard disk, Tracks are divided into?

A: Sectors

144: Which processor chip was the first with the ability to multitask?

A: 386

145: Which type of 486 chip runs twice as fast internally?

A: 486DX2

146: Which type of 486 chip runs at 33mhz on the system board and 99mhz internally?

A: 486dx4

147: Which processor chip was the first to be considered fault tolerant?

A: Pentium

148: Which peripheral port provides the FASTEST throughput to a laser printer?

A: Parallel port

149: Which hardware component controls serial port communications?

A: UART 16550

150: On a 16-bit ISA bus, IRQ2 us elevated to which higher level interrupt?

A: 9

151: A part of a computer or other electronic device that can be readily replaced in the field on a service call, and does not require any soldering or other special equipment is called?

A: Field Replaceable Unit (FRU)

152: What is thinnest PCMCIA card, measuring 3.5 mm in thickness?

A: TYPE I

153: Which processor chip has a disabled math coprocessor on board?

A: 486SX

154: What does the acronym RTS stand for?

A: Request To Send

155: What computer chip holds the computer's configuration information?

A: CMOS

156: What does CMOS stand for?

A: Complimentary Metal Oxide Semiconductor.

157: Which processor uses Socket 7?

A: Pentium

158: Which type of PCMCIA card supports Hard Drives?

A: Type III

159: In the Binary numbering system, a (1) represents a jumper being shorted and a (0) represents a jumper being open. On a three-bit jumper block on a SCSI drive, how would an ID of logical 3 be set?

A: 011

158: Which of the following statements is true?

A: Each SCSI device must have its own ID

159: When connecting a ribbon cable to a connector, how do you know which direction to plug it in?

A: The colored line in the cable goes to pin #1

160: Resistance is measured in?

A: Ohms

161: What does the statement "Current Drive is no longer valid" mean?

A: Your current drive is either a network drive that is no longer connected, or a disk drive with no disk in it.

162: How can you disable bus mastering for a PC card?

A: BIOS on the card.

163: Which of the following items would require you to comply with EPA disposal guidelines?

A: Battery

164: The ESD wrist strap is designed to protect PC Components or Service Technicians ?

A: Both

165:. Which processor uses slot 1?

A: Pentium II

166: What does the term BIOS stand for?

A: Basic Input/Output System

167: Which part of the laser printer should not be exposed to sunlight?

A: Photosensitive Drum

168: The stage of laser printing where the image is transferred from drum to paper is called?

A: Transfer Stage

169: Which component of the laser printer must be vacuumed or replaced during preventive maintenance?

A: Ozone filter

170: To prevent toner from sticking to a laser printer's heat rollers you should apply?

A: Oil

171: During preventive maintenance on a dot matrix printer, you should never lubricate?

A: Print head pins

172: What 2 items would you use to clean plastic covers on printers?

A: Mild, soapy water
clean, lint free cloth

173: If you notice your dot matrix printer is starting to print faint, patchy and intermittent characters, what would probably fix the problem?

A: Change the ribbon

174: ESD damage can be caused by?

A: Placing an I/O Controller Card in a non-conductive plastic bag

175: What device prevents power interruptions?

A: Battery backup units (UPS)

176: What is the best way to protect your computer during an electrical storm?

A: Disconnect all external cables and power cords

177: Can a monitor hold a charge even after you have unplugged it?

A: Yes

178: What should you do first when troubleshooting a faulty monitor?

A: Check the connections to the power source and to the computer.

179: When you measure an unknown voltage source, you should always start the meter set on the _____ setting possible to prevent damage to the meter.

A: Highest

180: How many Ohms should your meter register if you are testing a good circuit?

A: 0

181: What is happening during the initial memory test at boot-up?

A: The system is checking to see that contiguous memory is installed.

182: Your computer determines the amount of memory present, the date/time, and which communication ports and display adapters are installed during what phase?

A: Power On Self Test (POST)

183: What is a common complication when adding a 1.6GB IDE hard drive to an older system?

A: The System BIOS needs to be upgraded.

