Computer Hardware – FINAL Exam Question Bank

Lecture 01- Introduction

Q1\ Computer Architecture: is how to _____ computer components to build a computer system to achieve a desired level of _____.

Q2\ Understanding how the design of the PC has evolved will help when _____ as you will have deeper understanding of

1) _____ and 2) _____.

Q3\ List the features of IBM PC

Q4\ Explain by two points what open architecture means?

Q5\ When IBM PC has been introduced to the market, IBM has obtained a patent for its design (T/F).

Q6\ The IBM-compatible PCs BIOS is _____ from the original IBM PC BIOS

Q7\ The IBM-compatible PCs relied on customized version of _____

Q8\ Define Sampling.

Q9\ In digital systems, the Binary values 0 and 1 are represented by _____ levels.

Q10\ Draw the diagram of Combinational & Sequential Logic

Q11\ The binary digit is called ____

Q12\ 1 Byte = _____

Q13\ In binary Number, right most bit _____, while Left most bit is _____.

Q14\ The _____ number system uses a base of sixteen.

Q15\ Why Software developers and system designers widely use hexadecimal numbers?

Q16\ Each hexadecimal digit represents _____ bits.

Q17\ Define Clock Signal and explain the difference between positive edge and negative edge.

Q18\ Define Clock Cycle and Clock Frequency

Q19\ Define Flip-Flop.

Q20\ In D-type Flip-Flop the output Q assumes the state of the _____ on the _____ and keep memorizing this value till _____.

Q21\ Define Register and list three functions of it.

Q22\ List the Basic features of Von-Neumann Architecture

Q23\ Lis the three basic characteristics that differentiate microprocessors.

Q24\ Define Bus, and Bus size.

Q25\ List the three types of Bus and explain shortly about each type.

Q26\ Draw Von-Neumann Computer Architecture Block Diagram.

Lecture 02- CPU

Q1\ IBM PC was based on Intel _____ CPU

Q2\ Explain the difference between Intel 8086 and Intel 8088 CPUs.

Q3\ Each register in 8086/8088 is _____ bit size.

Q4\ The 8086/8088 has _____ address bus size which can address up to _____ physical memory locations.

Q5\ The 8086/8088 address ranges from _____ to _____ .

Q6\ If a CPU has 24 bits address bus, how many memory locations it can address (show calculations).

Q7\ In 8086 physically memory is divided into _____ logical segments.

Q8\ List the segment registers in 8086. Each of the Segment registers store the _____ of the segment.

Q9\ List the advantages of segmented memory scheme in 8080.

Q10\ 8086 Internal architecture has two blocks:

1) _____, 2) _____

Q11\ Draw Block Diagram of Intel 8086 Architecture – Bus Interface Unit

Q12\ Draw Block Diagram of Intel 8086 Architecture – Execution Unit

Q13\ In 8086 BIU and EU units operate _____ to give the 8086 an _____ instruction fetch and execution mechanism

Q14\ Define Pipelining.

Q15\ List the BIU operations.

Q16\ List the BIU parts.

Q17\ The _____ segment register is always combined with IP register

Q18\ The instruction pointer register contains a _____ address of instruction that is to be _____.

Q19\ The value of the instruction pointer is decremented after executing every instruction. (T/F)

Q20\ To form a 20bit address of the next instruction, the 16 bit address of the _____ is added by the _____ to the address contained in the _____, which has been shifted _____.

Q21\ Draw the Address Summing Block in 8086.

Q22\ List the EU operations

Q23\ List the EU parts

Q24\ The register _____ is used in arithmetic, logic and data transfer instructions.

Q25\ The register _____ is used to hold the address of a procedure or variable.

Q26\ The register _____ is used as loop counter in string manipulation.

Q27\ Define Flag.

Q28\ Explain the function of the following status flags: Carry, Parity, Zero, and Sign.

Q29\ Explain the function of Interrupt Flag.

Q30\ 80386 has _____ address bus size so it can address up to _____ of physical memory.

