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CORRECT ANSWER SOLVED BY HADI
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(Final Term Past Paper)

MADE AND SOLVED BY TEAM HADI

WARNING: Team HADI is not responsible for any mistake or wrong answer. All students reading and using this document may check and confirm the answers at their own.

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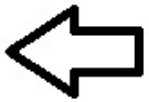
Best of luck!

PAST PAPER

Question No : 1 of 52 Marks: 1 (Budgeted Time 1 Min)

_____ Procedure can have parameters.

Answer (Please select your correct option)

- Hardware Interrupt
- Software Interrupt
- Both Hardware and software Interrupt 
- None of the Given

Question No : 2 of 52 Marks: 1 (Budgeted Time 1 Min)

The Address of partition block on hard disk is _____.

Boot block is a special block on disk which contains information about the operating system to be loaded. If the data on boot block is somehow destroyed the disk would be rendered inaccessible. The address of partition block on hard disk is head # =1, track# = 0 and sector # = 1.

Answer (Please select your correct option)

- head # =0, track # = 0 and sector # = 0
- head # =0, track # = 0 and sector # = 1
- head # =0, track # = 1 and sector # = 1
- head # =1, track # = 0 and sector # = 1

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Question No : 3 of 52 Marks: 1 (Budgeted Time 1 Min)

NMI Stand for _____

Hardware interrupts make use of two of such input signals namely NMI (Non maskable Interrupt) & INTR(Interrupt Request).

Answer (Please select your correct option)

- Non Multitude Interrupt
- Non Maskable Instruction
- None of Given
- Non Maskable Interrupt **page 46**

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Question No : 4 of 52 Marks: 1 (Budgeted Time 1 Min)

The interval timer is used to divide an input frequency.

The interval timer is used to divide an input frequency. The input frequency used by the interval timer is the PCLK signal generated by the clock generator. The interval timer has three different each with an individual output and memory for storing the divisor value.

Answer (Please select your correct option)

- ● True

page 68

- ○ False

Question No : 5 of 52 Marks: 1 (Budgeted Time 1 Min)

The PPI acts as an interface between the CPU and a parallel _____.

The PPI acts as an interface between the CPU and a parallel I/O device. A I/O device cannot be directly connected to the buses so they generally require a controller to be placed between the CPU and I/O device. One such controller is the PPI. Here we will see how we can program the PPI to control the device connected to the PPI which generally is the printer.

Answer (Please select your correct option)

- ● I/O device **page 83**
- ○ CPU
- ○ BUS
- ○ None of Given

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Question No : 6 of 52 Marks: 1 (Budgeted Time 1 Min)

BIOS DO NOT support _____.

Answer (Please select your correct option)

- LPT1
- LPT2
- LPT3
- LPT4

Question No : 7 of 52 Marks: 1 (Budgeted Time 1 Min)

_____ is used to identify the cause of interrupt.

Answer (Please select your correct option)

- Interrupt Enable register
- Interrupt ID register page 116
- Interrupt Status register
- None of the given

Question No : 8 of 52 Marks: 1 (Budgeted Time 1 Min)

The bit _____ of Line control register in UART, if cleared will indicate that DLL is the data register.

The line control register contains important information about the behaviour of the line through which the data will be transferred. In it various bits signify the word size, length of stop bits, parity check, parity type and also the a control bit to load the divisor value. The bit 7 if set indicates that the base +0 and base + 1 will act as the divisor register otherwise if cleared will indicate that base + 0 is the data register.

Answer (Please select your correct option)

- 3
- 5
- 7 **page 114**
- 1

Question No : 9 of 52 Marks: 1 (Budgeted Time 1 Min)

Int 14H _____ can be used to send a byte.

14h include service #1 which is used to send a byte and service #2 which is used to receive a byte.

Answer (Please select your correct option)

- Service # 0
- Service # 1 **page 121**
- Service # 2
- Service # 3

Question No : 10 of 52 Marks: 1 (Budgeted Time 1 Min)

To access bettery powered RAM, only _____ ports are important from programming point of view.

Internal Ports

70 – 7FH (16 ports)

Only 70 & 71H are important from programming point of view

Answer (Please select your correct option)

- ● 70 and 71H **page 141**
- ○ 71 and 72H
- ○ 70 and 72H
- ○ 72 and 73H

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Question No : 11 of 52 Marks: 1 (Budgeted Time 1 Min)

The DMA requests to acquire buses through the _____ signal.