184: If your hard drive light is constantly blinking while you are using one of your applications, this could be a sign of what?

A: That you need to add RAM

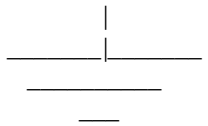
185: How can you best prevent ESD when working on a computer?

A: Place components on an anti-static mat
Wear a grounding wrist strap.

186: A grounding wrist strap contains what?

A: A resistor

187: This symbol represents what?



A: A Ground

188: Which is both a 16 and 32 bit bus?

A: EISA

189: The DC voltage on most circuit boards is?

A: +5 volts

190: What type of controller will support both internal and external CD-ROMs?

A: SCSI

192: How many pixels does a standard VGA display have in its native graphics mode?

A: 640x480 pixels

193: When the files on your hard drive are not stored in consecutive clusters, it is said to be?

A: Fragmented

194: What command would you type to fine out how much and what type of memory you have available?

A: MEM

195: You just bought a new video card. What is an important question to answer before installing ?

A: What are the available IRQ's

196: How long should you wait for the CRT to discharge before opening the case?

A: 60 minutes or more.

197: What can be used to ensure your power supply is not interrupted?

A: Uninterrupted Power Supply (UPS)

198: When is the risk of ESD the greatest?

A: During low humidity (Dry) and cold.temperatures.

199: A user calls and says his PC was working fine yesterday but he turned on this morning and he is getting an error that reads "Invalid System Disk". What could be the problem?

A: Floppy in drive A:

200: What would it mean if you did not hear any beeps when you boot your computer?

A: Bad or disconnected speaker.

201: What is the cheapest way to access the Internet?

A: Dial Up access

202: If a monitor only displays blue or green, or combinations of blue and green, what is the problem?

A: The RED electron gun is broken.

203: When you power up the monitor, it displays a "301" error code, what is the problem?

A: Keyboard

204: What type of output device should never be hooked up to a switch box?

A: Laser printer

205: Does it matter which lead of a voltmeter is connected to an AC circuit?

A: No

206: Does shadowing normally occur in conventional or extended memory?

A: Extended

207: What does Full Duplex mean?

A: Simultaneous Transmit and Receive

208: Do PCI cards need IRQs?

A: No. PCI cards don't use IRQs, they use "Interrupt Levels", numbered A,B,C and D.

209: If the output from the power supply drops from +12 Volts to +11.3 Volts, what should you do?

A: Nothing, a slight power drop or increase is acceptable.

210: The resolution of a monitor will always ultimately be determined by what?

A: The number of triads

211: What is the correct handshake signals used in serial data transfers?

A: Data Terminal Ready and Data Set Ready (DTR/DSR)

212: How many DMA channels are on a 16-bit ISA system?

A: 8

213: What is the maximum length for a narrow, slow, SCSI-2 chain?

A: 20 ft.

214: What is the first step to be performed after installing a new blank hard drive?

A: Partition the hard drive.

215: What product must you use to clean the rubber rollers on a printer?

A: Denatured Alcohol

216: What type of connection ports do most modems have?

A: RJ-11

217: In the AT type PCs, the system BIOS is most commonly located where in memory?

A: The 64K just below address FFFFF.

218: In Inkjet technology, the droplets of ink are deflected towards the paper by what?

A: Electrically charged plates

219: External modems are usually connected to which type of ports?

A: Serial

220: What does EMI stand for?

A: Electromagnetic Interference

221: If a laser printer keeps grabbing more than one sheet of paper at a time, the problem is most likely?

A: Paper has picked up too much moisture.

222: What are the 3 types of modem transmission protocols?

A: Xmodem
Ymodem
Zmodem

223: If the characters printed on a dot matrix appear chopped off at the top, what is the likely problem?

A: Misaligned printhead

224: How many 72 pin SIMMs are needed to make a bank on a Pentium PC?

A: 2

225: What is the most popular type of modem protocol?

A: Zmodem

226: Will you ever find ISA slots on a laptop PC?

A: No

227: What does the term MODEM stand for?