Q31\ 80386 has built-in Memory Management Unit to support

1) _____, 2) _____, and 3) _____.

Q32\ 80386 supports Virtual Memory upto _____.with maximum size of Segment _____..

Q33\ List and define 80386 Three Modes of Operation.

Q34\ List the 80386 Five functional units.

Q35\ In 80386 the Memory Management Unit contains: 1)_____, and 2) _____.

Q36\ Define Privilege levels in 80386 and draw their diagram.

Q37\ There are _____ privilege levels for 80386 processor architecture, user applications run at level _____ which is the least privilege and the operating system kernel run at level _____ as the most privileged.

Q38\ Define Kernel Mode and User Mode in 80386.

Q39\ 8086 is the first Intel microprocessor. (T/F)

Q40\ 8085 has _____ bus size

Q41\ 4004 was used in IBM PC. (T/F)

Q42\ The processor _____ is the first 32 bit architecture CPU, with new processor modes.

Q43\ The processor _____ is Fifth generation of x86 processors with superscalar architecture, and MMX

Q44\ Explain why Intel shifts from numbers to names in naming Pentium CPU.

Q45\ _____ is low-cost version of Pentium series.

Q46\ Xeon is ultra-low power version of Pentium 3 CPU. (T/F)

Q47\ Intel Core i9/i7/i5/i3 series processors, the higher the number, the more powerful the CPU. (T/F)

Q48\ More powerful CPUs have _____ and are clocked at a _____.

Q49\ Intel Core i9/i7/i5/i3 series processors, use the same _____ and _____.

Q50\ The letter U in modern CPUs refers to _____

Q51\ The letter _____ in modern CPUs refers to Low Power, and used only for laptops

Q52\ The letter T in modern CPUs refers to _____

Q53\ The letter _____ in modern CPUs refers to Low Power

Q54\ The letter _____ in modern CPUs refers to High-Performance Graphics.

Q55\ The letter _____ in modern CPUs refers to Discrete Graphics.

Q56\ Indicate the generation of below modern CPUs: i7 7500u, i5 8200Y, i3 7300T,

Q57\ _____ is the world's second largest chip maker behind Intel.

Lecture 03- Standard Input and Output Systems

Q1\ List the Data transfer modes between the CPU and I/O devices.

Q2\ Programmed I/O data transfers are the result of _____ written in computer program.

Q3\ Transferring data under programmed I/O mode requires _____ of the peripherals by the CPU.

Q4\ In programmed I/O mode, the CPU stays in the program loop until the I/O unit indicates that _____. This is _____ process because it _____.

Q5\ In Interrupt Initiated I/O mode when the device determines that _____, it generates an interrupt signal.

Q6\ In Interrupt Initiated I/O mode, CPU needs to poll device status continuously. (T/F)

Q7\ Define Interrupt Controller and explain its function.

Q8\ How does the CPU know which one of the Interrupt Functions to execute when there is more than one?

Q9\ Define DMA mode.

Q10\ During the DMA transfer, What is the status of the CPU? Which device controls the buses?

Q11\ Draw the Block Diagram of DMA

Q12\ Define I/O Processor and indicate its difference from CPU and its difference from DMA controller.

Q13\ Draw the Block Diagram of I/O Processor.

Q14\ List four widely used and popular input devices.

Q15\ Define Keyboard, Mouse.

Q16\ In keyboard, when the key is moved down_____.

Q17\ List three common Types of Keyboard.

Q18\ Virtual keyboard is available with _____.

Q19\ List four common Types of Mouse.

Q20\ Mechanical Mouse: includes _____ in its underside, while _____ produces light from a LED or laser and a light sensor

Q21\ Why Optical mouse is better than Mechanical mouse?

Q22\ Trackball mouse: has _____

Q23\ List Keyboard and Mouse Interfaces

Q24\ Define Touch Screen, Touchpad, KVM switch, KVM Extender, Scanner, and Printer

Q25\ List the common Touch Screen Technologies.

Q26\ Capacitive touch screens use _____, while Resistive touch screens use _____.

