



CS401 Final Term Solved MCQs & Papers Mega File (Latest All in One)

Question # 1 of 10 (Start time: 06:48:44 PM) Total Marks: 1

Which type of shifting is "Inserts a zero from the left and moves every bit one position to the right and copies the rightmost bit in the carry flag."

Select correct option:

- SHL
- SAL
- SAR

None of the given (Correct)

Question # 2 of 10 (Start time: 06:51:54 PM) Total Marks: 1

Unconditional jump

Select correct option:

Execute in every condition whether true or false

If the condition is true (Correct)

If the condition is false

None of the given

Question # 3 of 10 (Start time: 06:52:43 PM) Total Marks: 1

Physical address calculation depends on

Select correct option:

Base address

Effective address

Offset Address (Correct)

None of the above

Question # 4 of 10 (Start time: 07:04:57 PM) Total Marks: 1

In a virtual memory system, the effective address is a main memory address.

Select correct option:

True

False (False)

Question # 5 of 10 (Start time: 07:05:55 PM) Total Marks: 1

In _____ operation the zero bit is inserted from the right and every bit moves one position to its left with the most significant bit dropping into the carry flag.

Select correct option:

Shift Logical Right (SHR)

Shift Arithmetic Left (SAL) (Correct)

Shift Arithmetic Right (SAR)

Rotate Right (ROR)

Question # 6 of 10 (Start time: 07:07:24 PM) Total Marks: 1

The FLAG register in Intel x86 microprocessors that contains the current state of the processor

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Select correct option:

True (Correct)
False

Question # 7 of 10 (Start time: 07:08:04 PM) Total Marks: 1
Memory to Memory operation is allowed
Select correct option:

True
False (Correct)

Question # 8 of 10 (Start time: 07:08:31 PM) Total Marks: 1
Which register holds the item that is to be written into the stack or read out of the stack:
Select correct option:

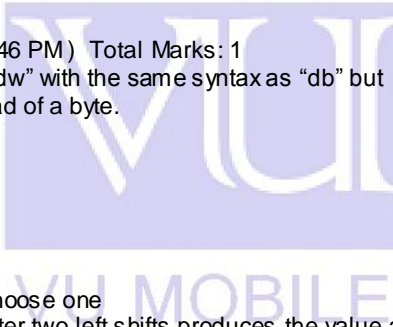
SP (Correct)
IP
BX
DX

Question # 9 of 10 (Start time: 07:11:30 PM) Total Marks: 1
mov [si+300], ax is an example of Indexed Register Indirect + Offset
Select correct option:

True (Correct)
False

Question # 10 of 10 (Start time: 07:13:46 PM) Total Marks: 1
The other directive is “define word” or “dw” with the same syntax as “db” but
reserving a whole word of ___ bits instead of a byte.
Select correct option:

32
8
16 (Correct)
64



Question No: 1 (Marks: 1) - Please choose one
Suppose AL contains 5 decimal then after two left shifts produces the value as

- ▶ 5
- ▶ 10
- ▶ 15
- ▶ **20 (Page 52)**

Question No: 2 (Marks: 1) - Please choose one

In graphics mode a location in video memory corresponds to a _____ on the screen.

- ▶ line
- ▶ **dot (Page 149)**
- ▶ circle
- ▶ rectangle

Question No: 3 (Marks: 1) - Please choose one

Creation of threads can be

- ▶ static
- ▶ **dynamic (Page 141)**
- ▶ easy
- ▶ difficult

Question No: 4 (Marks: 1) - Please choose one

The thread registration code initializes the PCB and adds it to the linked list so that the _____ will give it a turn.

- ▶ assembler
- ▶ **scheduler (Page 141)**
- ▶ linker
- ▶ debugger

Question No: 5 (Marks: 1) - Please choose one

VESA VBE 2.0 is a standard for

▶ **High resolution Mode (Page 180)**

- ▶ Low resolution Mode
- ▶ Medium resolution Mode
- ▶ Very High resolution Mode

Question No: 6 (Marks: 1) - Please choose one

Which of the following gives the more logical view of the storage medium

- ▶ BIOS
- ▶ **DOS (Page 155)**
- ▶ Both
- ▶ None

Question No: 7 (Marks: 1) - Please choose one

Which of the following IRQs is derived by a key board?

- ▶ IRQ 0
- ▶ **IRQ 1 (Page 114)**
- ▶ IRQ 2
- ▶ IRQ 3

Question No: 8 (Marks: 1) - Please choose one

Which of the following IRQs is used for Floppy disk drive?

- ▶ IRQ 4
- ▶ IRQ 5
- ▶ **IRQ 6 (Page 114)**
- ▶ IRQ 7

Question No: 9 (Marks: 1) - Please choose one

Which of the following pins of a parallel port connector are grounded?

- ▶ 10-18
- ▶ **18-25 (Page 125)**
- ▶ 25-32
- ▶ 32-39

Question No: 10 (Marks: 1) - Please choose one

The physical address of IDT(Interrupt Descriptor Table) is stored in _____

- ▶ GDTR
- ▶ **IDTR (Page 182)**
- ▶ IVT
- ▶ IDTT

Question No: 11 (Marks: 1) - Please choose one

In NASM an imported symbol is declared with the while and exported symbol is declared with the.....

- ▶ Global directive, External directive
- ▶ **External directive, Global directive (Page 189)**
- ▶ Home Directive, Foreign Directive
- ▶ Foreign Directive, Home Directive

Question No: 12 (Marks: 1) - Please choose one

In 68K processors there is a program counter (PC) that holds the address of currently executing instruction

- ▶ 8bit
- ▶ 16bit
- ▶ **32bit (Page 191)**
- ▶ 64bit

Question No: 13 (Marks: 1) - Please choose one

To reserve 8-bits in memory ____ directive is used.

- ▶ **db (Page 25)**
- ▶ dw
- ▶ dn
- ▶ dd

Question No: 14 (Marks: 1) - Please choose one

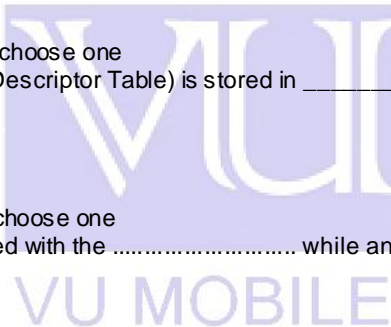
In the "mov ax, 5" 5 is the _____ operand.

- ▶ **source (Page 18)**
- ▶ destination
- ▶ memory
- ▶ register

Question No: 15 (Marks: 1) - Please choose one

RETF will pop the segment address in the

- ▶ **CS register (Page 72)**
- ▶ DS register



▶ SS register

▶ ES register

Question No: 16 (Marks: 1) - Please choose one

For the execution of the instruction "DIV BL", the implied dividend will be stored in

▶ **AX (Page 85)**

▶ BX

▶ CX

▶ DX

Question No: 17 (Marks: 1) - Please choose one

When a number is divided by zero "A Division by 0" interrupt is generated. Which instruction is used for this purpose

▶ INT 0

▶ INT 1

▶ INT 2

▶ **This interrupt is generated automatically (Page 107)**

Question No: 18 (Marks: 1) - Please choose one

INT 21 service 01H is used to read character from standard input with echo. It returns the result in _____ register.

▶ **AL (Page 152)**

▶ BL

▶ CL

▶ BH

Question No: 19 (Marks: 1) - Please choose one

BIOS sees the disks as

▶ logical storage

▶ **raw storage (Page 155)**

▶ in the form of sectors only

▶ in the form of tracks only

Question No: 20 (Marks: 1) - Please choose one

In 9pin DB 9, which pin number is assigned to CD (Carrier Detect)?

▶ **1 (Page 171)**

▶ 2

▶ 3

▶ 4

Question No: 21 (Marks: 1) - Please choose one

In 9pin DB 9, Signal ground is assigned on pin number

▶ 4

▶ **5 (Page 171)**

▶ 6

▶ 3

Question No: 22 (Marks: 1) - Please choose one

In 9pin DB 9, RI (Ring Indicator) is assigned on pin number

▶ 6

▶ 7

▶ 8

▶ **9 (Page 171)**

Question No: 23 (Marks: 1) - Please choose one

Motorola 68K processors have..... 23bit general purpose registers.

▶ 4

▶ 8

▶ **16 (Page 191)**

▶ 32

Question No: 24 (Marks: 1) - Please choose one

When two devices in the system want to use the same IRQ line then what will happen?

▶ An IRQ Collision

▶ **An IRQ Conflict (Page 114)**

▶ An IRQ Crash

▶ An IRQ Blockage

Question No: 25 (Marks: 1) - Please choose one

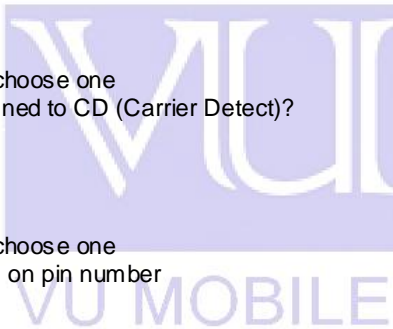
In the instruction MOV AX, 5 the number of operands are

▶ 1

▶ **2 (Page 25)**

▶ 3

▶ 4



- Question No: 26 (Marks: 1) - Please choose one
Which flags are NOT used for mathematical operations ?
- ▶ Carry, Interrupt and Trap flag.
 - ▶ **Direction, Interrupt and Trap flag. (Page 133)**
 - ▶ Direction, Overflow and Trap flag.
 - ▶ Direction, Interrupt and Sign flag.

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- Question No: 1 (Marks: 1) - Please choose one
The physical address of the stack is obtained by
- ▶ SS:SI combination
 - ▶ **SS:SP combination (Page 68)**
 - ▶ ES:BP combination
 - ▶ ES:SP combination

- Question No: 2 (Marks: 1) - Please choose one
Value of AH in the write Graphics pixel service is
- ▶ **0Ch (Page 152)**
 - ▶ 0Bh
 - ▶ 1Ch
 - ▶ 2Ch

- Question No: 3 (Marks: 1) - Please choose one
Threads can have function calls, parameters and _____ variables.
- ▶ global
 - ▶ **local (Page 141)**
 - ▶ legal
 - ▶ illegal

- Question No: 4 (Marks: 1) - Please choose one
Creation of threads can be
- ▶ static
 - ▶ **dynamic (Page 141) rep**
 - ▶ easy
 - ▶ difficult

- Question No: 5 (Marks: 1) - Please choose one
How many prevalent calling conventions do exist
- ▶ 1
 - ▶ **2 (Page 187)**
 - ▶ 3
 - ▶ 4

- Question No: 6 (Marks: 1) - Please choose one
VESA VBE 2.0 is a standard for
- ▶ **High resolution Mode (Page 180) rep**
 - ▶ Low resolution Mode
 - ▶ Medium resolution Mode
 - ▶ Very High resolution Mode

- Question No: 7 (Marks: 1) - Please choose one
The serial port connection is a ----- connector
- ▶ **9pin DB 9 (Page 171)**
 - ▶ 8pin DB 9
 - ▶ 3pin DB 9
 - ▶ 9pin DB 5

- Question No: 8 (Marks: 1) - Please choose one
Which of the following gives the more logical view of the storage medium
- ▶ BIOS
 - ▶ **DOS (Page 55) rep**
 - ▶ Both
 - ▶ None

- Question No: 9 (Marks: 1) - Please choose one
In STOSB instruction, when DF is clear, SI is
- ▶ **Incremented by 1 (Page 92)**
 - ▶ Incremented by 2
 - ▶ Decrement by 1
 - ▶ Decrement by 2



Question No: 10 (Marks: 1) - Please choose one

After the execution of STOSW the CX will be

▶ **Decrement by 1 (Page 92)**

▶ Decrement by 2

▶ Incremented by 1

▶ Incremented by 2

Question No: 11 (Marks: 1) - Please choose one

IRQ is referred to

▶ **Eight input signals (Correct)**

▶ One output signal

▶ One input signals

▶ Eight output signals

Question No: 12 (Marks: 1) - Please choose one

Which of the following IRQs is derived by a key board?

▶ IRQ 0

▶ **IRQ 1 (Page 113) rep**

▶ IRQ 2

▶ IRQ 3

Question No: 13 (Marks: 1) - Please choose one

Which of the following IRQs is connected to serial port COM 1?

▶ **IRQ 4 (page 114)**

▶ IRQ 5

▶ IRQ 6

▶ IRQ 7

Question No: 14 (Marks: 1) - Please choose one

The physical address of IDT(Interrupt Descriptor Table) is stored in _____

▶ GDTR

▶ **IDTR (Page 182) rep**

▶ IVT

▶ IDTT

Question No: 15 (Marks: 1) - Please choose one

Assembly language is:

▶ **Low-level programming language (Page 3)**

▶ High-level programming language

▶ Also known as machine language

▶ Not considered closer to the computer

Question No: 16 (Marks: 1) - Please choose one

The number of bits required to access 1MB of memory are

▶ 16 bits

▶ 32 bits

▶ **Depends on the processor architecture (Page 20)**

▶ 20 bits

Question No: 17 (Marks: 1) - Please choose one

In STOSB instruction, SI is decremented or incremented by

▶ 3

▶ 2

▶ **1 (Page 92)**

▶ 4

Question No: 18 (Marks: 1) - Please choose one

In programmable interrupt controller, which of the following ports is referred as a control port.

▶ 19

▶ **20 (Page 115)**

▶ 21

▶ 22

Question No: 19 (Marks: 1) - Please choose one

INT 21 service 01H is used to read character from standard input with echo. It returns the result in _____ register.

▶ **AL (Page 152) rep**

▶ BL

▶ CL

▶ BH

Question No: 20 (Marks: 1) - Please choose one

In device attribute word, which of the following bit decides whether it is a character device or a block device

▶ Bit 12

▶ Bit 13



▶ Bit 14

▶ **Bit 15 (Page 116)**

Question No: 21 (Marks: 1) - Please choose one

In 9pin DB 9, which pin number is assigned to CTS (Clear To Send) ?

