Computer Hardware – Final Exam Question Bank

Lecture 01- Introduction

Q1\ Define Computer Architecture

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 Five of the features of IBM PC

Q4\ The IBM-compatible PCs BIOS is _____ from the original IBM PC BIOS

Q5\ The IBM-compatible PCs relied on customized version of _____

Q6\ The total memory in Original IBM PC was _____ ranging from address _____ to address _____

Q7\ Define Sampling, Digital Pulse, and Flip-Flop.

Q8\ In digital systems, the Binary values 0 and 1 are represented by _____ levels.

Q9\ Draw the diagram of Combinational & Sequential Logic

Q10\ In D-type Flip-Flop the output Q assumes the state of the _____ on the _____ and keep memorizing this value till _____.

Q11\ Define Register and list three functions of it.

Q12\ List the Basic Operations Von-Neumann Architecture

Q13\ Lis the three basic characteristics that differentiate microprocessors.

Q14\ Define Bus, and Bus size.

Q15\ List the three types of Bus and explain shortly about each type.

Q16\ Draw Computer Architecture Block Diagram.

Lecture 02- CPU

Q1\ IBM PC was based on _____ CPU

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

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

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

Q5\ The 8086/8088 address ranges from _____ to _____, and Every _____ has a separate address.

Q6\ 8086 Internal architecture has two blocks:

  1) _____, 2) _____

Q7\ Draw Block Diagram of Intel 8086 Architecture – Bus Interface Unit

Q8\ Draw Block Diagram of Intel 8086 Architecture – Execution Unit

Q9\ In 8086 BIU and EU units operate _____ to give the 8086 an _____ instruction fetch and execution mechanism

Q10\ Define Pipelining.

Q11\ List the BIU functions

Q12\ List the BIU parts

Q13\ List the four segment registers in 8086.

Q14\ Each of the Segment registers store the _____.

Q15\ List the EU functions

Q16\ List the EU parts

Q17\ The register _____ is used for Word multiply, word divide, word I/O.

Q18\ The register _____ is used to store address information.

Q19\ The register _____ is used for string operation, loops.

Q20\ List the Pointer and Index Registers in 8086.

Q21\ The Pointer registers (SP and BP) are used to _____ and they work with _____ segment register.

Q22\ The index register (SI) is used to _____ and it works with _____ segment register.

Q23\ The index register (DI) is used to _____ and it works with _____ segment register.

Q24\ Define Flag.

Q25\ The 8086 has a total of _____ flags divided into:

1) _____ status flags
2) _____ control flags
3) _____ undefined flags.

Q26\ List the conditions- status flags and explain the function of each one.

Q27\ Explain the function of Interrupt Flag.

Q28\ The memory in an 8086 based system is organized as segmented memory. (T/F)

Q29\ The 8086 is able to address 64 K byte of memory.(T/F)

Q30\ The segment size in 8086 is 64 K byte. (T/F)

Q31\ Explain the two advantages of segmented memory Scheme in 8086?

Q32\ The _____ segment register is always combined with IP register

Q33\ The instruction pointer register contains a _____ address of instruction that is to be _____.

Q34\ The value contained in the _____ is called as an address offset

Q35\ The value of the instruction pointer is decremented after executing every instruction. (T/F)

Q36\ 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 _____.

Q37\ List the five main areas for PC processor evolution.

Q38\ 8086 is the first Intel microprocessor. (T/F)

Q39\ 8085 has _____ bus size

Q40\ 4004 was used in IBM PC. (T/F)

Q41\ The processor _____ is the first 32 bit architecture CPU, with new processor modes.

Q42\ The processor _____ is Fifth generation of x86 processors with superscalar architecture,

Q43\ The processor _____ is the first processor with 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\ 80386 has Maximum physical memory _____

Q58\ 80386 has built-in Memory Management Unit to support

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

Q59\ 80386 supports Virtual Memory upto _____.with maximum size of Segment _____..

Q60\ List and define 80386 Three Modes of Operation.

Q61\ List the 80386 Five functional units.

Q62\ In 80386 the Memory Management Unit contains: 1)_____, and 2) _____.

Q63\ Explain how 80386 extends the 8086/80186/80286 Instruction Set

Q64\ Define Privilege levels in 80386.