The latch B of the DMA interface is used to hold the higher 4 or 8 bits of the 20 or 24 bit absolute address respectively. The lower 16bits are loaded in the base address register and the number of bytes to be loaded are placed in the count register. The DMA requests to acquire buses through the HOLD signal, it receives a HLDA (Hold Acknowledge) signal if no higher priority signal is available

Answer (Please select your correct option)

- ● HOLD **page 186**
- ○ ACR
- ○ ACK
- ○ All of the given

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Question No : 12 of 52 Marks: 1 (Budgeted Time 1 Min)

_____ used to program various common parameters of transfer for all the channels.

Answer (Please select your correct option)

- DMA Status Register
- DMA Command Register **page 191**
- DMA Request Register
- None of the above

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Question No : 13 of 52 Marks: 1 (Budgeted Time 1 Min)

Bit # _____ of mode register in DMA determine the direction of a transfer.

Bit 5 of the mode register, determine the "direction" of a transfer. This "direction" isn't to or from a peripheral, rather it's forward or backward direction in memory. So you can decrement instead of increment the memory address during a DMA transfer. In his case, a data block is read backwards to forwards by the peripheral. Also the ending address of the buffer is loaded into the proper register before starting the transfer.

Answer (Please select your correct option)

- 2
- 3
- 4
- 5 **page 195**

Question No : 14 of 52 Marks: 1 (Budgeted Time 1 Min)

_____ will specify if the next DMA transfer will happen as a single transfer, block transfer or demand transfer.

Answer (Please select your correct option)

- DMA Request register
- DMA Mask register
- (●) DMA Mode register **video lec 24**
- DMA Command register

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Question No : 15 of 52 Marks: 1 (Budgeted Time 1 Min)

Each addressable unit has a unique combination of sec#, head# and track# as its _____ address.

An addressable unit on disk can be addressed by three parameters i.e. head #, sector # and track #. The disk rotates and changing sectors and a head can move to and fro changing tracks. Each addressable unit has a unique combination of sec#, head# and track# as its physical address.

Answer (Please select your correct option)

- ● Physical **page 202**
- ○ Logical
- ○ Both Physical and Logical
- ○ None of the given

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Question No : 16 of 52 Marks: 1 (Budgeted Time 1 Min)

Highest capacity of disk can be accessed using BIOS functions is _____.

Highest biosdisk() capacity
•Hence the highest capacity of disk can be accessed using bios functions is
•63x16x1024x512= 504 MB approx.

Answer (Please select your correct option)

- 128 MB
- 256 MB
- 504 MB **page 211**
- 127 GB

Question No : 17 of 52 Marks: 1 (Budgeted Time 1 Min)

DOS has built in limit of _____ blocks per cluster.

Answer (Please select your correct option)

- ● 128 **page 242**
- ○ 256
- ○ 32
- ○ 64

Clusters

- A cluster is a collection of contiguous blocks.
- User Data is divided into clusters
- Number of blocks within a cluster is in power of 2.
- Cluster size can vary depending upon the size of the disk.
- DOS has a built in limit of 128 blocks per cluster.
- But practically limit of 64 blocks per cluster has been established.
- We will learn more about the size of clusters, later.

Question No : 18 of 52 Marks: 1 (Budgeted Time 1 Min)

BIOS Parameter block is situated in _____ Block.

BPB (BIOS Parameter Block)
- **Situated within the Boot Block.**
- **Contains vital information about the file system.**

Answer (Please select your correct option)

- ● Boot **page 242**
- ○ Data
- ○ Extended Data
- ○ None of Given

Correct answer solved by hadi
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Question No : 19 of 52 Marks: 1 (Budgeted Time 1 Min)

The _____ block is the first block on disk.

LBA = 0 is not the same as LSN=0.
The LBA=0 block is the first block on disk. Whereas each logical partition has LSN=0 block which is the first block in logical drive and is not necessarily the first block on physical drive. Also notice the hidden blocks between the first physical block on each partition and its first LSN block. These hidden blocks are not used by the operating system for storing any kind of data.