▶ 6

▶ 7

▶ **8 (Page 171)**

▶ 9

Question No: 22 (Marks: 1) - Please choose one

In 9pin DB 9, which pin number is assigned to RD (Received Data) ?

▶ 1

▶ **2 (Page 171)**

▶ 3

▶ 4

Question No: 23 (Marks: 1) - Please choose one

VESA(Video Electronics Standards Association) organizes 16 color bits for every pixel in

▶ 5:5:5 format

▶ **5:6:5 format (Page 180)**

▶ 6:5:6 format

▶ 5:6:7 format

Question No: 24 (Marks: 1) - Please choose one

Motorola 68K processors have 23bit general purpose registers.

▶ 4

▶ 8

▶ **16 (Page 191) rep**

▶ 32

Question No: 25 (Marks: 1) - Please choose one

Programmable Interrupt Controller (PIC) has

▶ One input signals and eight output signals

▶ One input signal and one output signal

▶ **Eight input signals and one output signals (Page 113)**

▶ Eight input signals and eight output signals

Question No: 26 (Marks: 1) - Please choose one

Video services are classified into..... broad categories.

▶ 5

▶ 4

▶ 3

▶ **2 (Page 149)**

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1. BL contains 5 decimal then after right shift , BL will become

3

2.5 (Page 52)

5

10

2. 8 * 16 font is stored in _____ bytes.

3

4

8

16 (Page 150)

3. In DOS input buffer , number of characters actually read on return is stored in

First byte

Second byte (Page 152)

Third byte

Fourth byte

4. IRQ 0 has priority

Low

High

Highest (Page 114)

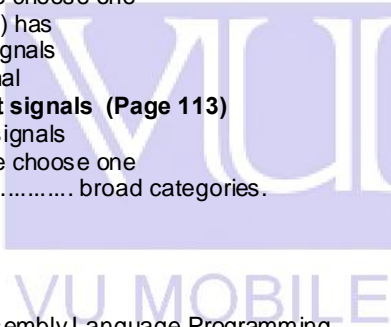
Medium

5. Thread registration code initialize PCB and add to linked list so that _____ will give it turn.

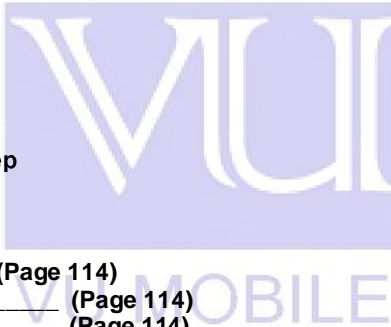
Assembler

Linker

Scheduler (Page 141) rep



- Debugger
- 6. Traditional calling conventions are in _____ number
 - 1
 - 2 (Page 187)**
 - 3
 - 4
- 7. VESA VEB 2.0 is standard for
 - High Resolution Mode (Page 180) rep
 - Low Resolution Mode
 - Very High Resolution Mode
 - Medium Resolution Mode
- 8. To clear direction flag which instruction is used
 - Cld (Page 92)**
 - Clrd
 - Cl df
 - Clr df
- 9. In STOSW instruction , When DI is cleared , SI is
 - Incremented by 1
 - Incremented by 2 (Page 92)**
 - Decrementd by 1
 - Decrementd by 2
- 10. Interrupt that is used in debugging with help of trap flag is
 - INT 0
 - INT 1 (Page 105)**
 - INT 2
 - INT 3
- 11. INT for arithmetic overflow is
 - INT 1
 - INT 2
 - INT 3
 - INT 4 (Page 106)**
- 12. IRQ referred as
 - Eight Input signals (Page 113) rep**
 - One Input signal
 - Eight Output signals
 - One output signal
- 13. IRQ for keyboard is _____ 1 _____ (Page 114)
- 14. IRQ for sound card is _____ 5 _____ (Page 114)
- 15. IRQ for floppy disk is _____ 6 _____ (Page 114)
- 16. IRQ with highest priority is
 - Keyboard IRQ
 - Timer IRQ (Page 114)**
 - Sound Card
 - Floppy Disk
- 17. Pin for parallel port ground is
 - 10-18
 - 18-25 (Page 125) rep**
 - 25-32
 - 32-39
- 18. The physical address of Interrupt Descriptor Table (IDT) is stored in
 - GDTR
 - IDTR (Page 182) rep**
 - IVT
 - IDTT
- 20. CX register is
 - Count register (Page 15)**
 - Data register
 - Index register
 - Base register
- 21. OUT instruction uses __AX or AL_____ as source register. (Page 115)
- 22. IN DB-9 connector the Data Set ready pin is at
 - 5
 - 6 (Page 171)**
 - 7
 - 8



23. If two devices uses same IRQ then there is
- IRQ collision
 - IRQ conflict (Page 114) rep**
 - IRQ drop
24. VESA organizes 16 bit color for every pixel in ratio
- 5:5:5
 - 5:6:5 (Page 180) rep**
 - 6:5:6
 - 5:6:7

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Question No: 1 (Marks: 1) - Please choose one

SP is associated with..... By default

▶ **SS (Page 34)**

▶ DS

▶ CS

▶ ES

Question No: 2 (Marks: 1) - Please choose one

Which bit of the attributes byte represents the red component of foreground color

▶ 5

▶ 4

▶ 3

▶ **2 (Page 81)**

Question No: 3 (Marks: 1) - Please choose one

An 8 x 16 font is stored in _____ bytes.

▶ 2

▶ 4

▶ 8

▶ **16 (Page 150) rep**

Question No: 4 (Marks: 1) - Please choose one

In DOS input buffer, the number of characters actually read on return is stored in _____ byte.

▶ third

▶ fourth

▶ first

▶ **second (Page 152) rep**

Question No: 5 (Marks: 1) - Please choose one

Which of the following gives the more logical view of the storage medium

▶ BIOS

▶ **DOS (Correct)**

▶ Both

▶ None

Question No: 6 (Marks: 1) - Please choose one

In STOSW instruction, when DF is clear, SI is

▶ Incremented by 1

▶ **Incremented by 2 (Page 92)**

▶ Decremented by 1

▶ Decremented by 2

Question No: 7 (Marks: 1) - Please choose one

Which of the following interrupts is Non maskable interrupt

▶ **INT 2 (Page 105)**

▶ INT 3

▶ INT 0

▶ INT 1

Question No: 8 (Marks: 1) - Please choose one

Which of the following IRQs is connected to serial port COM2?

▶ IRQ 0

▶ IRQ 1

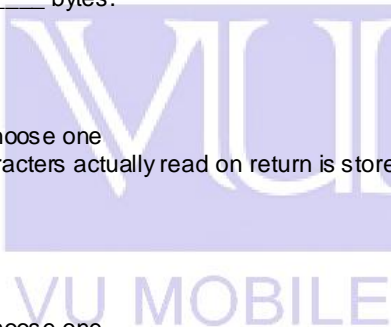
▶ IRQ 2

▶ **IRQ 3 (Page 114)**

Question No: 9 (Marks: 1) - Please choose one

The time interval between two timer ticks is?

▶ 40ms



▶ 45ms

▶ 50ms

▶ **55ms (Page 122)**

Question No: 10 (Marks: 1) - Please choose one

The physical address of IDT(Interrupt Descriptor Table) is stored in _____

▶ GDTR

▶ **IDTR (Page 182) rep**

▶ IVT

▶ IDTT

Question No: 11 (Marks: 1) - Please choose one

In NASM an imported symbol is declared with the while and exported symbol is declared with the.....

▶ Global directive, External directive

▶ **External directive, Global directive (Page 189) rep**

▶ Home Directive, Foreign Directive

▶ Foreign Directive, Home Directive

Question No: 12 (Marks: 1) - Please choose one

In 68K processors there is a 32bit that holds the address of currently executing instruction

▶ **Program counter (Page 191)**

▶ Stack pointer

▶ Register

▶ Stack

Question No: 13 (Marks: 1) - Please choose one

Single step interrupt is

▶ Hardware interrupt

▶ **Like divide by zero interrupt (Page 133)**

▶ Like divide by 1 interrupt

▶ Software interrupt

Question No: 14 (Marks: 1) - Please choose one

Which of the following is NOT true about registers:

▶ Their operation is very much like memory

▶ Intermediate results may also be stored in registers

▶ They are also called scratch pad ram

▶ **None of given options (Correct)**

Question No: 15 (Marks: 1) - Please choose one

Types of jump are:

▶ short, near

▶ **short, near, far (Page 45)**

▶ near, far

▶ short, far

Question No: 16 (Marks: 1) - Please choose one

MS DOS uses ____ display mode.

▶ **Character based (Page 79)**

▶ Graphics based

▶ Numeric based

▶ Console based

Question No: 17 (Marks: 1) - Please choose one

Which of the following IRQs is derived by a timer device?

▶ **IRQ 0 (Page 114)**

▶ IRQ 1

▶ IRQ 2

▶ IRQ 3

Question No: 18 (Marks: 1) - Please choose one

In programmable interrupt controller, which of the following ports is referred as a control port?

▶ 19

▶ **20 (Page 115) rep**

▶ 21

▶ 22

Question No: 19 (Marks: 1) - Please choose one

INT 21 service 01H is used to read character from standard input with echo. It returns the result in _____ register.

▶ **AL (Page 152) rep**

▶ BL

▶ CL

▶ BH



Question No: 20 (Marks: 1) - Please choose one
In 9pin DB 9, which pin number is assigned to DSR (DataSet Ready) ?

- ▶ 4
- ▶ 5
- ▶ **6 (Page 171)**
- ▶ 7

Question No: 21 (Marks: 1) - Please choose one
In 9pin DB 9, which pin number is assigned to TD (Transmitted Data) ?

- ▶ 1
- ▶ 2
- ▶ **3 (Page 171)**
- ▶ 4

Question No: 22 (Marks: 1) - Please choose one
In 9pin DB 9, Signal ground is assigned on pin number

- ▶ 4
- ▶ **5 (Page 171)**
- ▶ 6
- ▶ 3

Question No: 23 (Marks: 1) - Please choose one
8088 is a

- ▶ **16 bit processor (Page 14)**
- ▶ 32 bit processor
- ▶ 64 bit processor
- ▶ 128 bit processor

Question No: 24 (Marks: 1) - Please choose one
The table index (TI) is set to _____ to access the GDT (Global Descriptor Table).

- ▶ 1
- ▶ **0 (Page 175)**
- ▶ -1
- ▶ -2

Question No: 25 (Marks: 1) - Please choose one
VESA(Video Electronics Standards Association) organizes 16 color bits for every pixel in

- ▶ 5:5:5 format
- ▶ **5:6:5 format (Page 180) rep**
- ▶ 6:5:6 format
- ▶ 5:6:7 format

Question No: 26 (Marks: 1) - Please choose one
Which flags are NOT used for mathematical operations?

- ▶ Carry, Interrupt and Trap flag.
- ▶ **Direction, Interrupt and Trap flag. (Page 133) rep**
- ▶ Direction, Overflow and Trap flag.
- ▶ Direction, Interrupt and Sign flag.



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Question No: 1 (Marks: 1) - Please choose one
When a 32 bit number is divided by a 16 bit number, the quotient is of

- \$ 32 bits
- \$ **16 bits (Page 85)**
- \$ 8 bits
- \$ 4 bits

Question No: 2 (Marks: 1) - Please choose one
In the instruction MOV AX, 5 the number of operands are

- \$ 1
- \$ **2 (Page 25) rep**
- \$ 3
- \$ 4

Question No: 3 (Marks: 1) - Please choose one
3. In DOS input buffer, number of characters actually read on return is stored in

- \$ First byte
- \$ **Second byte (Page 152) rep**
- \$ Third byte

\$ Fourth byte

Question No: 4 (Marks: 1) - Please choose one

7. VESA VEB 2.0 is standard for

\$ High Resolution Mode (Page 180) rep

\$ Low Resolution Mode

\$ Very High Resolution Mode

\$ Medium Resolution Mode

Question No: 5 (Marks: 1) - Please choose one

22. IN DB-9 connector the Data Set ready pin is at

\$ 5

\$ 6 (Page 171) rep

\$ 7

\$ 8

19

Question No: 6 (Marks: 1) - Please choose one

Threads can have function calls, parameters and variables.

\$ global

\$ local (Page 141)

\$ legal

\$ illegal

Question No: 7 (Marks: 1) - Please choose one

How many prevalent calling conventions do exist

\$ 1

\$ 2 (Page 187) rep

\$ 3

\$ 4

Question No: 8 (Marks: 1) - Please choose one

In 9pin DB 9 DSR is assigned on pin number

\$ 4

\$ 5

\$ 6 (Page 171)

\$ 7

Question No: 9 (Marks: 1) - Please choose one

In 9pin DB 9 CTS is assigned on pin number

\$ 6

\$ 7

\$ 8 (Page 171)

\$ 9

Question No: 10 (Marks: 1) - Please choose one

In 9pin DB 9 CD is assigned on pin number

\$ 1 (Page 171)

\$ 2

\$ 3

\$ 4

Question No: 11 (Marks: 1) - Please choose one

A 32bit address register can access upto ...access has .of memory so memory increased a lot.

\$2GB

\$4GB (Page 175)

\$6GB

\$8GB

Question No: 12 (Marks: 1) - Please choose one

in device attribute word which of the following bit decides whether it is a character device or a block device

\$ Bit 12

\$ Bit 13

\$ Bit 14

\$ Bit 15 (Page 166) rep

Question No: 13 (Marks: 1) - Please choose one

9. Which of the following IRQ is cascading interrupt

\$ IRQ 0

\$ IRQ 1

\$ IRQ 2 (Page 114)

\$ IRQ 3

Question No: 14 (Marks: 1) - Please choose one

Which of the following interrupts is used for Arithmetic overflow

\$ INT 1



\$ INT 2

\$ INT 3

\$ INT 4 (Page 106) rep

Question No: 15 (Marks: 1) - Please choose one

An End of Interrupt (EOI) signal is sent by

\$ Handler (Page 114)

\$ Processor

\$ IRQ

\$ PIC

Question No: 16 (Marks: 1) - Please choose one

The number of pins in a parallel port connector are?