A: Modulator Demodulator

228: What is the fasted type of expansion bus?

A: PCI
229: Most Pentium CPUs run on what voltage?

A: 3.3 Volts

230: You have just replaced the toner cartridge in a laser printer. The first few sheets come out smudged. What should you do to fix this?

A: Run a few blank sheets trough until smudging stops.

231: What 2 types of ports can a mouse use?

A: PS/2
Serial

232: How many logical drives can an EIDE hard disk be divided into?

A: 24

233: A laser printer generates a totally black sheet. What could cause this?

A: No power to the primary corona

234: The distance between two adjacent phosphors of the same color on the CRT screen is known as?

A: Dot pitch

235: How often should you clean a CD-ROM laser?

A: Never touch the laser in a CD-ROM

236: The decimal equivalent of the binary number 0111 is?

A: 7

237: When you send print to your laser printer, the sheets come out blank. What is most likely the cause?

A: No power to the transfer corona.

238: When testing household current, you should read how many volts between the neutral and the ground?

A: 0

239: What IRQ does LPT2 use?

A: 5

240: You boot a computer and get the message "No ROM basic, system halted". What is the problem?

A: There is no active partition

241: A bi-directional parallel cable is also known by what specification?

A: IEEE 1284

242: If your monitor only shows a single line, what is probably the problem?

A: Bad yoke coil

243: When cleaning the keys on a keyboard, you should use?

A: All- purpose cleaner.

244: An error code 20 on an HP laser printer signifies what?

A: Memory overflow

245: Improper installation of the floppy drive ribbon cable can cause permanent damage to your PC?

A: False

246: What are the P8 and P9 connectors?

A: They connect the power supply to the motherboard.

247: Transferring multiple bits of data over several conductors at one time is what type of communication?

A: Parallel

248: When a power cable and a printer cable get too close together, what might occur?

A: EMI

249: Should you plug a laser printer into a UPS?

A: No

250: What is the primary advantage of parallel communication over serial?

A: Speed

251: Every VGA video card has what?

A: RAM

252: Intermittent lockups and reboots are a sign of what?

A: Bad power supply

253: Standard US household current is?

A: 120 Volts AC, 60 Hz

254: What is the I/O address is used for COM3?

A: 3E8

255: What is are the 3 types of networks?

A: LAN
WAN
MAN

256: The base, emitter, and collector are all parts of what?

A: Transistor

257: What type of electrical device allows current to only flow in one direction?

A: Diode

258: What type of processor has built in math coprocessor and cache?

A: Pentium

259: How often does Dynamic RAM (DRAM) need to be refreshed?

A: Every 16 milliseconds

260: What is the electrical symbol for a resistor?

A: A zig zag line /\/\/\/\

261: In an IDE hard drive the minimum storage unit is called a?

A: *Sector*

262: What must be installed at the end of a SCSI chain?

A: Terminating resistor

263: The acronym HDI stands for?

A: Head to disk interference

264: With a dot matrix printer, light then dark print is most commonly caused by?

A: Erratic ribbon advancement

265: Your client gets garbage characters when trying to print a document. Which of the questions listed below could you ask? (choose all that apply)

A: Occurrence (how often)?
Do you have a sample?
What applications are being used?
Where is the printer located?

266: Which of the following should be considered when storing laser printer paper? (choose all that apply)

A: Location
Temperature
Humidity

267: Which bus type was introduced by IBM and was not accepted by the industry?

A: MCA

268: What device takes advantage of EMF spooling?

A: Printer

269: What device can you use to prevent power surges to your computer?

A: Surge Suppressor

270: What is the purpose of the Modem?

A: Turns digital signals into analog signals and vice versa.

271: The major difference between ESD and EMI is?

A: EMI is recoverable, ESD is not.

272: You are testing a household electrical outlet. If you test the ***ground* & ***neutral*** wires, you should get what reading?**

A: 0

273: Unused memory in the reserved area is called?

A: UMB (Upper Memory Blocks)

274: The 384K of memory region between 640K and 1MB is called?