Answer (Please select your correct option)

- Both LBA=0 and LSN=0
- None of the given
- LSN =0
- LBA=0

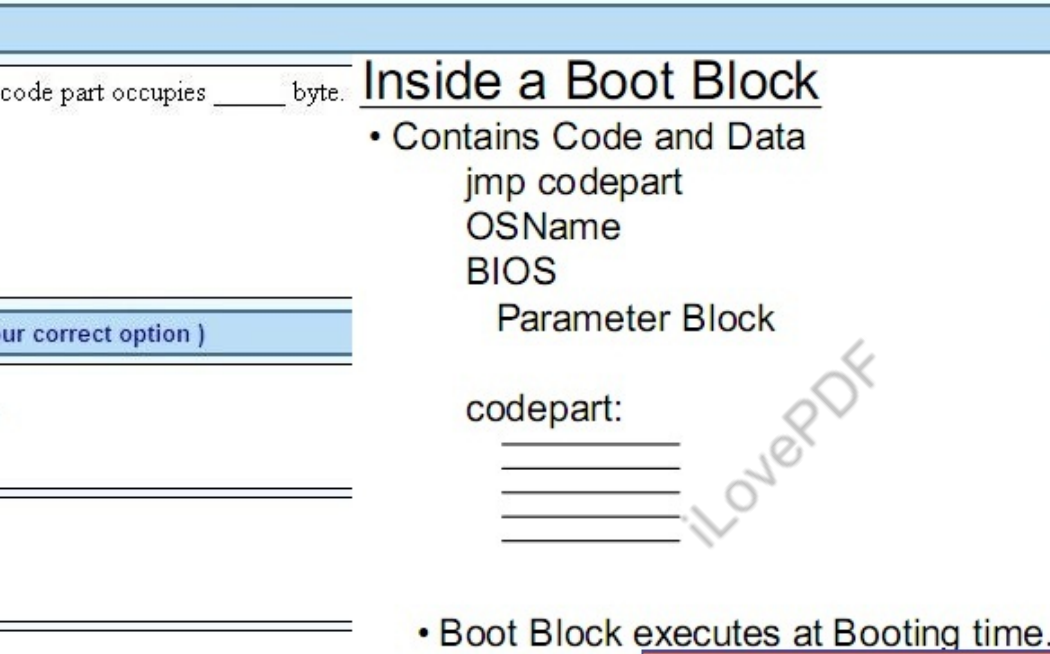
page 240

Question No : 20 of 52 Marks: 1 (Budgeted Time 1 Min)

Inside a boot block jump code part occupies _____ byte.

Answer (Please select your correct option)

- 3 **page 244**
- 8
- 11
- 5



The above slide shows the location of BPB within the boot block. A jump instruction (near jump of 3 bytes size) is used to jump to the code part and skip the data part so that it is not interpreted as instructions by the processor.

Question No : 21 of 52 Marks: 1 (Budgeted Time 1 Min)

In boot block BIOS parameter block starts from _____.

Answer (Please select your correct option)

- 03H
- 05H
- 08H
- 0BH

page 243

BPB (BIOS Parameter Block)

Byte Offset	Field Length	Meaning
0x0B	WORD	Bytes per Sector. The size of a hardware sector. Usually 512.
0x0D	BYTE	Sectors Per Cluster. The number of sectors in a cluster. The default cluster size for a volume depends on the disk size and the file system.
0x0E	WORD	Reserved Sectors. The number of sectors from the Partition Boot Sector to the start of the first file allocation table, including the Partition Boot Sector. The minimum value is 1.
0x10	BYTE	Number of file allocation tables (FATs). The number of copies of the file allocation table on the volume. Typically, the value of this field is 2.
0x11	WORD	Root Entries. The total number of file name entries that can be stored in the root folder of the volume.
0x13	WORD	Small Sectors. The number of sectors on the volume if the number fits in 16 bits (65535). For volumes larger than 65536

Question No : 22 of 52 Marks: 1 (Budgeted Time 1 Min)

In main memory smallest addressable unit is _____.

Answer (Please select your correct option)

- Byte
- Nibble
- Word
- None of the given

I think this is ans because smallest addessable unit is bytes not single byte.Block is called smallest addessable unit and it can have 512 bytes

page 202

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Question No : 23 of 52 Marks: 1 (Budgeted Time 1 Min)

Total number of clusters of FAT12 are _____.