\$ 20

\$ 25 (Page 125)

\$ 30

\$ 35

Question No: 17 (Marks: 1) - Please choose one

Which of the following pins of a parallel port connector are grounded?

\$ 10-18

\$ 18-25 (Page 125) rep

\$ 25-32

\$ 32-39

Question No: 18 (Marks: 1) - Please choose one

In NASM an imported symbol is declared with the while and exported symbol is declared with the.....

\$ Global directive, External directive

\$ External directive, Global directive (Page 189) rep

\$ Home Directive, Foreign Directive

\$ Foreign Directive, Home Directive

FINAL TERM EXAMINATION

Fall 2008

CS401- Computer Architecture and Assembly Language Programming

(Session - 1)



Question No: 1 (Marks: 1) - Please choose one

Which of the following is not true about registers:

Their operation is very much like memory

Intermediate results may also be stored in registers.

They are also called scratch pad ram

None of given options. (Correct) repeat

Question No: 2 (Marks: 1) - Please choose one

move [bp], al moves the one byte content of the AL register to the address contained in

BP register in the current

Stack segment (Page 35)

Code segment

Data segment

Extra segment

Question No: 3 (Marks: 1) - Please choose one

In a rotate through carry right (RCR) instruction applied on a 16 bit word effectively there is

16 bits rotation

1 bit rotation

17 bits rotation (Page 53)

8 bits rotation

Question No: 4 (Marks: 1) - Please choose one

The 8088 stack works on

Word sized elements (Page 68)

Byte sized elements

Double sized element

Nibble sized element

Question No: 5 (Marks: 1) - Please choose one

An 8 x 16 font is stored in _____ bytes.

2

4

8

16 (Page 150) rep

Question No: 6 (Marks: 1) - Please choose one
INT 10 is used for _____ services.
RAM
Disk

BIOS video (Page 149)

DOS video

Question No: 7 (Marks: 1) - Please choose one
Priority of IRQ 0 interrupt is
medium
high

highest (Page 114) rep

low

Question No: 8 (Marks: 1) - Please choose one
Threads can have function calls, parameters and _____ variables.
global

local (Page 141) rep

legal

illegal

Question No: 9 (Marks: 1) - Please choose one
How many prevalent calling conventions do exist
1

2 (Page 187) rep

3

4

Question No: 10 (Marks: 1) - Please choose one
In 9pin DB 9 DSR is assigned on pin number

4

5

6 (Page 171) rep

7

Question No: 11 (Marks: 1) - Please choose one
In 9pin DB 9 CTS is assigned on pin number

6

7

8 (Page 171) rep

9

Question No: 12 (Marks: 1) - Please choose one
In 9pin DB 9 CD is assigned on pin number

1 (Page 171) rep

2

3

4

Question No: 13 (Marks: 1) - Please choose one
In 9pin DB 9 RD is assigned on pin number

1

2 (Page 171)

3

4

Question No: 14 (Marks: 1) - Please choose one
in device attribute word which of the following bit decides whether it is a character device or a block device
Bit 12

Bit 13

Bit 14

Bit 15 (Page 166)

Question No: 15 (Marks: 1) - Please choose one
Video services are classified into _____ broad categories

2 (Page 149)

3

4

5

Question No: 16 (Marks: 1) - Please choose one
In STOSB instruction, when DF is clear, SI is

Incremented by 1 (Page 92) rep

Incremented by 2

Decrement by 1



Decrement by 2

Question No: 17 (Marks: 1) - Please choose one

The process of sending signals back and forth is called
Activity

Hand-shaking (Correct)

Interruption

Time clicking

Question No: 18 (Marks: 1) - Please choose one

Which of the following interrupts is used for Arithmetic Overflow?

INT 1

INT 2

INT 3

INT 4 (Page 106) rep

Question No: 19 (Marks: 1) - Please choose one

Which of the following is a special type of interrupt that returns to the same instruction instead of the next instruction?

Divide overflow interrupt (Page 107)

Debug interrupt

Arithmetic overflow interrupt

Change of sign interrupt

Question No: 20 (Marks: 1) - Please choose one

Which of the following IRQs is derived by a timer device?

IRQ 0 (Page 114) rep

IRQ 1

IRQ 2

IRQ 3

Question No: 21 (Marks: 1) - Please choose one

Which of the following IRQs is connected to serial port COM2?

IRQ 0

IRQ 1

IRQ 2

IRQ 3 (Page 114) rep

Question No: 22 (Marks: 1) - Please choose one

An End of Interrupt (EOI) signal is sent by

Handler (Page 114) rep

Processor

IRQ

PIC

Question No: 23 (Marks: 1) - Please choose one

The source registers in OUT is

AL or AX (Page 115) rep

BL or BX

CL or CX

DL or DX

Question No: 24 (Marks: 1) - Please choose one

In programmable interrupt controller which of the following ports is used for selectively enabling or disabling interrupts

19

20

21 (Page 115)

22

Question No: 25 (Marks: 1) - Please choose one

The number of pins in a parallel port connector are?

20

25 (Page 125) rep

30

35

Question No: 26 (Marks: 1) - Please choose one

Which of the following pins of a parallel port connector are grounded?

10-18

18-25 (Page 125) rep

25-32

32-39

Question No: 27 (Marks: 1) - Please choose one

If the decimal number "35" is shifted by two bit to left, the new value will be



35

70

140 (00100011 = 35 , 10001100=140)

17

Question No: 28 (Marks: 1) - Please choose one

A 32bit address register can access upto..... of memory so memory access has increased a lot.

2GB

4GB (Page 175) rep

6GB

8GB

Question No: 29 (Marks: 1) - Please choose one

In NASM an imported symbol is declared with the while and exported symbol is declared with the.....

Global directive, External directive

External directive, Global directive (Page 189) rep

Home Directive, Foreign Directive

Foreign Directive, Home Directive

Question No: 30 (Marks: 1) - Please choose one

Single step interrupt is

Hardware interrupt

Like divide by zero interrupt (Page 133) rep

Like divide by 1 interrupt

Software interrupt

CS401- Computer Architecture and Assembly Language Programming

FINAL TERM EXAMINATION

Spring 2007

Question No: 1 (Marks: 1) - Please choose one

Sun SPARC Processor has a fixed _____ instruction size.

? 16bit

? 32bit (Page 192) rep

? 64bit

? 20bit

Question No: 2 (Marks: 1) - Please choose one

When the subprogram finishes, the _____ retrieves the return

address from the stack and transfers

control to that location.

? RET instruction (Correct)

? CALL instruction

? POP instruction

? Jump instruction

Question No: 3 (Marks: 1) - Please choose one

A 32 bit address register can access upto _____ of memory.

? 1 GB

? 6 GB

? 4 GB (Page 175) rep

? 2 GB

Question No: 4 (Marks: 1) - Please choose one

The value of a segment register when the processor is running under protected mode is called _____

? segment descriptor

? segment selector

? global descriptor table

? protected register (Correct)

Question No: 5 (Marks: 1) - Please choose one

FS and GS are two _____ in protected mode.

? segment registers

? segment selectors (Page 175)

? stack pointers

? register pointers

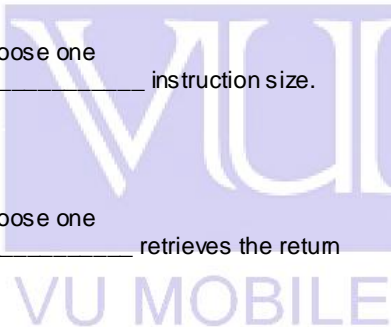
Question No: 6 (Marks: 1) - Please choose one

IRQ 0 interrupt have _____ priority

? low

? medium

? highest (Page 114) rep



? lowest

Question No: 7 (Marks: 1) - Please choose one

IDT stands for _____.

? **interrupt descriptor table (Page 182)**

? individual descriptor table

? inline data table

? interrupt descriptor table

Question No: 8 (Marks: 1) - Please choose one

Every bit of line status in serial port conveys _____ information.

? **different (Page 171)**

? same

? partial

? full

Question No: 9 (Marks: 1) - Please choose one

There are total _____ bytes in a standard floppy disk.

? 1444k

? **1440k (Page 155)**

? 1280k

? 2480k

Question No: 10 (Marks: 1) - Please choose one

An 8x16 font is stored in _____ bytes.

? 8

? **16 (Page 150) rep**

? 4

? 20

Cs401 – Quiz No.3 (June 2012)

Question No: 1(Marks: 1)

Memory address space is selected when which of the following instructions is given to the processor?s

Select correct option:

? **MOV (page 115)**

? DEC

? IN

? ADD

Question No: 2(Marks: 1)

PCB stands for?

Select correct option:

? **Process Control Block (Page 140)**

? Process Clearing Block

? Programmable Counter Block

? Programs Control Block

Question No: 3(Marks: 1)

The input frequency of the programmable interval timer (PIT) is

? **Fixed (Page 122)**

? Depends on processor clock

? Variable

? Depends on hardware attached

Question No: 4(Marks: 1)

Programmable interrupt controller has two ports 20 and 21. Port 20 is the control port while port 21 is.....

? **The Interrupt mask register (Page 115)**

? Interrupt port

? Output port

? Input port

Question No: 5(Marks: 1)

The time interval between two timer ticks is ?

? 40ms

? 45ms

? 50ms

? **55ms (Page 122)**

Question No: 6(Marks: 1)

Which of the following interrupts is used for saving and restoring the registers

? INT6

? Int7

? **Int8 (Page 141)**

? Int0



Question No: 7(Marks: 1)

In programmable interrupt controller which of the following ports is referred as a interrupt mask register?

19

20

21 (Page 115)

22

Question No: 8(Marks: 1)

The programmable interval timer (PIT) has input frequency of

1.193MHZ (Page 122)

2.192MHZ

3.196MHZ

4.198MHZ

Question No: 9(Marks: 1)

Peripheral address space is selected when which of the following instructions is given to the processor?

MOV

IN (Page 155)

Add

Out

Question No: 10(Marks: 1)

Direction flag, the interrupt flag, and the trap flag are used for mathematical operations

not used for mathematical operations (Page 133)

status flags

not status flags

30

Cs401 – Quiz No.3 (June 2012)

Question No: 1(Marks: 1)

The space where all the registers of a task are stored is called the **control block (Page 140)**

process control block

stack

memory

Question No: 2(Marks: 1)

Which of the following interrupt is of highest priority interrupt?

Select correct option:

Keyboard interrupt

Timer interrupt (Page 122)

INT 2

INT 3

Question No: 3(Marks: 1)

The instruction used to read a character from the keyboard port is

in al, 0x60 (Page 125)

out al, 0x60

in al, 0x80

out al, 0x80

Question No: 4(Marks: 1)

Each thread can have their own

execution area

stack (Page 141)

memory

array

Question No: 5(Marks: 1)

All the registers & stack are saved in

Multitasking

multi-processing

function call

BIOS (Correct)

Question No: 6(Marks: 1)

There is no instruction to clear the

Select correct option:

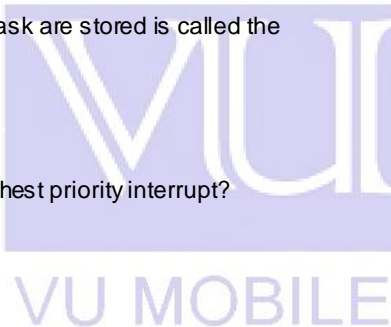
Trap flag (Page 133)

Interrupt flag

Direction flag

None of the above

Question No: 7(Marks: 1)



The interrupt mask register which can be used for selectively enabling or disabling interrupts is associated with
Select correct option:

- Port 19
- Port 20

Port 21 (Page 115)

- Port 22

Question No: 8(Marks: 1)

The parallel port connector is called?

Select correct option:

DB-25 (Page 125)

- BD-25
- DB-24
- BD-24

FINAL TERM EXAMINATION

Spring 2010

CS401- Computer Architecture and Assembly Language Programming

(Session - 3)

Time: 90 min

Marks: 58

Question No: 1 (Marks: 1) - Please choose one

SP is associated with..... By default

SS (Correct)

- DS
- CS
- ES

Question No: 2 (Marks: 1) - Please choose one

Which bit of the attributes byte represents the red component of foreground color

- 5
- 4
- 3

2 (Correct)

Question No: 3 (Marks: 1) - Please choose one

An 8 x 16 font is stored in _____ bytes.

- 2
- 4
- 8

16 (Correct)

Question No: 4 (Marks: 1) - Please choose one

In DOS input buffer, the number of characters actually read on return is stored in _____ byte.

- third
- fourth
- first

second (Correct)

Question No: 5 (Marks: 1) - Please choose one

Which of the following gives the more logical view of the storage medium

BIOS

DOS (Correct)

- Both
- None

Question No: 6 (Marks: 1) - Please choose one

In STOSW instruction, when DF is clear, SI is

Incremented by 1

Incremented by 2 (Correct)

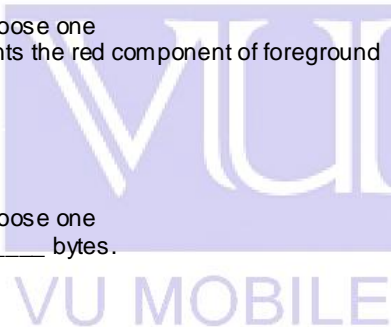
- Decrement by 1
- Decrement by 2

Question No: 7 (Marks: 1) - Please choose one

Which of the following interrupts is Non maskable interrupt

INT 2 (Correct)

- INT 3
- INT 0
- INT 1



Question No: 8 (Marks: 1) - Please choose one
Which of the following IRQs is connected to serial port COM2?