A: Upper or Reserved Memory

275: Which of the following is not internet related?

A: X.400

276: What is the purpose of a Thermal Fuse?

A: In case the low voltage power supply overheats.

277: You get a call from a user complaining that his computer consistently locks up after only 5 minutes of operation. What is the possible cause?

A: Faulty power supply

278: What types of Cache memory are available on a Pentium Pro CPU?

A: L1 & L2

279: The EIDE specification allows a maximum of how many hard drives?

A: 4

280: The most common size of floppy drive in use today is?

A: 3 ½ “, 1.44 MB

281: Floppy drive letters are determined by?

A: Position of the drive on the floppy cable.

282: The ROM chip located on the motherboard stores?

A: System BIOS

283: How many bytes are stored in a hard drive sector?

A: 512

284: What is a common connector for a serial port?

A: DB9

285: Which device can protect against power sags?

A: UPS

286: A customer calls and says that his monitor light is on but he has no display. His PC apparently seems to boot OK and is running. What is the first thing you would do?

A: Check the monitor adjustment controls

287: What tool would you use to properly discharge the CRT ?

A: High voltage probe

288: The video BIOS is normally located at what memory address?

A: C0000 - C7FFF

289: What would you use to clean the printhead on a dot-matrix printer ?

A: Denatured Alcohol

290: What size is the FAT for a floppy drive?

A: 12-bit

291: What is the most common way to access the CMOS Setup program?

A: Press DEL key at boot-up

292: How much memory could the 8086 processor address?

A: 1 MB

293: An old IBM PC gives you a POST error code of 1701. What does this point to?

A: Hard Drive Controller

294: Where are the Upper memory blocks located?

A: Reserved Memory

295: What is the one thing that all Viruses' try to do?

A: Copy itself

296: When servicing a dot matrix printer, which component gets very hot ?

A: Printhead

297: What action will enable more applications to run simultaneously?

A: Add RAM

298: What DMA channel does a floppy drive use?

A: 2

299: The monitor power LED is 'on' but the monitor screen is completely dark. The *least* likely cause of the problem is:

A: System RAM problem

300: How may standard levels of interrupts are provided on the 8-bit ISA bus (XT-class computer)?

A: 8

301: What specifies your hard disk configuration?

A: ROM BIOS

302: After doing a low-level format, what would be the next step in configuring the hard drive in a system?

A: Partition hard disk

303: After displaying the directory of a floppy disk, a different floppy is inserted into the drive. The contents of the original floppy continues to display regardless of the director requests on the other floppies placed in the drive. You remove the drive in question and install it into your test system, and it does not exhibit the problem. You should next replace the what?

A: Floppy drive ribbon cable

304: During the boot process, a system first counts memory from where?

A: System board

305: A customer attached an external drive to his notebook computer but the computer is not recognizing it. What should be considered?

A: The cables are attached firmly?
The external drive has been pre-loaded with the appropriate software?
The external drive was attached before the computer was on?
The external drive is turned on?

306: Suppose that you have a "solid" failure, and the maintenance package identifies several possible field replaceable units (FRUs) that will resolve the problem. What should you do after turning the power off?

A: Replace the indicated parts, one at a time in the recommended sequence, until the problem is resolved; return unused FRUs to stock.

307: When considering replacement of a PC's power supply, one should be concerned about? (choose two)

A: Voltage and ampere rating
Size and shape, on/off switch placement, and wattage

308: Which components could cause a blank screen?

A: Power supply
Video card
CPU
RAM

309: A keyboard locks up intermittently even when replaced with a new keyboard. What is the LEAST likely cause of the problem?

A: A second bad keyboard

310: What questions could be asked to determine if a problem is software or hardware related? (choose all that apply)

A: Does the computer BEEP during the boot phase?
Did peripheral devices initialize, i.e. printers?
Will hardware components pass diagnostics?

311: Which of the following would be a logical first step in trouble shooting a PC?

A: Define the circumstances of the problem

312: During the normal PC boot process, what is activated first?