Unused FAT Entries

- Reserved Entries = FF0H ~ FF6H
- EOF value = FF7H ~ FFFH
- First Two Clusters = 0,1
- Free Cluster = 0
- Max. range of Cluster # = 2 ~ FEFH
- Total # of Clusters of FAT12 = FEEH

Answer (Please select your correct option)

- ○ FF0 H
- ○ FFF H
- ○ FEF H
- ● FEE H page 266

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Question No : 24 of 52 Marks: 1 (Budgeted Time 1 Min)

In FAT12 to calculate the address or offset from index, we need to multiply it with ___.

Answer (Please select your correct option)

- 1/2
- 3/2 **page 267**
- 5/2
- 7/2

Selecting a 12-bit entry within FAT12

```
offset = cluster No * 3/2
temp = cluster No  * 3%2
 if (temp == 0)
{
        Then the entry is even, consider the word at this
        offset. Make a 12-bit value, by selecting the low
        Nibble of the high byte of this. Use this Nibble as
        the higher 4-bits. And use the low byte as the lower
        eight bits.
}
else
{
        The entry is odd, consider the word at this offset.
        Select the high Nibble of the low byte as lower 4-bits.
        And select high byte as the higher 8-bits.
}
```

Question No : 25 of 52 Marks: 1 (Budgeted Time 1 Min)

Total number of cluster of FAT16 is _____.

Unused FAT Entries

- Reserved Entries = FFF0H ~ FFF6H
- EOF value = FFF7H ~ FFFFH
- First Two Clusters = 0,1
- Free Cluster = 0
- Max. range of Cluster # = 2 ~ FFEFH
- Total # of Clusters of FAT16 = FFEEH

Answer (Please select your correct option)

- FFF0 H
- FFFF H
- FFEF H
- FFEE H

page 272

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Question No : 26 of 52 Marks: 1 (Budgeted Time 1 Min)

Total ____ fragments can be supported for storing long file names.

Answer (Please select your correct option)

- ● 26 **Video Lecture 37**
- ○ 28
- ○ 32
- ○ 48

Question No : 27 of 52 Marks: 1 (Budgeted Time 1 Min)

_____ used for FCB in FAT 12 and FAT 16.

Answer (Please select your correct option)

- Nibble
- Byte
- 2 Bytes
- 4 Bytes ⇦

Question No : 28 of 52 Marks: 1 (Budgeted Time 1 Min)

To store a cluster in FAT 32 _____ is/are needed.

Answer (Please select your correct option)

- Nibble
- Byte
- 2 Bytes
- 4 Bytes

Question No : 29 of 52 Marks: 1 (Budgeted Time 1 Min)

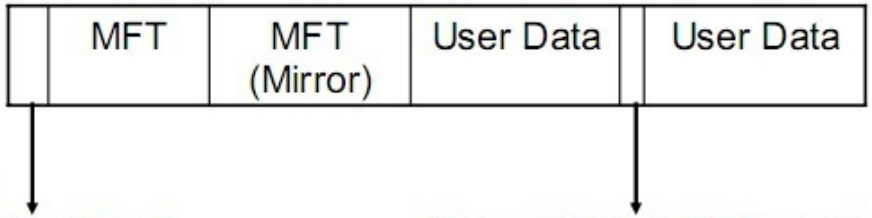
Practically in FAT 32, total number of entries are _____.

Answer (Please select your correct option)

- 2^{26}
- 2^{28}
- 2^{30}
- 2^{32}

Question No : 30 of 52 Marks: 1 (Budgeted Time 1 Min)

First logical sector of NTFS partition is _____.



Answer (Please select your correct option)

- DPB
- MFT
- Boot sector **Lec 39**
- None of the given

Question No : 31 of 52 Marks: 1 (Budgeted Time 1 Min)

Extended memory can be accessed in _____ mode.

memory portion higher than 1MB is called extended memory

Protected Mode

• PC has to be shifted to Protected Mode if originally boots in Real Mode.

• In Protected Mode whole of the RAM is accessible that includes the Conventional, Expanded and Extended Memories.

• OS like Windows has a memory management system for Protected Mode.

• A privilege level can be assigned to a memory area restricting its access.

