**MP Question Bank**

**Unit I**

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| **Sr. No.** | **Questions** |
| 1 | Explain the different operating modes of 80386.  1.REAL  2.VIRTUAL  3.PROTECTED  1. Real Mode- Unlimited direct software access to all memory, I/O address & hardware.  2.Protected Mode- It allows system software to use features such as virtual memory, paging and safe multi-tasking designed to increase an operating system's control over application software. It begins executing instructions in real mode. It starts after the system software sets up several descriptor tables and enables the Protection Enable (PE) bit in the control register 0 .  3. Virtual Mode - Allows the execution of real mode applications that are incapable of running directly in protected mode .Paging – Organize the available physical memory in to 4kb size each, under segmented memory |
| 2 | Explain the various data types supported by 80386.  *Bit*  *Bit Field: A group of at the most 32 bits (4bytes)*  *Bit String: A string of contiguous bits of maximum 4Gbytes in length.*  *Signed Byte: Signed byte data*  *Unsigned Byte: Unsigned byte data.*  *Integer word: Signed 16-bit data.*  *Long Integer: 32-bit signed data represented in 2's complement form.*  *Unsigned Integer Word: Unsigned 16-bit data*  *Unsigned Long Integer: Unsigned 32-bit data*  *Signed Quad Word: A signed 64-bit data or four word data.*  *Unsigned Quad Word: An unsigned 64-bit data.*  *Offset: 16/32-bit displacement that points a memory location using any of the addressing modes.*  *Pointer: This consists of a pair of 16-bit selector and 16/32-bit offset.*  *Character: An ASCII equivalent to any of the alphanumeric or control characters.*  *Strings: These are the sequences of bytes, words or double words. A string may contain minimum one byte and maximum 4 Gigabytes.*  *BCD: Decimal digits from 0-9 represented by unpacked bytes.*  *Packed BCD: This represents two packed BCD digits using a byte, i.e. from 00 to 99.* |
| 3 | Explain Memory organization and segmentation in 80386DX.  ***Segmentation****is the process in which the main memory of the computer is logically divided into different segments and each segment has its own base address. It is basically used to enhance the speed of execution of the computer system, so that the processor is able to fetch and execute the data from the memory easily and fast.* |
| 4 | Explain    how   physica1   address   is   formed   in   80'386   Dx Microprocessor. |
| 5 | What is maximum size of segment for 80386DX Microprocessor? Why?  Segmentation unit allows segments of size 4Gbytes at max |
| 6 | List and Explain the iteration control instructions of 80386 Dx microprocessor.  LOOP − Used to loop a group of instructions until the condition satisfies, i.e., CX = 0  LOOPE/LOOPZ − Used to loop a group of instructions till it satisfies ZF = 1 & CX = 0  LOOPNE/LOOPNZ − Used to loop a group of instructions till it satisfies ZF = 0 & CX = 0  JCXZ − Used to jump to the provided address if CX = 0 |
| 7 | How IMUL is different from MUL? |
| 8 | What is the use of bit test and modify instructions? |
| 9 | How to define and use the macro in assembly language programming? |
| 10 | Compare procedure and macro in assembly language programming. |
| 11 | Explain four different processor control instruction |
| 12 | Explain the following instruction of 80386 Dx.  a)SLDT  b)LEA  c)CMP d)Out e)XCHG |
| 13 | Differentiate between JMP and CALL instruction. |

**Unit-II**

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| **Sr. No** | **Questions** |
| 1 | Draw the functional block diagram of 80386DX and explain the  main  functional Units. |
| 2 | Describe Call gate descriptor |
| 3 | Describe in detail Memory Management Unit of 80386Dx. |
| 4 | Define Segment Descriptor. |
| 5 | What is LDT descriptor ? |
| 6 | What are the different types of descriptors? |
| 7 | Draw and explain flag register of 80386 processor |
| 8 | Describe in detail of Control Register,Debug Register and Test Register. |
| 9 | Explain in brief linear to physical address translation |
| 10 | Explain GDT,LDT and IDT. |

**Unit III**

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| **Sr. No** | **Questions** |
| 1 | Explain the four level  hierarchical  protection in  80386 DX Microprocessor. |
| 2 | What is DPL,RPL,CPL |
| 3 | What is the meaning of privilege level instructions?Explain any two. |
| 4 | What are the privilege checks made if accessed area is code,data or stack. |
| 5 | How will you access a function from higher privilege level?Explain. |
| 6 | How stacks are handled when privilege level is changed through call Gate. |
| 7 | Discuss the  use of TSS in multitasking |
| 8 | What is TSS descriptor? |
| 9 | What is the use of task gate  descriptor? |
| 10 | How does TSS support task switching? |
| 11 | What is Nested task?How are they handled in 80386? |
| 12 | Write note on Task Address Space. |
| 13 | Explain task linear to physical space mapping. |