Q65\ 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.

Q66\ Define Kernel Mode and User Mode in 80386.

Q67\ Draw the diagram of 80386 Privilege Levels.

Lecture 03- Standard Input and Output Systems

Q1\ Input/Output Subsystem provides a mechanism for communication between the _____ and _____ .

Q2\ List the Data transfer modes between the CPU and I/O devices.

Q3\ Programmed I/O data transfers are the result of _____ written in computer program.

Q4\ Transferring data under programmed I/O mode requires _____ of the peripherals by the CPU.

Q5\ In programmed I/O mode, the CPU stays in the program loop until the I/O unit indicates that _____. This is _____ process because it _____.

Q6\ List the two Programmed I/O mode addressing schemes.

Q7\ In Interrupt Initiated I/O mode when the device determines that _____, it generates an interrupt

Q8\ In Interrupt Initiated I/O mode, CPU needs to poll device status continuously.

Q9\ How does the CPU know which one of the Interrupt Functions to execute when there is more than one?

Q10\ Define DMA mode.

Q11\ During the DMA transfer, What is the status of the CPU? Which device controls the buses?

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

Q13\ List four widely used and popular input devices.

Q14\ Define Keyboard, Mouse, Touch Screen and Touchpad.

Q15\ List the common Touch Screen Technologies.

Q16\ Capacitive touch screens use _____, while Resistive touch screens use _____.

Q17\ For touch screens, Capacitive technology is _____, while Resistive technology is _____.

Q18\ For touch screens, Optical technology has optical sensors on the screen that detects _____ at a specific location on the screen.

Q19\ List Keyboard and Mouse Interfaces

Q20\ In Keyboard, there are _____ separate layers of plastic, _____ of them are covered in electrically conducting metal tracks and there's an _____ layer between them with holes in it.

Q21\ List four common Types of Keyboard.

Q22\ Virtual keyboard is available with _____.

Q23\ List four common Types of Mouse.

Q24\ Mechanical Mouse: includes _____ in its underside, while _____ produces light from a LED or laser and a light sensor

Q25\ Optical mouse is _____ Mechanical mouse since _____

Q26\ Trackball mouse: has _____

Q27\ Define KVM switch , KVM Extender, Scanner, and Printer

Q28\ Scanners operate by _____ at the object or document being digitized and directing the _____ onto a _____ element

Q29\ Define CCD

Q30\ A Webcam is used for_____ and _____.

Q31\ Define IP Camera?

Q32\ IP Cameras are fixed only (T/F).

Q33\ IP Cameras are can be wired or wireless (T/F).

Q34\ List the three common types of Printer.

Q35\ Dot matrix printers: use _____ to shoot ink or strike an ink ribbon to place hundreds to thousands of _____ to form text and images.

Q36\ _____ is an old printer technology while _____ is The most popular printer for home users

Q37\ _____ prints by spraying streams of quick-drying ink on paper.

Q38\ _____ are often used for environments that require print jobs to be completed quickly and in large quantities.

Q39\ Draw the Block Diagram of DMA

Q40\ Draw the Block Diagram of I/O Processor

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

   2) _____ , 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\ Define RAM, and Cache Memory

Q2\ Program must be brought from _____ into _____ and placed within a process for it to be run.

Q3\ Explain the differences between RAM and ROM

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 dual channel Memory showing Pros and Cons.

Q22\ Explain how to obtain quad channel Memory showing Pros and Cons.

Q23\ Lis the reasons to upgrade RAM

Q24\ What is the recommend RAM for below Tasks

1. **Basic Everyday Use /Programming**

2. **Graphic Design / Gaming**

3. **CAD / Video Editing**

Q25\ Indicate the full statement corresponding to each term below

DRAM	
SRAM	
SIMM	
DIMM	
SODIMM	

Q26\ Draw the RAM Types – Diagram

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 _____ holds the carry (half – carry) after addition or borrow after subtraction between bit positions 3 and 4 of the result

    a) Carry (CF)

    b) Parity (PF)

    c) Auxiliary (AF)

    d) Zero (ZF)

Q3\ The letter _____ in modern CPUs refers to High-Performance Graphics

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

Q4\ 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.