- IRQ 0
- IRQ 1
- IRQ 2

IRQ 3 (Correct)

Question No: 9 (Marks: 1) - Please choose one
The time interval between two timer ticks is ?

- 40ms
- 45ms
- 50ms

55ms (Correct)

Question No: 10 (Marks: 1) - Please choose one
The physical address of IDT(Interrupt Descriptor Table) is stored in _____

GDTR

IDTR

IVT

IDTT

Question No: 11 (Marks: 1) - Please choose one
In NASM an imported symbol is declared with the while and exported symbol is declared with the

Global directive, External directive

External directive, Global directive

Home Directive, Foreign Directive

Foreign Directive, Home Directive

Question No: 12 (Marks: 1) - Please choose one

In 68K processors there is a 32bit that holds the address of currently executing instruction

Program counter

Stack pointer

Register

Stack

Question No: 13 (Marks: 1) - Please choose one

Single step interrupt is

Hardware interrupt

Like divide by zero interrupt

Like divide by 1 interrupt

Software interrupt

Question No: 14 (Marks: 1) - Please choose one

Which of the following is NOT true about registers:

Their operation is very much like memory

Intermediate results may also be stored in registers

They are also called scratch pad ram

None of given options

Question No: 15 (Marks: 1) - Please choose one

Types of jump are:

short, near

short, near, far

near, far

short, far

Question No: 16 (Marks: 1) - Please choose one

MS DOS uses ____ display mode.

Character based

Graphics based

Numeric based

Console based

Question No: 17 (Marks: 1) - Please choose one

Which of the following IRQs is derived by a timer device?

IRQ 0

IRQ 1

IRQ 2

IRQ 3

Question No: 18 (Marks: 1) - Please choose one

In programmable interrupt controller, which of the following ports is referred as a



control port.

- 19
- 20**
- 21
- 22

Question No: 19 (Marks: 1) - Please choose one

INT 21 service 01H is used to read character from standard input with echo. It returns the result in _____ register.

- AL**
- BL
- CL
- BH

Question No: 20 (Marks: 1) - Please choose one

In 9pin DB 9, which pin number is assigned to DSR (DataSet Ready) ?

- 4
- 5
- 6 (Correct)**
- 7

Question No: 21 (Marks: 1) - Please choose one

In 9pin DB 9, which pin number is assigned to TD (Transmitted Data) ?

- 1
- 2
- 3 (Correct)**
- 4

Question No: 22 (Marks: 1) - Please choose one

In 9pin DB 9, Signal ground is assigned on pin number

- 4
- 5 (Correct)**
- 6
- 3

Question No: 23 (Marks: 1) - Please choose one

8088 is a

- 16 bit processor**
- 32 bit processor
- 64 bit processor
- 128 bit processor

Question No: 24 (Marks: 1) - Please choose one

The table index(TI) is set to _____ to access the GDT (Global Descriptor Table).

- 1
- 0 (Correct)**
- 1
- 2

Question No: 25 (Marks: 1) - Please choose one

VESA(Video Electronics Standards Association) organizes 16 color bits for every pixel in

- 5:5:5 format
- 5:6:5 format**
- 6:5:6 format
- 5:6:7 format

Question No: 26 (Marks: 1) - Please choose one

Which flags are NOT used for mathematical operations ?

- Carry, Interrupt and Trap flag.
- Direction, Interrupt and Trap flag.**
- Direction, Overflow and Trap flag.
- Direction, Interrupt and Sign flag.

Question No: 27 (Marks: 2)

Write instruction to allocate space for 32 PCBs.

Ans:

multitasking kernel as a TSR

[org 0x0100]

jmp start

PCB layout:

ax,bx,cx,dx,si,di,bp,sp,ip,cs,ds,ss,es,flags,next,dummy

0, 2, 4, 6, 8,10,12,14,16,18,20,22,24, 26 , 28 , 30



Question No: 28 (Marks: 2)

Define short jump

Ans;

The jump is called a short jump, if the offset is stored in a single byte as in 75 F2 with the opcode 75 and operand F2, the jump is called a short jump. F2 is added to IP as a signed byte

Question No: 29 (Marks: 2)

INT 14 - SERIAL - READ CHARACTER FROM PORT uses which two 8bit registers to return the results ?

Ans;

14 - SERIAL - READ CHARACTER FROM PORT uses these two 8bit registers to return the results:

AH = line status

AL = received character if AH bit 7 clear

Question No: 30 (Marks: 2)

Which registers are used as scratch when we call a function?

Ans:

Following registers are used as scratch when we call a function

•EAX

•ECX

•EDX

Question No: 31 (Marks: 3)

VESA service "INT 10 – VESA – Get SuperVGA Information" uses which registers to return the result?

To return the result, "INT 10 – VESA – Get SuperVGA Information" uses:

Return:

AL = 4 Fh if function supported

AH = status

Question No: 32 (Marks: 3)

Define the protected mode.

When the processor switches into 32bit mode it is called protected mode.

It can be

accessed by turning on least significant bit of a register called CR0

(Control Register 0) and the processor switches into 32bit mode.

All registers in 386 have been extended to 32bits. The new names are

EAX,

EBX,

ECX,

EDX,

ESI,

EDI,

ESP,

EBP,

EIP, and

EFLAGS.

The original names refer to the lower 16bits of these registers. A 32bit address register can access upto 4GB of memory so memory access has increased a lot.

Question No: 33 (Marks: 3)

Describe briefly INT 3 functionality.

The functionality of INT 3 is this , its Debug Interrupt. The special thing about this interrupt is that it has a single byte opcode and not a two byte combination where the second byte tells the interrupt number which allows it to replace any instruction what soever. It is also used by the debugger.

Question No: 34 (Marks: 5)

Read the passage carefully and choose proper word for each blank space from the list given below .

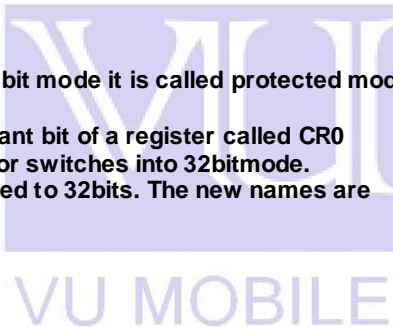
In descriptors the 32bit base is scattered into different places because of compatibility reasons. The limit is stored in 20 bits but thedefines that the limit is in terms of bytes of 4K pages therefore a maximum of 4GB size is possible.

The must be set to signal that this segment is present in memory. DPL is the descriptor privilege level again related to the protection levels in 386.

..... defines that this segment is to execute code in 16bit mode or 32bit mode. is conforming bit that we will not be using.signals

that the segment is readable. A bit is automatically set whenever the segment is accessed.

(A bit, C bit, G bit, D bit, P bit , R bit, B bit)



SOLUTION:

In descriptors the 32bit base is scattered into different places because of compatibility reasons. The limit is stored in 20 bits but theG bit.....defines that the limit is in terms of bytes of 4K pages therefore a maximum of 4GB size is possible. TheP bit..... must be set to signal that this segment is present in memory. DPL is the descriptor privilege level again related to the protection levels in 386.D bit..... defines that this segment is to execute code is 16bit mode or 32bit mode.C..... is conforming bit that we will not be using.R bit.....signals that the segment is readable. A bit is automatically set whenever the segment is accessed.

Question No: 35 (Marks: 5)

Answer the following:

§ What is a device driver?

Ans:

These are operating system extensions which become part of the operating system and extend its services to new devices. Device drivers in DOS are very simple. They just have their services exposed through the file system interface.

Device driver file starts with a header containing a link to the next driver in the first four bytes followed by a device attribute word. The most important bit in the device attribute word is bit 15 which dictates if it is a character device or a block device.

If the bit is zero the device is a character device and otherwise a block device.

Next word in the header is the offset of a strategy routine, and then is the offset of the interrupt routine and then in one byte, the number of units supported is stored.

This information is padded with seven zeroes.

•Strategy routine is called whenever the device is needed

•it is passed a request header. Request header stores the unit requested, the command

•code, space for return value and buffer pointers etc. Important command codes include

1. 0 to initialize,
2. 1 to check media,
3. 2 to build a BIOS parameter block,
4. 4 and 8 for read and write respectively.

For every command the first 13 bytes of request header are same.

§ Why are device drivers necessary, given that the BIOS already has code that communicates with the computer's hardware?

Ans:

These are used for the reason of fast programming execution. device driver takes some RAM and expresses it as a secondary storage device to the operating system. Therefore a new drive is added and that can be browsed to, filed copied to and from just like ordinary drives expect that this drive is very fast as it is located in the RAM. This program cannot be directly executed since it is not a user program.

This must be loaded by adding the line "device=filename.sys" in the "config.sys" file in the root directory.

Question No: 36 (Marks: 5)

Write the code of "break point interrupt routine".

Breakpoint interrupts service routine :

debugISR: push bp

mov bp, sp ;to read cs, ip and flags

push ax

push bx

push cx

push dx

push si

push di

push ds

push es

sti ; waiting for keyboard interrupt

push cs

pop ds ; initialize ds to data segment

mov ax, [bp+4]

mov es, ax ;load interrupted segment in es



```
dec word [bp+2] ; .....decrement the return address
mov di, [bp+2] ; ..... read the return address in di
mov word [opcodepos], di ; ..... remember the return position
mov al, [opcode] ; .....load the original opcode
mov [es:di], al ; ..... restore original opcode there
mov byte [flag], 0 ; .....set flag to wait for key
call clrscr ; ..... clear the screen
mov si, 6 ; .....first register is at bp+6
mov cx, 12 ; ..... total 12 registers to print
mov ax, 0 ; .....start fromrow 0
mov bx, 5 ; .....print at column 5
push ax ; .....row number
push bx ; ..... column number
mov dx, [bp+si]
push dx ; ..... number to be printed
call printnum ; ..... print thenumber
sub si, 2 ; .....point to next register
inc ax ; .....next row number
loop l3 ; .....repeat for the 12 registers
mov ax, 0 ; .....start fromrow 0
mov bx, 0 ; .....start fromcolumn 0
mov cx, 12 ; .....total 12 register names
mov si, 4 ; ..... each name length is 4 chars
mov dx, names ; .....offset of first name in dx
push ax ; ..... row number
push bx ; .....column number
push dx ; .....offset of string
push si ; .....length of string
call printstr ; .....print the string
add dx, 4 ; ..... point tostart of next string
inc ax ; .....new row number
loop l1 ; ..... repeat for 12 register names
or word [bp+6], 0x0100 ; .....set TF in flags image on stack
keywait: cmp byte [flag], 0 ; ..... has a key been pressed
je keywait ; ..... no, check again
pop es
pop ds
pop di
pop si
pop dx
pop cx
pop bx
pop ax
pop bp
iret

start: xor ax, ax
mov es, ax ; .....point es to IVT base
mov word [es:1*4], trapisr ; ..... store offset at n*4
mov [es:1*4+2], cs ; .....store segment at n*4+2
mov word [es:3*4], debugisr ; store offset at n*4
mov [es:3*4+2], cs ; .....store segment at n*4+2
cli ; .....disable interrupts
mov word [es:9*4], kbisr ; .....store offsetat n*4
mov [es:9*4+2], cs ; .....store segment at n*4+2
sti ; .....enable interrupts
```

FINAL TERM EXAMINATION

Spring 2010

CS401- Computer Architecture and Assembly Language Programming (Session- 2)

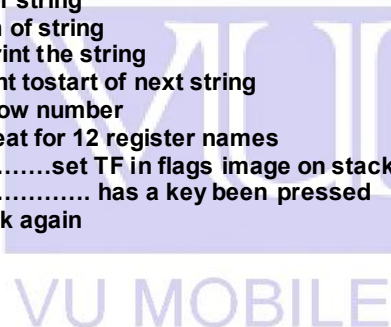
Time: 90 min

Marks: 58

Question No: 1 (Marks: 1) - Please choose one

Suppose AL contains 5 decimal then after two left shifts produces the value as

5 (Correct)



10
15
20

Question No: 2 (Marks: 1) - Please choose one

In graphics mode a location in video memory corresponds to a _____ on the screen.

line

dot

circle

rectangle

Question No: 3 (Marks: 1) - Please choose one

Creation of threads can be

static

dynamic

easy

difficult

Question No: 4 (Marks: 1) - Please choose one

The thread registration code initializes the PCB and adds it to the linked list so that the _____ will give it a turn.

assembler

scheduler

linker

debugger

Question No: 5 (Marks: 1) - Please choose one

VESA VBE 2.0 is a standard for

High resolution Mode

Low resolution Mode

Medium resolution Mode

Very High resolution Mode

Question No: 6 (Marks: 1) - Please choose one

Which of the following gives the more logical view of the storage medium

BIOS

DOS

Both

None

Question No: 7 (Marks: 1) - Please choose one

Which of the following IRQs is derived by a key board?

IRQ 0

IRQ 1

IRQ 2

IRQ 3

Question No: 8 (Marks: 1) - Please choose one

Which of the following IRQs is used for Floppy disk derive?

IRQ 4

IRQ 5

IRQ 6

IRQ 7

Question No: 9 (Marks: 1) - Please choose one

Which of the following pins of a parallel port connector are grounded?