Q27\ For touch screens, Capacitive technology is _____, while Resistive technology is _____.

Q28\ For touch screens, Optical technology has optical sensors on the screen that detects _____ at a specific location on the screen.

Q29\ Scanners operate by _____ at the object or document being digitized and directing the _____ onto a _____ element

Q30\ Define CCD

Q31\ A Webcam is used for_____ and _____.

Q32\ Define IP Camera?

Q33\ IP Cameras are fixed only (T/F).

Q34\ IP Cameras are can be wired or wireless (T/F).

Q35\ List the three common types of Printer.

Q36\ Dot matrix printers: use _____ to shoot ink or strike an ink ribbon to place hundreds to thousands of _____ to form text and images.

Q37\ _____ is an old printer technology while _____ is The most popular printer for home users

Q38\ _____ prints by spraying streams of quick-drying ink on paper.

Q39\ _____ are often used for environments that require print jobs to be completed quickly and in large quantities.

Lecture 04: Network Cards

Q1\ Define Network Interface Card.

Q2\ Ethernet is popular because it has a good balance between _____, _____, and _____.

Q3\ The first Ethernet standard is _____.

Q4\ Most laptops include _____ Ethernet port

Q5\ List the four common data rates of Ethernet LAN Technology.

Q6\ In LAN, UTP stands for _____, while CAT stands for _____.

Q7\ The higher the _____, the better the frequency and bandwidth for that cable.

Q8\ Ethernet network uses _____ connector, while Dialup network uses _____ connector.

Q9\ List three common applications of Multi-Ports Server NIC

Q10\ Link Aggregation, enables to add _____ to the system.

Q11\ List the two common types of Fiber-Optics connectors.

Q12\ Fiber-optic cables send data using _____, generated either via _____ or _____.

Q13\ Fiber-optic cables data can travel between _____ to _____

Q14\ Wireless standards are IEEE _____ a/b/g/n/ae

Q15\ Wireless NICs use an _____ to transmit information onto the network via different radio frequencies

Q16\ The PCIe Mini Card offers wifi connectivity to _____ and _____. The _____ is normally a conductor inside the laptop body.

Q17\ List the three Common Issues in Ethernet Card

Q18\ List the three common troubleshooting tools of Ethernet Card

Q19\ List three common types of Modem Cards and define each of them.

Lecture 05- Motherboard

Q1\ _____ is the main circuit board inside a computer that connects the different parts of a computer together.

Q2\ A motherboard provides logistics for all elements so that they can work in _____.

Q3\ In laptop, the motherboard is

1) _____ , 2) _____ , and 3) _____.

Q4\ The form factor refers to the:

1) _____ , 2) _____ , and 3) _____.

Q5\ Any motherboard size can fit into any case (T/F).

Q6\ Large cases can accommodate standard, medium, and small motherboards (T/F).

Q7\ Why from a visual standpoint, it is not preferred to put a small motherboard in a large case?

Q8\ the first type of motherboard was called _____-.

Q9\ List the three most Modern Motherboard Form Factors.

1) _____ , 2) _____ , and 3) _____.

Q10\ ATX is short for _____.

Q11\ ATX motherboards are larger in size. (T/F)

Q12\ ATX motherboards have more _____, so work best for _____.

Q13\ Micro-ATX motherboards are shorter than _____ .

Q14\ Mini-ITXs are larger than both micro-ATXs motherboards (T/F).

Q15\ _____ motherboards usually have only one PCIe lane

Q16\ Micro-ITXs motherboards are larger in size. (T/F)

Q17\ _____ motherboards have higher RAM capacity.

Q18\ _____ motherboards better suited for overclocking.

Q19\ _____ motherboard is the least expensive option.

Q20\ _____ motherboard is the best option for smaller cases.

Q21\ List the Pros and Cons of each motherboard type.

Q22\ If multiple GPU's are needed for mining then best selection is _____ motherboard.

Q23\ For mass photo and video editing with numerous applications going at once best selection is _____ motherboard.