Real Mode

• PCs initially boots up in Real Mode. It may be shifted t protected mode during the booting process using drivers like HIMEM.SYS

• Only first 1 MB of RAM can be accessed in Real Mod

• The Real Mode address is a 20-bit address, stored and represented in the form of Segment : Offset

• OS like DOS has a memory management system in reflection of the Real Mode.

Answer (Please select your correct op

- Real
- Protected **lec 42 pg:319**
- Both real and protected
- None of the given

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Question No : 32 of 52 Marks: 1 (Budgeted Time 1 Min)

MCB is a _____ bytes data structure.

Answer (Please select your correct option)

- 8
- 16 **page 321**
- 32
- 64

MCB or Arena Header

- MCB is used to control an allocated block in memory.
- Every allocated block will have a MCB before the start of block.
- MCB is a 16-bytes large structure.

Size	Offset	
Byte	0	Contains 'M' if the MCB controls allocated memory and 'Z' if it controls free space.
Word	1	Contains the Segment address of the PSP and the program controlled by MCB.
Word	3	Contains number of Paragraphs controlled by the MCB.
Byte [11]	5	Reserved or contains the program name in case of higher versions of DOS.

Question No : 33 of 52 Marks: 1 (Budgeted Time 1 Min)

Real mode does not support _____ memory allocation system.

Answer (Please select your correct option)

- Contiguous
- Non Contiguous **Video Lec 43 page 325**
- Both Contiguous and Non Contiguous
- None of the given

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Question No : 34 of 52 Marks: 1 (Budgeted Time 1 Min)

There can be _____ different descriptors privilege levels.

00 highest privilege level and 11 is lowest privilege level

Answer (Please select your correct option)

- 2
- 4 **Video Lec 43**
- 8
- 10

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Question No : 35 of 52 Marks: 1 (Budgeted Time 1 Min)

In memory management, descriptor entry is of _____ bytes.

Answer (Please select your correct option)

- 64
- 32
- 8 **Lec 43**
- 16

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Question No : 36 of 52 Marks: 1 (Budgeted Time 1 Min)

For virus to propagate itself, it has to intercept interrupt _____.

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Answer (Please select your correct option)

- 9H
- 11H
- 13H 
- 17H

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Question No : 37 of 52 Marks: 1 (Budgeted Time 1 Min)

If virus wants to be in memory independently, it should have its own _____.

Answer (Please select your correct option)

- MCB
- PSP
- EB
- Both MCB and PSP **page 334**

How COM Virus Loads Itself

- When a file is Loaded in Memory it will occupy a number of Paragraphs controlled by some MCB.
- If the file is infected the Virus is also loaded within the Memory Area allocated to the Program.
- In this case the Virus does not exist as an Independent Program as it does not have its own PSP. If the Program is terminated the Virus Code will also be unloaded with the program. The Virus will try to attain an Independent Status for which it needs to relocate itself and create its own PSP and MCB in Memory.
- When the program runs the Virus Code executes first. The Virus creates an MCB, defines a new PSP initializes the PSP and relocates itself, updates the last MCB, so that it can exist as an Individual Program, and then transfers the execution back to the Original Program Code.
- Now if the Original Program Terminates the Virus will still remain resident.

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Question No : 38 of 52 Marks: 1 (Budgeted Time 1 Min)

Size of single entry in Partition Table is _____.

File System for Each O.S.

- **On a single disk there can be 4 different file systems and hence 4 different O.S.**
- **Each O.S. will have its individual partition on disk.**
- **Data related to each partition is stored in a 16-bytes chunk within the Data Part of Partition Table.**

Answer (Please select your correct option)

- ○ 512 bytes
- ○ 128 bytes
- ○ 64 bytes
- ● 16 bytes

page 219

Structure of Data Part of P.T.

Size	Description
16 Bytes	Partition into of 1st partition.
16 Bytes	Partition into of 2nd partition.
16 Bytes	Partition into of 3rd partition.
16 Bytes	Partition into of 4th partition.
02 Bytes	Signature

CORRECT A

Question No : 39 of 52 Marks: 1 (Budgeted Time 1 Min)

_____ is a data structure maintained by DOS in the boot block for each drive.

BIOS parameter block is a data structure maintained by DOS in the boot block for each drive. The boot block is typically a 512 byte block which as seen the previous slides is the first logical block i.e. LSN = 0. It contains some code and data. The data part constitutes the BPB

Answer (Please select your correct option)

- DPB
- BPB **page 242**
- FCB
- None of the Given

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Question No : 40 of 52 Marks: 1 (Budgeted Time 1 Min)

Cluster size is variable and can be measured in power of _____.