10-18

18-25

25-32

32-39

Question No: 10 (Marks: 1) - Please choose one

The physical address of IDT(Interrupt Descriptor Table) is stored in _____

GDTR

IDTR

IVT

IDTT

Question No: 11 (Marks: 1) - Please choose one

In NASM an imported symbol is declared with the while and exported

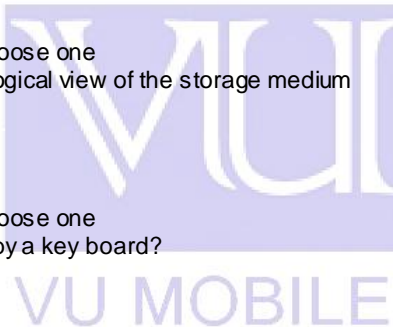
symbol is declared with the

Global directive, External directive

External directive, Global directive

Home Directive, Foreign Directive

Foreign Directive, Home Directive



Question No: 12 (Marks: 1) - Please choose one

In 68K processors there is a program counter (PC) that holds the address of currently executing instruction

- 8bit
- 16bit
- 32bit**
- 64bit

Question No: 13 (Marks: 1) - Please choose one

To reserve 8-bits in memory ____ directive is used.

- db**
- dw
- dn
- dd

Question No: 14 (Marks: 1) - Please choose one

In the “mov ax, 5” 5 is the _____ operand.

source

- destination
- memory
- register

Question No: 15 (Marks: 1) - Please choose one

RETF will pop the segment address in the

CS register

- DS register
- SS register
- ES register

Question No: 16 (Marks: 1) - Please choose one

For the execution of the instruction “DIV BL”, the implied dividend will be stored in

- AX**
- BX
- CX
- DX

Question No: 17 (Marks: 1) - Please choose one

When a number is divided by zero “A Division by 0” interrupt is generated.

Which

instruction is used for this purpose

- INT 0
- INT 1
- INT 2

This interrupt is generated automatically

Question No: 18 (Marks: 1) - Please choose one

INT 21 service 01H is used to read character from standard input with echo. It returns the result in _____ register.

- AL**
- BL
- CL
- BH

Question No: 19 (Marks: 1) - Please choose one

BIOS sees the disks as

logical storage

raw storage

in the form of sectors only

in the form of tracks only

Question No: 20 (Marks: 1) - Please choose one

In 9pin DB 9, which pin number is assigned to CD (Carrier Detect) ?

- 1**
- 2
- 3
- 4

Question No: 21 (Marks: 1) - Please choose one

In 9pin DB 9, Signal ground is assigned on pin number

- 4
- 5**
- 6
- 3



Question No: 22 (Marks: 1) - Please choose one
In 9pin DB 9, RI (Ring Indicator) is assigned on pin number

- 6
- 7
- 8
- 9**

Question No: 23 (Marks: 1) - Please choose one
Motorola 68K processors have 23bit general purpose registers.

- 4
- 8
- 16**
- 32

Question No: 24 (Marks: 1) - Please choose one
When two devices in the system want to use the same IRQ line then what will happen?

- An IRQ Collision
- An IRQ Conflict**
- An IRQ Crash
- An IRQ Blockage

Question No: 25 (Marks: 1) - Please choose one
In the instruction MOV AX, 5the number of operands are

- 1
- 2**
- 3
- 4

Question No: 26 (Marks: 1) - Please choose one
Which flags are NOT used for mathematical operations ?

- Carry, Interrupt and Trap flag.
- Direction, Interrupt and Trap flag.**
- Direction, Overflow and Trap flag.
- Direction, Interrupt and Sign flag.

Question No: 31 (Marks: 3)
List down any three common video services for INT 10 used in text mode.

Ans:
INT 10 - VIDEO - SET TEXT-MODE CURSOR SHAPE
AH = 01h
CH = cursor start and options
CL = bottom scan line containing cursor (bits 0-4)

Question No: 32 (Marks: 3)
How to create or Truncate File using INT 21 Service?

Ans:
INT 21 - TRUNCATE FILE
AH = 3Ch
CX = file attributes
DS:DX -> cs401 filename

Return:
CF= error flag
AX = file handle or error code

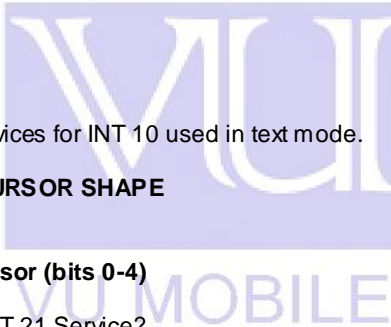
Question No: 34 (Marks: 5)
How to read disk sector into memory using INT 13 service?

Ans:
INT 13 - DISK - READ SECTOR(S) INTO MEMORY :
AH = 02h

AL = number of sectors to read (must be nonzero)
CH = low eight bits of cylinder number
CL = sector number 1-63 (bits 0-5)
high two bits of cylinder (bits 6-7, hard disk only)
DH = head number
DL = drive number (bit 7 set for hard disk)
ES:BX -> data buffer

Return:
CF= error flag
AH = error code
AL = number of sectors transferred

Question No: 36 (Marks: 5)
Write the code of "break point interrupt routine".



Ans:

Breakpoint interrupts service routine :

```

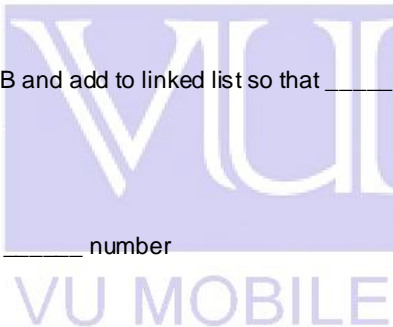
debugISR: push bp
mov bp, sp ; .....to read cs, ip and flags
push ax
push bx
push cx
push dx
push si
push di
push ds
push es
sti ; ..... waiting for keyboard interrupt
push cs
pop ds ; .....initialize ds to data segment
mov ax, [bp+4]
mov es, ax ; .....load interrupted segment in es
dec word [bp+2] ; .....decrement the return address
mov di, [bp+2] ; .....read the return address in di
mov word [opcodepos], di ; ..... remember the return position
mov al, [opcode] ; .....load the original opcode
mov [es:di], al ; ..... restore original opcode there
mov byte [flag], 0 ; .....set flag to wait for key
call clrscr ; ..... clear the screen
mov si, 6 ; .....first register is at bp+6
mov cx, 12 ; .....total 12 registers to print
mov ax, 0 ; .....start from row 0
mov bx, 5 ; .....print at column 5
push ax ; .....row number
push bx ; ..... column number
mov dx, [bp+si]
push dx ; ..... number to be printed
call printnum ; ..... print the number
sub si, 2 ; .....point to next register
inc ax ; .....next row number
loop l3 ; .....repeat for the 12 registers
mov ax, 0 ; .....start from row 0
mov bx, 0 ; .....start from column 0
mov cx, 12 ; .....total 12 register names
mov si, 4 ; ..... each name length is 4 chars
mov dx, names ; .....offset of first name in dx
push ax ; ..... row number
push bx ; .....column number
push dx ; .....offset of string
push si ; .....length of string
call printstr ; .....print the string
add dx, 4 ; ..... point to start of next string
inc ax ; .....new row number
loop l1 ; ..... repeat for 12 register names
or word [bp+6], 0x0100 ; .....set TF in flags image on stack
keywait:cmp byte [flag], 0 ; ..... has a key been pressed
je keywait ; ..... no, check again
pop es
pop ds
pop di
pop si
pop dx
pop cx
pop bx
pop ax
pop bp
iret
start:xor ax, ax
mov es, ax ; .....point es to IVT base
mov word [es:1*4], trapISR ; ..... store offset at n*4
    
```



mov [es:1*4+2], cs ;store segment at n*4+2
mov word [es:3*4],debugisr ; store offset at n*4
mov [es:3*4+2], cs ;store segment at n*4+2
cli ;disable interrupts
mov word [es:9*4], kbisr ;store offset at n*4
mov [es:9*4+2], cs ;store segment at n*4+2
sti ;enable interrupts

Assembly Language Paper – CS401 Paper attempted : 22 Feb 2010 at 05:00 PM

1. BL contains 5 decimal then after right shift , BL will become
 - 3
 - 2.5
 - 5
 - **10**
2. 8 * 16 font is stored in _____ bytes.
 - 3
 - 4
 - 8
 - **16**
3. In DOS input buffer , number of characters actually read on return is stored in
 - First byte
 - **Second byte**
 - Third byte
 - Fourth byte
4. IRQ 0 has priority
 - Low
 - High
 - **Highest**
 - Medium
5. Thread registration code initialize PCB and add to linked list so that _____ will give it turn.
 - Assembler
 - Linker
 - **Scheduler**
 - Debugger
6. Traditional calling conventions are in _____ number
 - 1
 - **2**
 - 3
 - 4
7. VESA VEB 2.0 is standard for
 - **High Resolution Mode**
 - Low Resolution Mode
 - Very High Resolution Mode
 - Medium Resolution Mode
8. To clear direction flag which instruction is used
 - **Cld**
 - Clrd
 - Cl df
 - Clr df
9. In STOSW instruction , When DI is cleared , SI is
 - Incremented by 1
 - **Incremented by 2**
 - Decremented by 1
 - Decremented by 2
10. Interrupt that is used in debugging with help of trap flag is
 - INT 0
 - **INT 1**
 - INT 2
 - INT 3
11. INT for arithmetic overflow is
 - INT 1
 - INT 2
 - INT 3
 - **INT 4**



12. IRQ referred as
- **Eight Input signals**
 - One Input signal
 - Eight Output signals
 - One output signal
13. IRQ for keyboard is 1
14. IRQ for sound card is 5
15. IRQ for floppy disk is 6
16. IRQ with highest priority is
- Keyboard IRQ
 - **Timer IRQ**
 - Sound Card
 - Floppy Disk
17. Pin for parallel port ground is
- 10-18
 - **18-25**
 - 25-32
 - 32-39
18. The physical address of Interrupt Descriptor Table (IDT) is stored in
- GDTR
 - **IDTR**
 - IVT
 - IDTT
19. Execution of "RET 2" results in?
20. CX register is
- **Count register**
 - Data register
 - Index register
 - Base register
21. OUT instruction uses AX as source register.
22. IN DB-9 connector the Data Set ready pin is at
- 5
 - **6**
 - 7
 - 8
23. If two devices uses same IRQ then there is
- IRQ collision
 - **IRQ conflict**
 - IRQ drop
24. VESA organizes 16 bit color for every pixel in ratio
- 5:5:5
 - **5:6:5**
 - 6:5:6
 - 5:6:7
25. Division by zero is done by which interrupt.
Interrupt 0.

26. Define Hardware Interrupt & I/O ports (5 marks)

27. Five BIOS video services used in text mode (3 marks)

INT 10 - VIDEO - SET TEXT-MODE CURSOR SHAPE

AH = 01h

CH = cursor start and options

CL = bottom scan line containing cursor (bits 0-4)

INT 10 - VIDEO - SET CURSOR POSITION

AH = 02h

BH = page number

0-3 in modes 2&3

0-7 in modes 0&1

0 in graphics modes

DH = row (00h is top)

DL = column (00h is left)

INT 10 - VIDEO - SCROLL UP WINDOW

AH = 06h

AL = number of lines by which to scroll up (00h = clear entire window)



BH = attribute used to write blank lines at bottom of window

CH, CL = row, column of window's upper left corner

DH, DL = row, column of window's lower right corner

INT 10 - VIDEO - SCROLL DOWN WINDOW

AH = 07h

AL = number of lines by which to scroll down (00h=clear entire window)

BH = attribute used to write blank lines at top of window

CH, CL = row, column of window's upper left corner

DH, DL = row, column of window's lower right corner

INT 10 - VIDEO - WRITE CHARACTER AND ATTRIBUTE AT CURSOR

POSITION

AH = 09h

AL = character to display

BH = page number

BL = attribute (text mode) or color (graphics mode)

CX = number of times to write character

28. DOS allocate memory for program execution and then de-allocate , explain memory management in DOS (10 marks)

An important point to understand here is that whenever a program is executed in DOS all available memory is allocated to it. No memory is available to execute any new programs. Therefore memory must be freed using explicit calls to DOS for this purpose before a program is executed.

Important services in this regard are listed below.

INT 21 - ALLOCATE MEMORY

AH = 48h

BX = number of paragraphs to allocate

Return:

CF= error flag

AX = segment of allocated block or error code in case of error

BX = size of largest available block in case of error

INT 21 - FREE MEMORY

AH = 49h

ES = segment of block to free

Return:

CF= error flag

AX = error code

INT 21 - RESIZE MEMORY BLOCK

AH = 4Ah

BX = new size in paragraphs

ES = segment of block to resize

Return:

CF= error flag

AX = error code

BX = maximum paragraphs available for specified memory block

INT 21 - LOAD AND/OR EXECUTE PROGRAM

AH = 4Bh

AL = type of load (0 = load and execute)

DS:DX -> ASCIZ program name (must include extension)

ES:BX -> parameter block

Return:

CF= error flag

AX = error code

The format of parameter block is as follows.

Offset Size Description

00h WORD segment of environment to copy for child process

(copy caller's environment if 0000h)

02h DWORD pointer to command tail to be copied into child's PSP

06h DWORD pointer to first FCB to be copied into child's PSP

0Ah DWORD pointer to second FCB to be copied into child's PSP

0Eh DWORD (AL=01h) will hold subprogram's initial SS:SP on return

12h DWORD (AL=01h) will hold entry point (CS:IP) on return

There was fill in blanks question with 10 marks. The choice was given at bottom.

29. Serial Port is also accessible via I/O ports , COM 1 is accessible via ports 3F8-3FF while COM 2 is accessible via 2F8 -2FF.