Q24\ For classical office work the best selection is _____ motherboard form.

Q25\ For building A Desktop Home PC _____ is the best selection when small size is required.

Q26\ List Three from Back Panel Connectors and Ports.

Q27\ _____ slots are the oldest types of slots on the motherboard.

Q28\ Modern motherboards no longer have _____slots

Q29\ Extended ISA has two features over original ISA

1) _____ , and 2) _____

Q30\ ISA cards could plug into an EISA slot (T/F)

Q31\ In PCI Express (x1, x4, x8) Slots each X number is the _____ the slot provides.

Q32\ _____ slot is optimum slot for discrete graphic cards and high bandwidth devices.

Q33\ _____ expansion slot was specifically designed to deal with graphics adapters.

Q34\ _____ is the modern name of Northbridge , and it allows the CPU to communicate with the:

1) _____ , and 2) _____

Q35\ _____ is the modern name of Southbridge, and it allows the CPU to communicate with

1) _____ , 2) _____ , 3) _____.

4) _____ , 5) _____ , and 6) _____.

Q36\ Define CPU Socket

Q37\ CPU Socket connects between:1) _____ , and 2) _____

Q38\ For laptops, _____ processors are used instead of socket processors to _____.

Q39\ _____ is almost the most important characteristic of motherboard.

Q40\ In _____ socket the contact pins are on the CPU.

Q41\ In _____ the CPU will be able to drop in without any pressure.

Q42\ In _____ socket contains pins in the motherboard.

Q43\ The LGA socket rests in the motherboard and has an _____at its top end, and the CPU is placed inside the enclosure and secured using a _____.

Q44\ The advantages of LGA Socket are:1) _____ , and 2) _____

Q45\ The advantages of PGA Socket are:1) _____ , and 2) _____

Q46\ Define CMOS Battery, Power & Reset Button

Q47\ Compare the ATX Main Power Connector and ATX 12V Power Connector.

Q48\ Define Docking Station and list five examples of devices connect to it.

Q49\ Compare the BIOS chip and CMOS chip.

Q50\ One of the advantages of UEFI is _____ using a _____.

Q51\ Discuss the differences between BIOS and UEFI

Q52\ To access the Legacy BIOS screen, first _____, and then _____ between powering on the computer and before the operating system is launched.

Q53\ BIOS can be accessed if no keyboard is attached to the PC (T/F).

Q54\ To access UEFI with Windows 10 go to _____ > _____ > _____

Q55\ List and define all Common BIOS Settings (Eight items)

Q56\ Indicate the full statement corresponding to each term below

ISA	
PCI	
AGP	
PGA	
LGA	
ZIF	
BIOS	
UEFI	

Q57\ Draw the Legacy Motherboard Architecture

Q58\ Draw the Booting of BIOS and UEFI

Lecture 06- Memory Organization

Q1\ Program must be brought from _____ into _____ and placed within a process for it to be run.

Q2\ Explain the differences between RAM and ROM.

Q3\ Define Cache Memory

Q4\ DRAM cell is made of 1) _____ , and 2) _____

Q5\ The _____ cell needs to be refreshed periodically.

Q6\ The recharge of DRAM cells are done by: 1) _____ , or 2) _____

Q7\ SRAM cell is made of _____

Q8\ SRAM is more expensive than DRAM (T/F)

Q9\ DRAM is faster than SRAM (T/F)

Q10\ Explain why SRAM is more expensive.

Q11\ The first types of memory module were _____ .

Q12\ Why you had to install SIMMs in pairs of equal capacity and speed?

Q13\ DIMMs can be installed singly instead of in pairs (T/F).

Q14\ Laptop computers use _____ memory module.

Q15\ List the seven RAM Specifications with brief description on each.

Q16\ Discuss the main three features of DDR generations

Q17\ List the advantages of DDR5 over DDR4.

Q18\ It's not advised to mix RAM units of different brands, storage sizes, and speeds (T/F).

Q19\ Discuss the main Four Features of Multi-Channel RAM.