The cluster size can vary from 512 bytes to 32K in powers of 2 depending upon the volume size.

Answer (Please select your correct option)

- 4
- 8
- 16
- 2

Page 266 cluster size determination

Question No : 41 of 52 Marks: 2 (Budgeted Time 4 Min)

In how many ways/ modes, higher PC's can operate.

Answer (Please click here to Add Answer)

Higher PCs can operate in two modes

- **REAL MODE**
- **PROTECTED MODE**

Question No : 42 of 52 Marks: 2 (Budgeted Time 4 Min)

How many bytes are used for FCB in FAT12 & FAT16 and to store a cluster in FAT32 how many bytes are required?

Answer (Please click here to Add Answer)

Question No : 43 of 52 Marks: 2 (Budgeted Time 4 Min)

In context of UART FIFO queue, why we need buffering?

Answer (Please click here to Add Answer)

A queue or a buffer of the input or output bytes is maintained within the UART in order to facilitate more efficient I/O.

page 118

Question No : 44 of 52 Marks: 2 (Budgeted Time 4 Min)

What will be the advantage of having large size cluster?

Answer (Please click here to Add Answer)

Cluster size represents a trade-off between efficient storage and efficient data handling. Not only is there a limit on the number of clusters available per volume, but larger clusters allow information to be stored and retrieved faster because fewer logical operations are needed to move the same amount of data. (book se ni mila google kia hai ans)

Question No : 45 of 52 Marks: 3 (Budgeted Time 6 Min)

Why we cannot directly access NTFS volume in DOS? What will happen if we try to do that?

Answer (Please click here to Add Answer)

If NTFS volume is accessed in DOS, it will fire the error of Invalid Media

page 310

If the system has booted in DOS then a NTFS volume can be accessed by an Indirect Method, using BIOS functions..

Accessing NTFS volume in DOS

- NTFS volume can not be accessed in DOS using DOS based function like absread( ) etc.
- DOS device drivers does not understand the NTFS data structures like MFT etc.
- If NTFS volume is accessed in DOS, it will fire the error of Invalid Media.

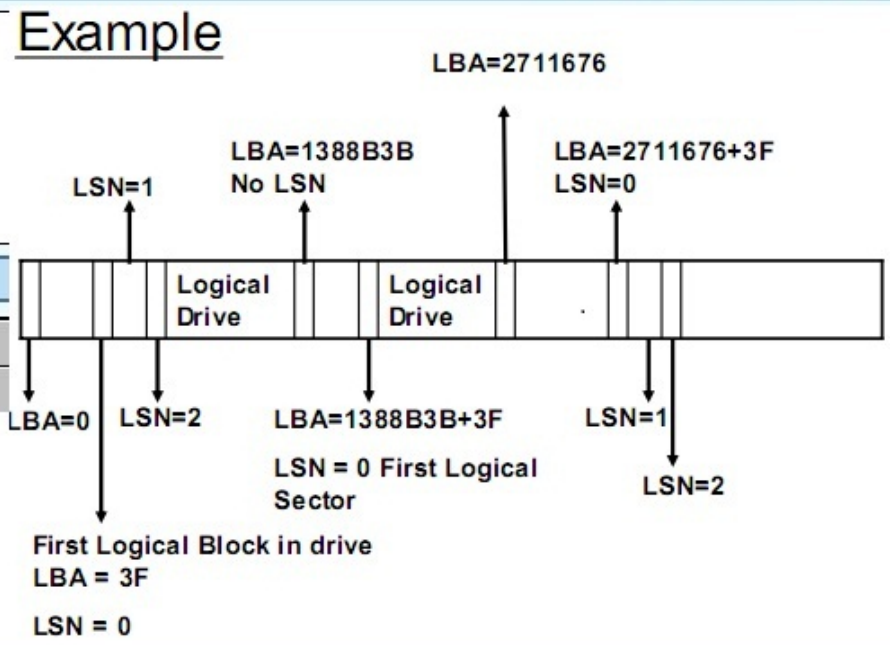
Question No : 46 of 52 Marks: 3 (Budgeted Time 6 Min)

Is LSN=0 and LBA=0 same thing? Why or why not?