The first register at 3F8 is the **Transmitter** holding register if written to and the receiver **buffer** register if read from. Other register of our interest include 3F9 whose **Bit 0** must be set to enable received data available interrupt and **Bit 1** must be set to enable transmitter holding register empty interrupt. (Transmitter , COM1, I/O ports , COM2. bit 0 , Buffer , 3FA)

FINAL TERM EXAMINATION SPRING 2010
CS401 COMPUTER ARCHITECTURE AND ASSEMBLY
LANGUAGE PROGRAMMING
9 AUG 2010

Question No: 1 (Marks: 1) - Please choose one
When a 32 bit number is divided by a 16 bit number, the quotient is of

- 32 bits
- 16 bits
- 8 bits
- **4 bits**

Question No: 2 (Marks: 1) - Please choose one
In the instruction MOV AX, 5 the number of operands are

- **1**
- 2
- 3
- 4

Question No: 3 (Marks: 1) - Please choose one
3. In DOS input buffer , number of characters actually read on return is stored in

- First byte
- **Second byte**
- Third byte
- Fourth byte

Question No: 4 (Marks: 1) - Please choose one
7. VESA VEB 2.0 is standard for

- **High Resolution Mode**
- Low Resolution Mode
- Very High Resolution Mode
- Medium Resolution Mode

Question No: 5 (Marks: 1) - Please choose one
22. IN DB-9 connector the Data Set ready pin is at

- 5
- **6**
- 7
- 8

Question No: 6 (Marks: 1) - Please choose one
Threads can have function calls, parameters and variables.

- global
- **local**
- legal
- illegal

Question No: 7 (Marks: 1) - Please choose one
How many prevalent calling conventions do exist

- 1
- **2**
- 3
- 4

Question No: 8 (Marks: 1) - Please choose one
In 9pin DB 9 DSR is assigned on pin number

- 4
- 5
- **6**
- 7

Question No: 9 (Marks: 1) - Please choose one
In 9pin DB 9 CTS is assigned on pin number

- 6
- 7
- **8**
- 9

Question No: 10 (Marks: 1) - Please choose one



In 9pin DB 9 CD is assigned on pin number

- 1
- 2
- 3
- 4

Question No: 11 (Marks: 1) - Please choose one

A 32bit address register can access uptoof memory so memory access has increased a lot.

- 2GB
- **4GB**
- 6GB
- 8GB

Question No: 12 (Marks: 1) - Please choose one

in device attribute word which of the following bit decides whether it is a charater device or a block device

- Bit 12
- Bit 13
- Bit 14
- **Bit 15**

Question No: 13 (Marks: 1) - Please choose one

9. Which of the following IRQ is cascading interrupt

- IRQ 0
- IRQ 1
- **IRQ 2**
- IRQ 3

Question No: 14 (Marks: 1) - Please choose one

Which of the following interrupts is used for Arithmeticoverflow

- INT 1
- INT 2
- INT 3
- **INT 4**

Question No: 15 (Marks: 1) - Please choose one

An End of Interrupt (EOI) signal is sent by

- **Handler**
- Processor
- IRQ
- PIC

Question No: 16 (Marks: 1) - Please choose one

The number of pins in a parallel port connector are?

- 20
- **25**
- 30
- 35

Question No: 17 (Marks: 1) - Please choose one

Which of the following pins of a parallel port connector are grounded?

- 10-18
- **18-25**
- 25-32
- 32-39

Question No: 18 (Marks: 1) - Please choose one

A 32bit address register can access upto of memory so memory access has increased a lot.

- 2GB
- **4GB**
- 6GB
- 8GB

Question No: 19 (Marks: 1) - Please choose one

9 Pin Serial connector is called

- DB-7
- **DB-9**
- DB-25
- 9DB-5

Question No: 20 (Marks: 1) - Please choose one

In NASM an imported symbol is declared with the while and exported symbol is declared with the



- Global directive, External directive
- **External directive, Global directive**
- Home Directive, Foreign Directive
- Foreign Directive, Home Directive

Question No: 21 (Marks: 2)

Write brief about INT 13 – Extended READ SERVICES

Question No: 22 (Marks: 2)

What is Interrupt flag?

Question No: 23 (Marks: 3)

Give the name of any two descriptors

Question No: 24 (Marks: 3)

It is the part of Multitasking TSR caller, what will do these instructions comment against them (3)

Mov al, [chars+bx]

Mov [es:40],al

Inc bx

Question No: 25 (Marks: 5)

Write Data Movement and Arithmetic Instructions of Motorola 68K Processor.

Question No: 26 (Marks: 5)

Write assembly program for “Break Interrupt Service Routine”

Today's CS401 Exam

final 2010 spring

REPLIED BY: MALIK RIZWAN ALI

Question No: 1 (Marks: 1) - Please choose one

The physical address of the stack is obtained by

SS:SI combination

SS:SP combination

ES:BP combination

ES:SP combination

Question No: 2 (Marks: 1) - Please choose one

Value of AH in the write Graphics pixel service is

0Ch

0Bh

1Ch

2Ch

Question No: 3 (Marks: 1) - Please choose one

Threads can have function calls, parameters and _____ variables.

global

local

legal

illegal

Question No: 4 (Marks: 1) - Please choose one

Creation of threads can be

static

dynamic

easy

difficult

Question No: 5 (Marks: 1) - Please choose one

How many prevalent calling conventions do exist

1

2

3

4

Question No: 6 (Marks: 1) - Please choose one

VESA VBE 2.0 is a standard for

High resolution Mode

Low resolution Mode

Medium resolution Mode

Very High resolution Mode

Question No: 7 (Marks: 1) - Please choose one

The serial port connection is a ----- connector

9pin DB 9

8pin DB 9

3pin DB 9



9pin DB 5

Question No: 8 (Marks: 1) - Please choose one

Which of the following gives the more logical view of the storage medium

BIOS

DOS

Both

None

Question No: 9 (Marks: 1) - Please choose one

In STOSB instruction, when DF is clear, SI is

Incremented by 1

Incremented by 2

Decrement by 1

Decrement by 2

Question No: 10 (Marks: 1) - Please choose one

After the execution of STOSW the CX will be

Decrement by 1

Decrement by 2

Incremented by 1

Incremented by 2

Question No: 11 (Marks: 1) - Please choose one

IRQ is referred to

Eight input signals

One output signal

One input signals

Eight output signals

Question No: 12 (Marks: 1) - Please choose one

Which of the following IRQs is derived by a key board?

IRQ 0

IRQ 1

IRQ 2

IRQ 3

Question No: 13 (Marks: 1) - Please choose one

Which of the following IRQs is connected to serial port COM1?

IRQ 4

IRQ 5

IRQ 6

IRQ 7

Question No: 14 (Marks: 1) - Please choose one

The physical address of IDT(Interrupt Descriptor Table) is stored in _____

GDTR

IDTR

IVT

IDTT

Question No: 15 (Marks: 1) - Please choose one

Assembly language is:

Low-level programming language

High-level programming language

Also known as machine language

Not considered closer to the computer

Question No: 16 (Marks: 1) - Please choose one

The number of bits required to access 1MB of memory are

16 bits

32 bits

Depends on the processor architecture

20 bits

Question No: 17 (Marks: 1) - Please choose one

In STOSB instruction, SI is decremented or incremented by

3

2

1

4

Question No: 18 (Marks: 1) - Please choose one

In programmable interrupt controller, which of the following ports is referred as a control port.

19

20



21

22

Question No: 19 (Marks: 1) - Please choose one

INT 21 service 01H is used to read character from standard input with echo. It returns the result in _____ register.

AL

BL

CL

BH

Question No: 20 (Marks: 1) - Please choose one

In device attribute word, which of the following bit decides whether it is a character device or a block device

Bit 12

Bit 13

Bit 14

Bit 15

Question No: 21 (Marks: 1) - Please choose one

In 9pin DB 9, which pin number is assigned to CTS (Clear To Send) ?

6

7

8

9

Question No: 22 (Marks: 1) - Please choose one

In 9pin DB 9, which pin number is assigned to RD (Received Data) ?

1

2

3

4

Question No: 23 (Marks: 1) - Please choose one

VESA(Video Electronics Standards Association) organizes 16 color bits for every pixel in

5:5:5 format

5:6:5 format

6:5:6 format

5:6:7 format

Question No: 24 (Marks: 1) - Please choose one

Motorola 68K processors have 23bit general purpose registers.

4

8

16

32

Question No: 25 (Marks: 1) - Please choose one

Programmable Interrupt Controller (PIC) has

One input signals and eight output signals

One input signal and one output signal

Eight input signals and one output signals

Eight input signals and eight output signals

Question No: 26 (Marks: 1) - Please choose one

Video services are classified into..... broad categories.

5

4

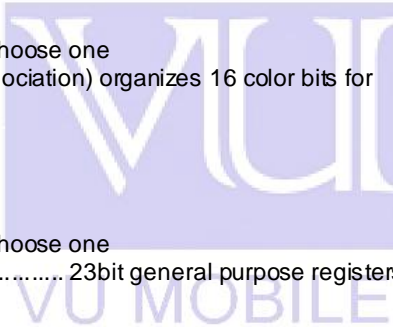
3

2

Question No: 27 (Marks: 2)

What are device drivers? give your answer in two to three lines.

Device drivers are operating system extensions that become part of the operating system and extend its services to new devices. Device drivers in DOS are very simple. They just have their services exposed through the file system interface. Device driver file starts with a header containing a link to the next driver in the first four bytes followed by a device attribute word. The most important bit in the device attribute word is bit 15 which dictates if it is a character device or a block device. If the bit is zero the device is a character device and otherwise a block device. Next word in the header is the offset of a strategy routine, and then is the offset of the interrupt routine and then in one byte, the number of units supported is stored. This information is padded with seven zeroes. Strategy routine is called whenever the device is needed and it is passed a request header. Request header stores the unit requested, the command code, space for return value and buffer pointers etc. Important command codes include 0 to initialize, 1 to check media, 2 to build a



BIOS parameter block, 4 and 8 for read and write respectively. For every command the first 13 bytes of request header are same.

Question No: 28 (Marks: 2)
For what purpose "INT 1" is reserved ?

INT 1 vector occupies location 4, 5, 6, and 7 INT 1, Trap, Single step Interrupt
This interrupt is used in debugging with the trap flag. If the trap flag is set the Single Step Interrupt is generated after every instruction. By hooking this interrupt a debugger can get control after every instruction and display the registers etc. 8088 was the first processor that has this ability to support debugging.

Question No: 29 (Marks: 2)
How interrupts are handled in protected mode.

Switching processor in the newer 32bit mode is a very easy task. Just turn on the least significant bit of a new register called CR0 (Control Register 0) and the processor switches into 32bit mode called protected mode. However manipulations in the protected mode are very different from those in the read mode. Handling interrupts in protected mode is also different. Instead of the IVT at physical address 0 there is the IDT (interrupt descriptor table) located at physical address stored in IDTR, a special purpose register. The IDTR is also a 48bit register similar in structure to the GDTR and loaded with another special instruction LGDT.

Question No: 30 (Marks: 2)
Which bit of acknowledge is used to generate IRQ7

Pin 10, the ACK pin, is normally used by the printer to acknowledge the receipt of data and show the willingness to receive more data. Signaling this pin generates IRQ 7 if enabled in the PIC and in the parallel port controller. Pin 18-25 are ground and must be connected to the external circuit ground to provide the common reference point otherwise they won't understand each other voltage levels.

Question No: 31 (Marks: 3)
Write the name three flags which are not used for mathematical operations.

The three flags not used for mathematical operations are the direction flag, the interrupt flag and the trap flag.

Question No: 32 (Marks: 3)
"INT 13 - DISK - GET DRIVE PARAMETERS " uses which registers to return error flag and error number.

INT 13 - DISK - GET DRIVE PARAMETERS
AH = 08h
DL = drive (bit 7 set for hard disk)
Return:
CF = error flag
AH = error code

Question No: 33 (Marks: 3)
Who is responsible for removing the parameter from the stack when we call a function in C and Pascal?

In C the caller removes the parameter while in Pascal the callee removes them. The C scheme has reasons pertaining to its provision for variable number of arguments.

Question No: 34 (Marks: 5)
Read the passage carefully and choose proper word for each blank space from the list given below .

In descriptors the 32bit base is scattered into different places because of compatibility reasons. The limit is stored in 20 bits but thedefines that the limit is in terms of bytes of 4K pages therefore a maximum of 4GB size is possible. The must be set to signal that this segment is present in memory. DPL is the descriptor privilege level again related to the protection levels in 386. defines that this segment is to execute code is 16bit mode or 32bit mode. is conforming bit that we will not be using.signals that the



segment is readable. A bit is automatically set whenever the segment is accessed.

(A bit, C bit, G bit, D bit, P bit, R bit, B bit)

Question No: 35 (Marks: 5)

Write assembly language instructions to set the timer interrupt frequency at 1 ms.

Question No: 36 (Marks: 5)

In the context of " INT 13 - DISK - WRITE DISK SECTOR(S)" fill the blanks by choosing the correct answer against each blank space from the list given at the bottom.

AH =

AL =

CH =

CL = sector number 1-63 (bits 0-5)

high two bits of cylinder (bits 6-7, hard disk only)

DH =

DL = drive number (bit 7 set for hard disk)

ES:BX ->

CS401- Computer Architecture and Assembly Language Programming
FINAL TERM EXAMINATION
Fall 2012

Q1. Define Stack Data Structure? 2 marks

Answer:- (Page 67)

Stack is a data structure that behaves in a first in last out manner. It can contain many elements and there is only one way in and out of the container. When an element is inserted it sits on top of all other elements and when an element is removed the one sitting at top of all others is removed first

Q2. How many broad categories video services are classified? 2 marks

Answer:- (Page 149)

Video services are classified into two broad categories; graphics mode services and text mode services.

Q3. What is programmer view of processor? 2 marks

Answer:- (Page 32)

The processor will blindly go there, where we mention even if it contains data and not code

Q4. INT-14-Serial-READ CHARACTER FROM PORT uses which two 8-bit registers to return to result? 2 marks

Answer:- (Page 172)

Return:

AH = line status

AL = received character if AH bit 7 clear

Q5. Difference between two instructions? 3 Marks

mov byte [num 1],5

mov word [num 1],5

Answer:-

In first instruction, The variable num 1 is treated as a byte and similarly 5 is also treated as byte.

In 2nd instruction, The variable num 1 is treated as a word and similarly 5 is also treated as word.