A: ROM BIOS

313: What is the first thing you could do to check for damage to a printer after receiving it?

A: Unbox it and examine it for physical damage.

314: When measuring AC (Alternating Current) with a multimeter, is it important to maintain the proper polarity.

A: False

315: Which FRU can be considered both an input and output device?

A: SCSI Host adapter

316: HIMEM.SYS gives you any kind of error during startup. This usually means what?

A: Bad RAM

317: Memory addresses located in the first 640K of memory are known as?

A: Conventional Memory

318: Extended memory is also called?

A: XMS

319: Which driver allows you to access HMA?

A: HIMEM.SYS

320: How many pins does a narrow SCSI-2 cable have?

A: 50

321: What are the 3 basic components of hard drive geometry?

A: Cylinders
Heads
Sectors/Track

322: When not in use, it is very important to keep 5 1/4 diskettes where?

A: In their protective sleeves

323: How many Megabytes is a 2 x 32 SIMM?

A: 8 (2 X 32 = 64/8)

324: What device uses IRQ15?

A: Secondary Hard Drive Controller

325: The TWO primary performance restraints for mass storage devices are?

A: Disk Access speed
Rate of transfer

326: If you have a device using IRQ2, then you should not have any other device using which other IRQ?

A: IRQ9

327: How large is the reserved memory area?

A: 384K

328: System software stored on non-volatile memory chips (ROM) is called?

A: Firmware

329: In a 16-bit environment, what is the most clusters a partition can have?

A: 64K

330: What is the 8042 chip used for?

A: Keyboard controller

331: If you replace the battery and the date & time clock is still malfunctioning, then you probably have what type of problem?

A: Bad motherboard

332: What is the maximum number of floppy drives you can have on any one PC?

A: 2

333: When configuring a new network interface card for installation, what would be a valid I/O address?

A: 360

334: Can you use a standard multimeter for measuring a monitors high voltage output?

A: No

335: Should a Computer technician attempt to open a power supply in order to repair it?

A: No

336: When do you need to use Line Conditioners?

A: When you have severe power problems.

337: Do Surge Suppressors offer really good protection for computer equipment?

A: No

338: If you check a good 4 amp fuse with the ohmmeter set at 20 what reading would you get?

A: 0.0

339: How much memory did the 8086 and 8088 computers have?

A: 640k

340: How much memory could a 80286 computer address?

A: 16MB

341: How would you clean a floppy drive?

A: Denatured alcohol

342: What code is entered on the FAT table to designate the last cluster a file uses?

A: FFFF

343: What code is entered on the FAT table to designate a bad cluster?

A: FFF7

344: You have a old PC with a MFM hard drive which boots occasionally for no reason. How would you fix this?

A: Back it up and then perform a low-level format.

345: What SCSI feature allows multiple devices to be chained together?

A: All devices have unique IDs.

346: Which type drives get logical letter assignment first, SCSI or IDE?

A: IDE

347: How much memory could a 386 or above computer address?

A: 4GB

348: If you have a laser printer connected to your PC, which one would you turn on first?

A: Laser printer

349: If your monitor is making a high pitched noise, what might the problem be?

A: Bad video controller

350: At what location on the hard drive will you find Master boot record?

A: Cylinder 0, Head 0, Sector 1

351: A customer complains his printer doesn't work but the light is on. What is the first thing you should do to correct the problem?

A: Make sure the printer is on-line.

352: Toner particles have what type of charge?

A: Negative

353: You are testing a household electrical outlet. If you test *hot* & *neutral* wires, you should get what reading?

A: 110-120v

353: You are testing a household electrical outlet. If you test *hot* & *ground* wires, you should get what reading?

A: 110-120v

354: Which will cause more damage to your computer system components, EMI or ESD?

A: ESD

355: Which components in your PC is most susceptible to ESD damage?

A: CMOS
RAM
I/O controller cards

356: Which COM port does the mouse usually use?

A: COM1

357: After replacing a motherboard, what should you do with the adapter cards?

A: Put them all back in their original slots.