LSN is also indexed like LBA the only difference is that LBA is the address relative to the start of physical drive (i.e. absolute), whereas LSN address is the address from the start of logical partition i.e relative.

Answer (Please click here to Add Answer)

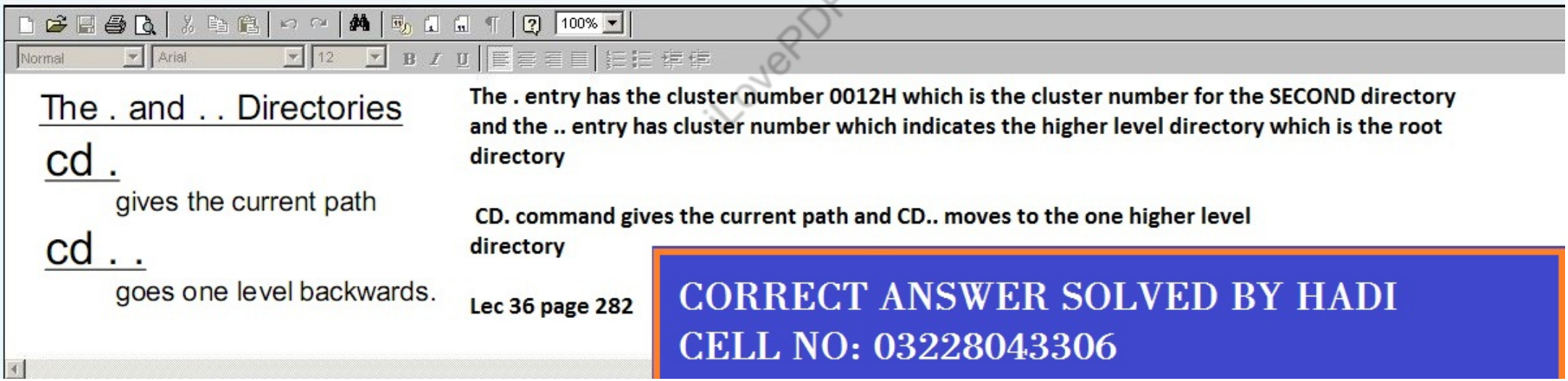
As in the above example it can be noticed that the LBA = 0 is not the same as LSN=0. The LBA=0 block is the first block on disk. Whereas each logical partition has LSN=0 block which is the first block in logical drive and is not necessarily the first block on physical drive. Also notice the hidden blocks between the first physical block on each partition and its first LSN block. These hidden blocks are not used by the operating system for storing any kind of data.



Question No : 47 of 52 Marks: 3 (Budgeted Time 6 Min)

What is the usage of CD. And CD.. commands?

Answer (Please click here to Add Answer)



Question No : 48 of 52 Marks: 3 (Budgeted Time 6 Min)

In system programming, how can we access the hardware using three layered approach?

Answer (Please click here to Add Answer)

page 3

Question No : 49 of 52 Marks: 5 (Budgeted Time 10 Min)

Write down the steps to perform alignment test to distinguish between 386 and 486 processors.

Note : Also check yourself on page 164

Answer (Please click here to Add Answer)

Alignment Test

```
pushfd
pop eax
mov ecx, eax
mov dword ptr [13], EDX
pushfd
pop  eax
```