Q6. Write two different modes of video services of BIOS? Differentiate between both modes? 3 Marks

Answer:- (Page 149)

Video services are classified into two broad categories; graphics mode services and text mode services. In graphics mode a location in video memory corresponds to a dot on the screen. In text mode this relation is not straightforward. The video memory holds the ASCII of the character to be shown and the actual shape is read from a font definition stored elsewhere in memory

Q7. Define Triple Fault? 3 Marks

Q8. Difference between roles of segment-selector and segment-descriptor? 3 Marks



Answer:- (Page 175)

Role of selector is to select on descriptor from the table of descriptors and the role of descriptor is to define the actual base address.

Q9. How value of Stack pointer (SP) changes after every PUSH or POP instructions? 5 Marks

Answer:- (Page 68)

Whenever an element is pushed on the stack SP is decremented by two and when we pop from it, it increments by 2 as in case of decrementing stack. A decrementing stack moves from higher addresses to lower addresses as elements are added in it

Q10. How to write disk sector using INT 13 service? 5 Marks

Answer:- (Page 156)

INT 13 - DISK - WRITE DISK SECTOR(S)

AH = 03h

AL = number of sectors to write (must be nonzero)

CH = low eight bits of cylinder number

CL = sector number 1-63 (bits 0-5)

high two bits of cylinder (bits 6-7, hard disk only)

DH = head number

DL = drive number (bit 7 set for hard disk)

ES:BX -> data buffer

Return:

CF = error flag

AH = error code

AL = number of sectors transferred

Q11. Write down instructions for data movement and arithmetic operations in Motorola 68K Processor?

5 Marks

Answer:- (Page 191)

Data Movement

EXG D0, D2

MOVE.B (A1), (A2)

MOVE.A (2222).L, A4

MOVEQ #12, D7

Arithmetic

ADD D7, (A4)

CLR (A3) (set to zero)

CMP (A2), D1

ASL, ASR, LSL, LSR, ROR, ROL, ROXL, ROXR (shift operations)



Q12. How to load program using INT21 service? 5 Marks

Answer:- (Page 165)

INT 21 - LOAD AND/OR EXECUTE PROGRAM

AH = 4Bh

AL = type of load (0 = load and execute)

DS:DX -> ASCII program name (must include extension)

ES:BX -> parameter block

Return:

CF = error flag

AX = error code

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Difference between serial and parallel communication.

Answer:- (Page 171)

Serial port is a way of communication among two devices just like the parallel port. The basic difference is that whole bytes are sent from one place to another in case of parallel port while the bits are sent one by one on the serial port in a specially formatted fashion.

Write brief about INT 13 – Extended READ SERVICES

Answer:- (Page 157)

INT 13 - INT 13 Extensions - EXTENDED READ

AH = 42h
DL = drive number
DS:SI -> disk address packet
Return:
CF = error flag
AH = error code

Describe briefly INT 3 functionality.

Answer:- (Page 133)
INT 3 is a Debug Interrupt. INT 3 has a single byte opcode so it can replace any instruction. This allows it to replace any instruction whatsoever. This is also called break point interrupt.

How to create or Truncate File using INT 21 Service?

Answer:- (Page 161)
INT 21 - CREATE OR TRUNCATE FILE

AH = 3Ch
CX = file attributes
DS:DX -> ASCIZ filename
Return:
CF = error flag
AX = file handle or error code

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Q1) define condition when ZF is set or clear? 2 marks

Answer:- (Page 41)

When the source is subtracted from the destination and both are equal the result is zero and therefore the zero flag is set.

Q2) types of User descriptor?

Q3) system descriptor?

Answer:- (Page 182)

The S bit tells that this is a system descriptor

Q4) define interrupt INT 0*80

Answer:- (Page 145)

int 0x80 ; multitasking kernel interrupt

Q5) draw serial port connector? 5marks

Answer:- (Page 171)

Q6) define extended ADD with carry? 5 marks

Answer:- (Page 57)

The instruction is ADC or "add with carry." Normal addition has two operands and the second operand is added to the first operand. However ADC has three operands. The third implied operand is the carry flag. The ADC instruction is specifically placed for extending the capability of ADD. Numbers of any size can be added using a proper combination of ADD and ADC. ADC first adds the carry flag to AX and then adds BX to AX. Therefore the last carry is also included in the result.

Q7) data movement? 5 marks

Answer:- (Page 13)

These instructions are used to move data from one place to another. These places can be registers, memory, or even inside peripheral devices. Some examples are:

mov ax, bx
lad 1234

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Q- What is speed of multitasking?

Answer:- (Page 143)



When new threads are added, there is an obvious slowdown in the speed of multitasking. To improve that, We can change the timer interrupt frequency. The following can be used to set to an approximately 1ms interval.

```
mov ax, 1100  
out 0x40, al  
mov al, ah  
out 0x40, al
```

This makes the threads look faster. However the only real change is that the timer interrupt is now coming more frequently

Q- What is the function of ES and DS in video mode?

Answer:- (Page 81)

Both DS and ES can be used to access the video memory. However we commonly keep DS for accessing our data, and load ES with the segment of video memory.

Q-Device drivers and its routine

Answer:- (Page 166)

Device drivers are operating system extensions that become part of the operating system and extend its services to new devices.

Q-INT 13 Read sector into memory

Answer:- (Page 156)

INT 13 - DISK - READ SECTOR(S) INTO MEMORY

AH = 02h

AL = number of sectors to read (must be nonzero)

CH = low eight bits of cylinder number

CL = sector number 1-63 (bits 0-5)

high two bits of cylinder (bits 6-7, hard disk only)

DH = head number

DL = drive number (bit 7 set for hard disk)

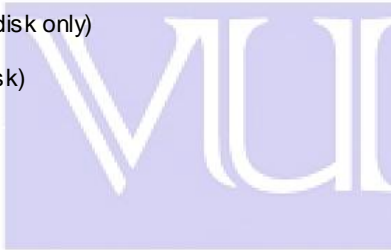
ES:BX -> data buffer

Return:

CF = error flag

AH = error code

AL = number of sectors transferred



Q-SCAS instruction? How it checks null string?

Answer:- (Page 92,95)

SCAS compares a source byte or word in register AL or AX with the destination string element addressed by

ES:DI and updates the flag. We use SCASB with REPNE and a zero in AL to find a zero byte in the string. In

CX we load the maximum possible size, which are 64K bytes.

Q-Function of 9 pin DB 9 Connectors?

Answer:- (Page 171)

- 1 – Carrier Detect
- 2 – Received Data
- 3 – Transmitted
- 4 – Data Terminal Ready
- 5 – Signal Ground
- 6 – Data Set Ready
- 7 – Request to Send
- 8 – Clear to Send
- 9 – Ring Indicator

Q-What flags are used in AND operation

Answer:-

Affected Flag of AND are:

CF, OF, PF, SF, ZF and AC.

Q-What do you mean by calling conventions?

Answer:- (Page 187)

To interface an assembly routine with a high level language program means to be able to call functions back and forth. And to be able to do so requires knowledge of certain behavior of the HLL when calling functions. This behavior of calling functions is called the calling conventions of the language. Two prevalent calling conventions are the C calling convention and the Pascal calling convention.

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Q No 1: Why we say that stack behaves like LIFO? (Marks 2)

Answer:-

Because the structure of stack is based on first in last out. The value which we push last on the stack should be pop first.

Q No2: What are the services provided by INT 0x18? (Marks 2)

Q No3: Which register's used by "INT 21-CREATE OR TRUNCATE FILE" to read service number and file attributes? (Marks 2)

Answer:-

AH = 3Ch

CX = file attributes

DS:DX -> ASCIZ filename

Q No4: What do you mean by faulty instruction? (Marks 2)

Q No 5: Which instructions are to call a subroutine and to get back to the same point where the function was called? Explain these instruction with help of an Examples.(Marks 3)

Answer:- (Page 64)

CALL is used to call a subroutine and to get back RET is used. CALL takes a label as argument and execution starts from that label, until the RET instruction is encountered and it takes execution back to the instruction following the CALL.

FOR EXAMPLE:

```
[org 0x0100]
```

```
jmp start
```

```
num: dw 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20
```

```
sum: add dx, [num+bx]
```

```
add bx,2
```

```
cmp bx,40
```

```
jne sum
```

```
ret
```

```
start: mov dx,0
```

```
mov bx,0
```

```
call sum
```

```
mov ax,0x4c00
```

```
int 0x21
```



Q No6: With reference to the multitasking program "TSR Caller" writes against each instruction what they do. (Marks 3)

```
MOVE al, [chars+bx]
```

```
Move [es: 40], al
```

```
INC bx
```

Answer:- (Page 146)

```
MOVE al, [chars+bx]
```

It will read next character from the declared variable char.

```
Move [es: 40], al
```

Answer: It will print the data at the specified place

```
INC bx
```

Answer: It will increment the register bx by 1

Q No7: Consider the function "int divide (int divided, int divisor)" declared in C, write the code to call this function from assembly language? (Marks 3)

Answer:- (Page 187)

To call this function from assembly we have to write.

```
push dword [mydivisor]
```

```
push dword [mydividend]
```

```
call _divide
```

```
add esp, 8
```

```
; EAX holds the answer
```

Q No 8: How many type of Granularity are there? (Marks 3)

Answer:- click here for detail

In particular two types of granularity have been delineated
aggregation and abstraction.

Q No 9: Write an assembly language program that clears the computer screen? (marks 5)

Answer:- (Page 82)

; clear the screen

[org 0x0100]

mov ax, 0xb800 ; load video base in ax

mov es, ax ; point es to video base

mov di, 0 ; point di to top left column

nextchar: mov word [es:di], 0x0720 ; clear next char on screen

add di, 2 ; move to next screen location

cmp di, 4000 ; has the whole screen cleared

jne nextchar ; if no clear next position

mov ax, 0x4c00 ; terminate program

int 0x21

Q No 10: Write an assembly language program for drawing a line in graphic mode of video service?
(Marks 5)

Answer:- (Page 152)

; draw line in graphics mode

[org 0x0100]

mov ax, 0x000D ; set 320x200 graphics mode

int 0x10 ; bios video services

mov ax, 0x0C07 ; put pixel in white color

xor bx, bx ; page number 0

mov cx, 200 ; x position 200

mov dx, 200 ; y position 200

l1: int 0x10 ; bios video services

dec dx ; decrease y position

loop l1 ; decrease x position and repeat

mov ah, 0 ; service 0 – get keystroke

int 0x16 ; bios keyboard services

mov ax, 0x0003 ; 80x25 text mode

int 0x10 ; bios video services

mov ax, 0x4c00 ; terminate program

int 0x21



Q No 11: Write down the movement instruction for SUN SPARK processor? Provide at least two examples? (Marks 5)

Answer:- (Page 193)

Data Movement

LDSB [rn], rn (load signed byte)

LDUW [rn], rn (load unsigned word)

STH [rn], rn (store half word)

Q No12: What are the different registers setting values required to initialize the serial port? (Marks 5)

Answer:- rep

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Sun Spark Properties? 5

Answer:- (Page 192)

SPARC stands for Scalable Processor Architecture. SPARC is a 64bit processor. Its byte order is user settable and even on a per program basis. There are 8 global registers and 8 alternate global registers. One of them is active at a time and accessible as g0-g7. SPARC introduces a concept of register window. One window is 24 registers and the active window is pointed to by a special register called Current Window Pointer (CWP).

DB 9 Connect Diagram? 5

Answer:- rep

Base Register Function?5

Answer:- (Page 35)

A base register is used in brackets and the actual address accessed depends on the value contained in that register. For example “mov [bx], ax” moves the two byte contents of the AX register to the address contained in the BX register in the current data segment. The instruction “mov [bp], al” moves the one byte content of the AL register to the address contained in the BP register in the current stack segment.

Chargen Services Attributes? 5

Answer:- (Page 150)

INT 10 - VIDEO - GET FONT INFORMATION

AX = 1130h

BH = pointer specifier

Return:

ES:BP = specified pointer

CX = bytes/character of on-screen font

DL = highest character row on screen

Difference SHR&SAR? 2

Answer:- (Page 150)

The sign bit is NOT retained in SHR operation while in SAR The sign bit is retained.

Imported and exported symbols in NASM? 2

Answer:- (Page 189)

In NASM an imported symbol is declared with the extern directive while and exported symbol is declared with the global directive.

Int 21 Create or Truncate File? 3

Answer:- rep

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What is CALL instruction work?

Answer:- (Page 64)

CALL takes a label as argument and execution starts from that label, until the RET instruction is encountered

and it takes execution back to the instruction following the CALL. The RET

works regardless of the CALL and

the CALL works regardless of the RET.

SUN SPARC processor.....three basic characteristics.

Answer:- rep

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Define the multitasking (2)

Answer:- [Click here for detail](#)

Multitasking is processing multiple tasks at one time

Define the protected mode (3)

Answer:- (Page 175)

Switching processor in the newer 32bit mode is a very easy task. Just turn on the least significant bit of a new register called CR0 (Control Register 0) and the processor switches into 32bit mode called protected mode.

What is disk driver and why disk driver are necessary in BIOS (5)

Answer:- (Page 156)

BIOS disk services used to directly see the data stored in the directory entries by DOS. For this purpose we will be using the BIOS disk services.

Writ the code of break point interrupt routine (5)

Answer: Page 136 (Example 10.2)

Define the trap flag (3)

Answer:- (Page 133)



If the trap flag is set, the after every instruction a type 1 interrupt will be automatically generated. This is like the divide by zero interrupt which was never explicitly invoked but it came itself.

From what purpose INT 1 is reserved (2)

Answer:- (Page 105)

This interrupt is used in debugging with the trap flag. If the trap flag is set the Single Step Interrupt is generated after every instruction. By hooking this interrupt a debugger can get control after every instruction and display the registers etc.