358: Why would you never want to test computer circuits with a standard Ohmmeter?

A: Ohmmeters provide their own current which may damage internal components.

359: Which type of fire extinguisher would you use to fight a computer or electrical fire?

A: Class C

360: What do you set your Volt-Ohm meter to in order to test a fuse?

A: Ohms

361: Which is the easiest component to environmentally recycle?

A: Toner Cartridge

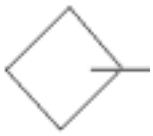
362: Which part of the computer is most likely to be effected by EMI?

A: CMOS

363: If the digital multimeter is set for DC, Ohm and 20k, what will it read while measuring a good 2 amp fuse?

A: 0.00

364: What does this symbol represent?



A: SCSI Port

365: What is not typically considered a FRU?

A: System Chassis

366: What PC part would require you to follow EPA guidelines when you dispose of it?

A: CMOS battery

367: What do you use to discharge the CRT?

A: resistor

368: When replacing a power supply in a computer, how do the black wires connect to the mother board?

A: They face each other on the insides of the plugs.

369: If your monitor has random dots on it, the problem most likely is with the?

A: Video Card

370: Which of the following devices can send and receive information from other devices? (Choose 2)

A: Serial Port
Parallel port

371: What causes "Soft" memory errors?

A: Random program events

372: What causes "Hard" memory errors?

A: Bad SIMM or Short in circuit

373: How many electron guns does a color monitor use?

A: 3

374: What is the best ground source for a conductive work bench?

A: AC Outlet

375: The Keyboard uses what IRQ?

A: IRQ1

376: On a wall outlet, which side is neutral?

A: The longer slot

377: The SCSI boot drive must be have which ID?

A: 0

378: The binary address of the SCSI host adapter is usually?

A: 0111

379: How much data can a 5" CD store?

A: 650MB

380: A PC with a 486DX2 processor runs internally at 50Mhz. What speed would its external logic be running?

A: 25Mhz

381: Which device provides the fastest access to large video files?

A: SCSI hard drives

382: When connecting two external SCSI hard disks to a computer, where can you connect the second hard drive?

A: Any open SCSI port on the computer
An open SCSI port on the first hard drive

383: When installing a SCSI CD-ROM drive, you must set the CD-ROM SCSI adapter to what?

A: An unused SCSI address.

384: Which device provides the fastest data access time?

A: RAM

385: What does the CPU do? (choose all that apply)

A: Executes program instructions
Performs math functions
Controls input/output operations

386: What specification covers PC hard cards?

A: PCMCIA

387: Which would you have to upgrade to install an EIDE drive?

A: Controller board

388: Which peripheral port provides the FASTEST throughput to laser printers?

A: Parallel

389: A 25-pin female connector on the back of your computer will typically be?

A: Parallel Port

390: COM1 is typically represented by which of port?

A: 9 pin male

391: A 14.4 modem should transmit at _____ bits per second.

A: 14,400-15,000

392: A modem could be attached to which port?

A: ASYNC port

393: A customer has one printer on LPT1 and wants to add another printer. To which port could it be connected?

A: COM1
LPT2
COM2

394: What is a type of preventive maintenance used on a hard drive?

A: Disk check diagnostics

395: Which should you use for cleaning Mylar-protected LCD screens?

A: Alcohol-impregnated wipes

396: It is most important to keep hard drives and diskettes away from? (choose two)

A: Magnetic devices
Temperature extremes

397: What questions would you ask to determine if the display is working?

A: Is there a video cursor or action on the screen?
Did the computer beep or chime?
Is there high voltage static on the screen
Is the video display brightness and contrast turned up?

398: Which monitor would provide the highest level of performance?

A: VGA

399: A multimeter can be use to perform tests on which of the following? (choose all that apply)

A: To test a capacitor
Testing diodes
Testing transistors

400: In order for a modem to accept data, which of the following signals must be present? (choose all that apply)

A: Carrier detect
Receive data

401: What part of the PC performs the POST?