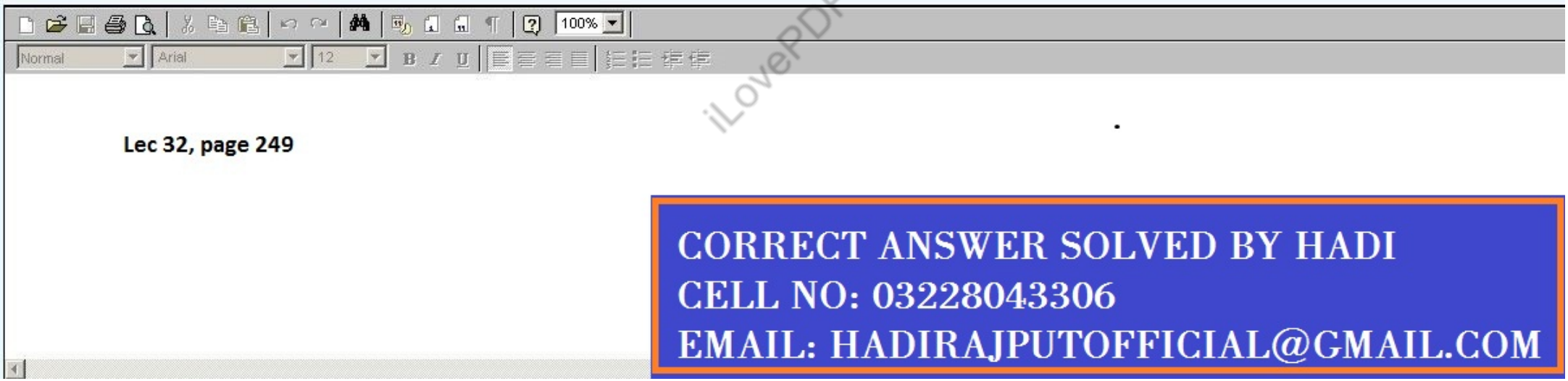

In this slide a double word is moved into a odd address. If the processor is 386 then the 18th bit of the EFLAGS register will not be set, it will be set if the processor is higher than 386.

page 165

Question No : 50 of 52 Marks: 5 (Budgeted Time 10 Min)

Explain the Association between DPB (Drive parameter block) and BIOS parameter block (BPB).

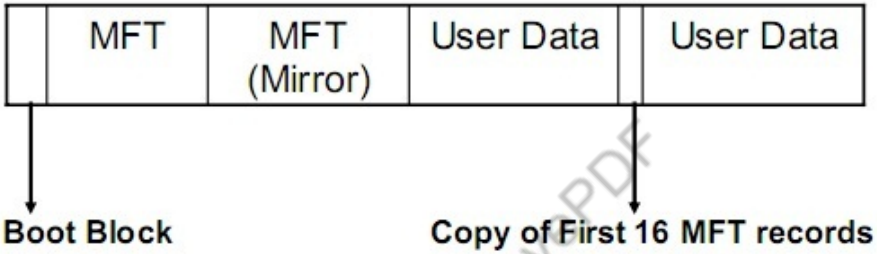
Answer (Please click here to Add Answer)



Lec 32, page 249

Question No : 51 of 52 Marks: 5 (Budgeted Time 10 Min)

Write down the anatomy of NTFS based file system.



Answer (Please click here to Add Answer)

Normal Arial 12

The given slide shows the anatomy of an NTFS based system. The FAT and root directory has been replaced by the MFT. It will generally have two copies the other copy will be a mirror image of the original. Rests of the blocks are reserved for user data. In the middle of the volume is a copy of the first 16 MTF record which are very important to the system

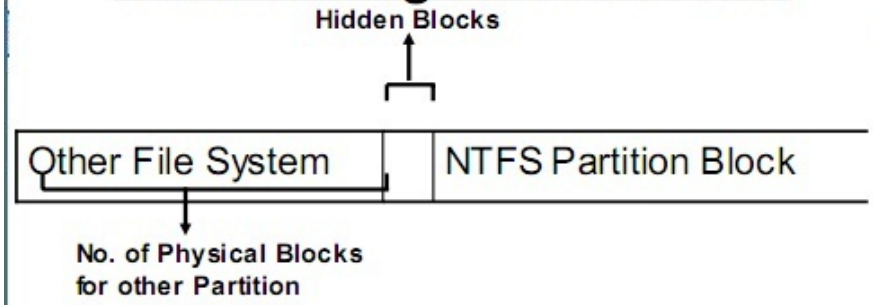
page 301

Question No : 52 of 52 Marks: 5 (Budgeted Time 10 Min)

How LSN is translated to LBA in NTFS based system?

STAY HOME STAY SAME..

Translating LSN to LBA



LBA = No. of Physical Blocks in other Partition + Hidden Blocks + LSN

• All this information can be retrieved from the Partition Table + Boot Block