Q20\ Explain how to obtain single channel Memory showing Pros and Cons.

Q21\ Explain how to obtain Multi channel Memory showing Pros and Cons.

Q22\ Lis the reasons to upgrade RAM

Q23\ Indicate the full statement corresponding to each term below

DRAM	
SRAM	
SIMM	
DIMM	
SODIMM	

Q24\ Draw the RAM Types – Diagram

Lecture 07- Audio and Video Systems

Q1\ What is sound card?

Q2\ List three uses of sound card.

Q3\ What is graphics card?

Q4\ In modern computers, CPU performs all the graphics calculations (T/F).

Q5\ Like the CPU, the GPU gets hot and is cooled by a heatsink and usually a fan (T/F).

Q6\ List the Video Adapter Components.

Q7\ List the Factors to Choose the GPU.

Q8\ For modern GPUS: the recommended Memory Bus is _____ .

Q9\ Indicate the type of Video RAM used in each platform below:

Platform	**Video RAM**
Xbox 360	
Play Station 3 (PS3)	
Play Station 4 (PS4)	
Play Station 5 (PS5)	
Xbox Series X/S	

Q10\ It is not important to check if Power Supply Unit (PSU) will be able to supply enough power (wattage) to graphics card (T/F).

Q11\ List the Four Display Interface Ports Types.

Q12\ _____ was initially created by IBM for their x86 machines.

Q13\ The disadvantage of DVI that _____

Q14\ List the three main types of DVI ports and their usage

Q15\ HDMI carries _____ and _____ signal at the same time.

Q16\ In USB-C, its _____ is eliminating many of the frustrations of earlier USB ports.

Q17\ In USB-C, increased data-transfer speeds make it possible to _____ over the same connection.

Q18\ Define The graphics display resolution, Bit depth, and Pixel.

Q19\ List the Modern Graphics Display Standards.

Q20\ Indicate the full statement corresponding to each term below

GPU	
VGA	
DVI	
HDMI	
DP	
Pixel	

Lecture 08- Storage Devices

Q1\ What is the difference between storage medium and storage device

Q2\ List the Main Types of Storage Devices depending on Technology used.

Q3\ A magnetic disk's medium contains _____, which can be _____.

Q4\ List the three classifications of magnetic storage devices.

Q5\ was the first removable storage medium.

Q6\ List the two main types of floppy disks.

Q7\ _____ store most of the information in large data centers around the world.

Q8\ List two of HDD Hardware Interfaces.

Q9\ _____ hardware interface is widely used in home and work desktops.

Q10\ Explain the advantage and disadvantages of SATA

Q11\ SCSI hard drives are upgrades over SATA drives. (T/F)

Q12\ Explain the advantage and disadvantages of SCSI

Q13\ The _____ is a medium-to-high-capacity removable magnetic storage system normally used for backing up in data centers.

Q14\ In the optical storage devices, all data is saved like as _____ which can be easily read with using of _____.

Q15\ List the Types of Optical Storage Devices.

Q16\ Blue Ray discs are used to store _____.

Q17\ SSDs do not depend on _____; instead, they use _____ to send and receive data.

Q18\ List advantages and disadvantages of SSDs.

Q19\ List the three Fixed SSD Types.

Q20\ List the two Removable SSD Types.

Q21\ Indicate the full statement corresponding to each term below

SATA	
SCSI	
CD-ROM	
DVD-ROM	
SD	

Sample Questions:

Q1\ Which point below is not a component of the EU unit in 8086:

a) Control Circuitry
b) Instruction decoder
c) ALU
d) Instruction Pointer

Q2\ The letter _____ in modern CPUs refers to High-Performance Graphics

a) U
b) Y
c) H
d) T

Q3\ One of the advantages of segmented memory Scheme in 8086 is_____

a) Allows the placing of code, data and stack portions of the same program in different parts
b) Combines the code, data and stack portions of the same program in same area.
c) Permits a program to be put into same area of memory each time program is executed.
d) Permits data to be put into same area of memory each time program is executed.