**Unit IV**

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| **Sr . No.** | **Questions** |
| 1 | What is difference between I/O mapped I/O and Memory mapped I/O. |
| 2 | Explain the different I/O instructions in 80386 |
| 3 | How does I/O permission bit map helps in accessing I/O devices? |
| 4 | What is the difference between Interrupt,Fault,trap and Abort.  Faults are exceptions that are reported "before" the instruction causingthe exception. Faults are either detected before the instruction begins to execute, or during execution of the instruction. If detected during the instruction, the fault is reported with the machine restored to a state that permits the instruction to be restarted.  A trap is an exception that is reported at the instruction boundary immediately after the instruction in which the exception was detected.  An abort is an exception that permits neither precise location of the instruction causing the exception nor restart of the program that caused the exception. Aborts are used to report severe errors, such as hardware errors and inconsistent or illegal values in system tables. |
| 5 | How to handle simultaneous interrupt  When there are multiple interrupts at the instruction boundary ,the processor services that interruozzzzzz |
| 5 | What happened when interrupt is recognised? |
| 6 | Give significance of descriptors in IDT. |
| 7 | What is the difference between IVT of Real mode and IDT of protected mode? |
| 8 | Explain Error Code and Exception Conditions. |

**Unit-V**

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| **Sr. No** | **Questions** |
| 1 | Explain the Reset Activity of the 80386 and self test |
| 2 | What is TLB?Explain the use of TLB while accessing the memory |
| 3 | What is V-86 mode?Explain in detail. |
| 4 | How to switch from protected mode to virtual 86 mode? |
| 5 | How will you switch from real mode to protected mode |
| 6 | How are exceptions handled in virtual mode? |
| 7 | State and explain the difference between all operating modes of 80386. |
| 8 | What is significance of debug registers?Explain DR6 and DR7. |
| 9 | Explain entering and leaving V86 mode in detail. |
| 10 | Explain how to set V86 mode. |

**Unit -VI**

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| **Sr. No** | **Questions** |
| 1 | What is function of following signal of 80386DX processor:  1)Byte Enable (0-3)  The 4 bytes enable lines BE 0 to BE 3, may be used for enabling these 4 blanks. Using these 4 enable signal lines, the CPU may transfer 1 byte / 2 / 3 / 4 byte of data simultaneously  2)BUSY #  The busy input signal indicates to the CPU that the  coprocessor is busy with the allocated task.  3)READY#  The ready signals indicates to the CPU that the  previous bus cycle has been terminated and the bus is ready  for the next cycle |
| 2 | What is the use of HOLD and HLDA instruction ? |
| 3 | Explain the following  80387 NDP instruction with one example each.  1)Data transfer Group  2)Trigonometric and Transcendental Group.  3)Processor  Control  Instructions.  4)Compare Group. |
| 4 | Explain control word and status word of 80387 NDP |
| 5 | Draw and explain the architecture of 80387 NDP. |
| 6 | Explain the following instruction of NDP.          1)FBSTP          2)FMUL |
| 7 | Draw and explain the architecture of 80387 NDP. |
| 8 | Explain working of stack of 80387(NDP) |
| 9 | Draw and explain interfacing signals of 80386DX with 80387. |
| 10 | Draw the timing diagram of write machine cycle for 80386.Show status of important signals and list activities carried out in sequence. |
| 11 | Draw the timing diagram of read machine cycle for 80386.Show status of important signals and list activities carried out in sequence. |
| 12 | What is the differences between pipelined and non pipelined machine cycle |
| 13 | What are the characteristics of address pipelining in 80386DX? |
| 14 | Draw the timing diagram for write cycle with pipelined address. |
| 15 | Draw the timing diagram for read cycle with pipelined address. |
| 16 | Explain wait and idle state machine cycle with the help of timing diagram. |

INSTRUCTIONS

AAA - ASCII Adjust After Addition

AAS - ASCII Adjust After Subtraction

AAM - ASCII Adjust After Multiply

AAD - ASCII Adjust Before Division

DAA - Decimal Adjust for Addition

DAS - Decimal Adjust for Subtraction