A: ROM BIOS

402: What error code identifies a floppy drive problem?

A: 601

403: Can EMI affect the display on a monitor?

A: YES

404: In a laser printer which component will not cause a paper jam?

A: Scanner unit

405: What resistance in Ohms should be displayed when testing a speaker in a computer?

A: 0

406: On an AT computer, which IRQ could not be used for a network card?

A: 1

407: DMA is managed with a controller chip on the system board. How many channels can a single controller chip manage?

A: 4

408: On a floppy cable, the connector with the twist will be come which drive letter?

A: A

409: You have a printer on LPT1, you want to install another printer. To which port should it be connected?

A: LPT2

410: On a leased line installation a known good external modem shows no carrier detect light. What is most likely the problem?

A: Phone line

411: To clean the plastic case of a PC you would use?

A: Damp cloth
All purpose cleaner

412: Which processor chip was introduced in 1984 and has 130,000 transistors?

A: 80286

413: The_____ chip is found in most AT class computers.

A: 80286

414: Which was the first processor chip to have onboard cache?

A: 486

415: What type of bus is used in laptops?

A: PCMCIA

416: To avoid ESD when working on a PC, you should? (choose two)

A: Assure that you and the PC are at the same electrical charge level
Use anti-static spray liberally

417: ESD potential decreases with the use of what?

A: A wrist strap

418: ESD would cause the most damage to which component?

A: Expansion board

419: One of the major components of a PC is the Central Processing Unit (CPU) which can be best described as:

A: The area where all of the processing takes place.

420: Which type of system board is the MOST likely will be best if you want maximum performance and future compatibility?

A: PCI

421: What REQUIRES an anti-static bag for transport?

A: I/O controller

422: Which was the first interface to embed the controller within the drive housing?

A: IDE

423: Which type of interface can exchange data without the use of microprocessor?

A: SCSI

424: The host adapter of a SCSI interface is usually set to what ID?

A: 7

425: How many pins do Dot matrix printers commonly use?

A: 9 or 24

426: How does a thermal printer produce images?

A: With heat and special thermal paper

427: Using paper that is to coarse in a laser printer can cause what problem?

A: Premature wear to the paper path

428: Which bus type can reach a peak transfer rate of 33Mbps?

A: EISA

429: What type of expansion bus does an AT bus support?

A: 8 and 16 bit slots

430: What is the highest binary number that can be referenced on a three position jumper block?

A: 7 (0111)

431: What is the problem with an interlaced monitor?

A: It can flicker and cause eye strain.

432: In a normal text mode a monitor can display?

A: 80 columns by 25 lines.

433: The resolution for the CGA standard monitor is?

A: 320x200-4 colors

434: The resolution for the VGA standard monitor is?

A: 640x480-16 colors

435: The resolution for the SVGA standard monitor is?

A: 800x600-16 colors

436: The resolution for the XGA standard monitor is?

A: 640x480-65,536 colors

437: Of the two types of keyboards Capacitive and Switch, which is more prone to failure?

A: Switch

438: When referring to keyboards, what does debouncing mean?

A: Cleans up electrical noise.

439: A mode of data transmission characterized by regular time periods and no start or stop bits is called?

A: Synchronous

440: Which serial data transmission mode is faster, synchronous or asynchronous?

A: Synchronous

441: Does a byte equal one character or one word?

A: One character.

442: You have two modems connected over a phone line and one modem is dropping characters. What is the most likely problem ?

A: The modem is not configured correctly.

443: Which prong on the AC plug is the Phase side?

A: The shorter one

444: A Power Supply is rated in?

A: Watts

445: The fusing unit of a laser printer uses what 2 elements to bond the image to the paper?

A: Heat and Pressure

446: Why should you change an ink jet cartridge instead of refilling it?

A: With a new cartridge you are also replacing the jets

447: You have a printing resolution of 200dpi. What does that mean?

A: 200 dots per inch

448: The transfer corona wire in a laser printer has what type of charge?

A: Positive

449: A printwire can be found in what type of printer?

A: Dot Matrix