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Write two examples of Instructions relating data movement used in “sun SPARK Processor”. (2 Marks)

Answer:- rep

When we multiply two 8 bit numbers , in how many bits there answer will be? (2 Marks)

Answer:-16 bit

What is trap flag? (2 Marks)

Answer:- rep

Define serial port? (2 Marks)

Difference between serial and parallel communication.

Answer:- (Page 171)

Serial port is a way of communication among two devices just like the parallel port

How to reset disk file system using INT 13 Disk Rest services? (3 Marks)

Answer:- (Page 156)

INT 13 - DISK - RESET DISK SYSTEM

AH = 00h

DL = drive

Return:

CF = error flag

AH = error code

Why IF & TF are cleared? (3 Marks)

Answer:- (Page 133)

The interrupt mechanism automatically clears IF and TF otherwise there would an infinite recursion of the

single step interrupt. The TF is set in the flags on the stack so another interrupt will comes after one more instruction is executed after the return of the interrupt.

Describe “Indexed Register Indirect + offset” addressing mode with example? (3 Marks)

Answer:- (Page 136)

An index register is used with a constant offset in this addressing mode. The value contained in the index register is added with the constant offset to get the effective address. For example “mov [si+300], ax” moves the word contained in AX to the offset attained by adding 300 to SI in the current data segment and the instruction “mov [di+300], al” moves the byte contained in AL to the offset attained by adding 300 to DI in the current data segment.

Write the algorithm of bubble sort in your words? (5 Marks)

Answer:- (Page 46)

In this algorithm we compare consecutive numbers. If they are in required order e.g. if it is a descending sort and the first is larger then the second, then we leave them as it is and if they are not in order, we swap them. Then we do the same process for the next two numbers and so on till the last two are compared and possibly swapped.

List only five BIOS video services used in text mode? (5 Marks)

Answer:- (Page 149)

INT 10 - VIDEO - SET TEXT-MODE CURSOR SHAPE

INT 10 - VIDEO - SET CURSOR POSITION

INT 10 - VIDEO - SCROLL UP WINDOW

INT 10 - VIDEO - SCROLL DOWN WINDOW

INT 10 - VIDEO - WRITE STRING



Write main characteristic of SUN SPARK Processor? (5 Marks)

Answer:- rep

Write the code of “break point Interrupt routine”. (5 Marks)

Answer:- rep

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1. Define multitasking? 3 marks

Answer:- rep

2. What is the function of selector and descriptor? 3 marks

Answer:- rep

4 what is the difference in Motorola 64 k and x86 processors? 5 marks

Answer:- (Page 191)

The instructions are very similar however the difference in architecture evident. 68K processors have 16 23bit general purpose registers named from A0-A7 and D0-D7. A0-A7 can hold addresses in indirect memory accesses. These can also be used as software stack pointers. Stack in 68K is not as rigid a structure as it is in x86.

5. Which register is called a scratch register? 2 marks

Answer:- (Page 187)

EAX, ECX, EDX, FS, GS, EFLAGS, and any other registers.

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What is scheduler

Answer:- (Page 141)

INT 08 that is saving and restoring the registers is called the scheduler.

VESA INT 10 service

Answer:- (Page 180)

INT 10 – VESA – Get SuperVGA Information

INT 10 – VESA – Get SuperVGA Mode Information

INT 10 – VESA – Set VESA Video Mode

Draw the DB-9 pin Connector and writ each PIN

Answer:- rep

What is Stack overflow

Answer:- (Page 187)

The strong argument in favour of callee cleared stacks is that the arguments were placed on the stack for the subroutine, the caller did not needed them for itself, so the subroutine is responsible for removing them. Removing the arguments is important as if the stack is not cleared or is partially cleared the stack will eventually become full, SP will reach 0, and thereafter wraparound producing unexpected results. This is called stack overflow.

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Difference between naming conversion of C language & Pascal (5).

Answer:- (Page 187)

C pretends an underscore to every function or variable name while Pascal translates the name to all uppercase.

C++ has a weird name mangling scheme that is compiler dependent. To avoid it C++ can be forced to use C style naming with extern “C” directive.

Difference between Data Bus & Control bus (5).

Answer:- (Page 9)

Data bus is used to move the data from the memory to the processor in a read operation and from the processor



to the memory in a write operation. While one line of the bus is used to inform the memory about whether to do the read operation or the write operation. These lines are collectively known as the control bus

Define protected mode (3)

Answer:- rep

In what order C & Pascal instruction are passed to routines. (3).

Answer:- (Page 187)

In C parameters are pushed in reverse order with the rightmost being pushed first. While in Pascal they are pushed in proper order with the leftmost being pushed first.

Describe Debugger in the term of Trap Flag (5).

Answer:- (Page 133)

If the trap flag is set, the after every instruction a type 1 interrupt will be automatically generated. The debugger is made using this interrupt. It allows one instruction to be executed and then return control to us. It has its display code and its code to wait for the key in the INT 1 handler. Therefore after every instruction the values of all registers are shown and the debugger waits for a key.

Define Multithreading (3).

Answer:- rep

What the processor vision about video devices. (3).

Answer:- (Page 80)

The video device is seen by the computer as a memory area containing the ASCII codes that are currently displayed on the screen and a set of I/O ports controlling things like the resolution, the cursor height, and the cursor position.

lds si, [bp+4] from DS and SI will load? (2)

Answer:- (Page 97)

lds si, [bp+4] will load SI from BP+4 and DS from BP+6.

What is processor control block answer in one line (2).

Answer:- (Page 140)

The space where all registers of a task are stored is called the process control block or PCB.

Name the five video text mode of BIOS only list (5).

Answer:- rep

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Define context switching 2 marks

Answer:- (Page 141)

INT 08 that is saving and restoring the registers is called the scheduler and the whole event is called a context switch.

Make Diagram of Serial port and give pin names. 5 marks

Answer:- rep

3 common services given by video text mode. 2 marks

Answer:- rep

Format of the interrupt descriptor

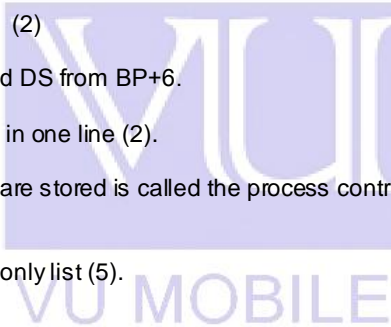
Answer:- (Page 182)

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1. Define Faulty Instructions [3marks]

2. Define Protected mode [3 marks]

Answer:- rep



3a. What are the ranges of addressable memory in protected mode?

5. Define Device drivers. Why device drivers are used when BIOS already have all available codes. write its need[5marks]

Answer:- (Page 166)

Device drivers are operating system extensions that become part of the operating system and extend its services to new devices. Device drivers in DOS are very simple. They just have their services exposed through the file system interface.

6. Write Bubble sort algorithm in your own words. [5 marks]

Answer:- rep

7. Fill in the blanks with proper words[solved] [5 marks]

Answer:- (Page 150)

AH = -09h --AL = -- character to display --BH = - page number ---BL = --- attribute ---CX =--- number of times to write character –

(09h, page number, number of times to write character, attribute ,character to display,)

8. How can we increase speed of multitasking process? [2marks]

Answer:- rep

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Qno.41 How can we improve the spec of the multitasking? (2)

Answer:- rep

Qno.42 What do you mean by data label and code label? (2)

Answer:- (Page 32)

Labels can be used on code as well. Just like data labels they remember the address at which they are used. The assembler does not differentiate between code labels and data labels. The programmer is responsible for using a data label as data and a code label as code.

Qno.43 What is system descriptor? (2)

Answer:- rep

Qno.44 What are device driver, Give your answer in two or three lines (2)

Answer:- rep

Qno.45 In what order the parameters are passed to routine in Pascal and C Language (3)

Answer:- rep

Qno.46 What is multitasking (3)

Answer:- rep

Qno.47 Difference between wraparound and physical wraparound and physical wraparounds

Qno.49 How to load AND/ OR execute program using INT 21 services (5)

Answer:- (Page 165)

INT 21 - LOAD AND/OR EXECUTE PROGRAM

AH = 4Bh

AL = type of load (0 = load and execute)

DS:DX -> ASCIZ program name (must include extension)

ES:BX -> parameter block

Return:

CF = error flag

AX = error code

Qno.50 Describe the format of interrupt descriptor (5)

Answer:- rep

Qno.51 Following piece of code is taken from the program of scrolling up the screen write against each

instruction what it does (5)

Mov ax,80
Mul byte [bp+4]
Mov si, ax
Push si
Shl si,1

Answer:- (Page 150)

mov ax, 80 ; load chars per row in ax
mul byte [bp+4] ; calculate source position
mov si, ax; load source position in si
push si ; save position for later use
shl si, 1 ; convert to byte offset

Qno.52 In context of video service write character and attribute at cursor position using INT 10 pick up correct statement given between and put it is proper blank spaces

AH.....
AL.....
BH.....
BL.....
CX.....

(5)

*

Answer:- rep

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Question No: 42 (Marks: 2) -INT 14 - SERIAL - READ CHARACTER 8 bit register return result in?

Answer:- (Page 172)

Return:

AH = line status

AL = received character if AH bit 7 clear

Question No: 43 (Marks: 2) -What is the process control back answer in single line

Answer:- rep

Question No: 44 (Marks: 2) -Explain Divide overflow

Answer:- (Page 85)

If a large number is divided by a very small number it is possible that the quotient is larger than the space provided for it in the implied destination. In this case an interrupt is automatically generated and the program is usually terminated as a result. This is called a divide overflow error;

Question No: 45 (Marks: 2)

What is the system descriptor?

Answer:- rep

Question No: 46 (Marks:3)

It is the part of Multitasking TSR caller, what will do these instructions comment against them

Mov al, [chars+bx]

Mov [es:40],al

Inc bx

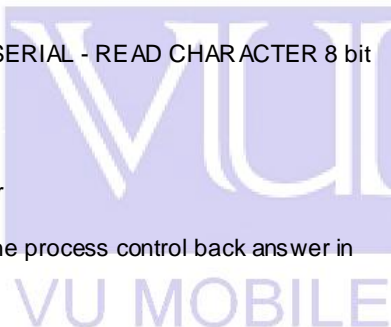
Answer:- rep

Question No: 48 (Marks:3)

Three basic steps B/w memory and processor to communicate.

Answer:- (Page 9)

The group of bits that the processor uses to inform the memory about which element to read or write is collectively known as the address bus. Another important bus called the data bus is used to move the data from the memory to the processor in a read operation and from the processor to the memory in a write operation. The third group consists of miscellaneous independent lines used for control purposes.



Question No: 49 (Marks:3)

What is baud rate, tell the parity bit function.

Answer:- (Page 171)

The data starts with a 1 bit called the start bit, then five to eight data bits, an optional parity bit, and one to two 0 bits called stop bits.

The number of data bits, parity bits, and the number of stop bits have to be configured at both ends. Also the duration of a bit must be precisely known at both ends called the baud rate of the communication.

Question No: 50 (Marks:5)

Write the instruction of following

Copy BL into CL

Answer: mov cl, bl

Copy DX into AX

Answer: mov ax, dx

Store 0x12 into AL

Answer: mov al, 0x12

Store 0x1234 into AX

Answer: mov ax, 0x1234

Store 0xFFFF into AX

Answer: mov ax, 0xFFFF

Question No: 51 (Marks:5)

9 pin DB9 connector , write function of any five

Answer:- rep

Question No: 52 (Marks:5)

Fill in the blanks with proper words

AH =

AL =

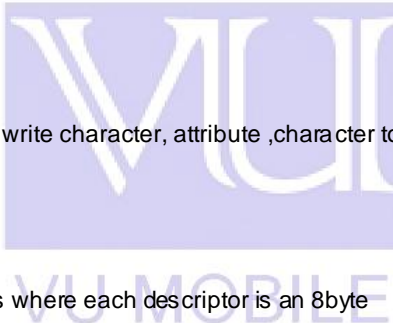
BH =

BL =

CX =

(09h, page number, number of times to write character, attribute ,character to display.)

Answer:- rep



Question No: 52 (Marks:5)

Fill in the blanks with proper words

The GDT itself is an array of descriptors where each descriptor is an 8byte entry.

The base and limit of GDT is stored in a 48bit register called the GDTR.

This register is loaded with a special instruction LGDT and is given a memory address from where the 48bits are fetched.

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Question No: 27 (Marks: 2)

How can we improve the speed of multitasking?

Answer:- rep

Question No: 28 (Marks: 2)

Write instructions to do the following. Copy contents of memory location with offset 0025 in the current data segment into AX.

Answer:- Mov ax , [0025]

Question No: 29 (Marks: 2)

Write types of Devices?

Answer:- Click here for detail

The four types of computer devices are:-

1. input devices
2. output devices
3. storage devices and
4. The central processing unit i.e. C.P.U.
- 5.

Question No: 30 (Marks: 2)
What dose descriptor 1
st
16 bit tell?

Question No: 31 (Marks: 3)
List down any three common video services for INT 10 used in text mode.
Answer:- rep

Question No: 32 (Marks: 3)
How to create or Truncate File using INT 21 Service?
Answer:- rep

Question No: 33 (Marks: 3)
How many Types of granularity also name them?
Answer:- Click here for detail
There are three types of granularity :
1. Data Granularity
2. Business Value Granularity
3. Functionality Granularity

Question No: 34 (Marks: 5)
How to read disk sector into memory using INT 13 service?
Answer:- rep

Question No: 35 (Marks: 5)
The program given below is written in assembly language. Write a program in C to call this assembly routine.

```
[section .text]
global swap
swap: mov ecx,[esp+4] ; copy parameter p1 to ecx
      mov edx,[esp+8] ; copy parameter p2 to edx
      mov eax,[ecx] ; copy *p1 into eax
      xchg eax,[edx] ; exchange eax with *p2
      mov [ecx],eax ; copy eax into *p1
      ret ; return from this function
```

Answer:- (Page 189)

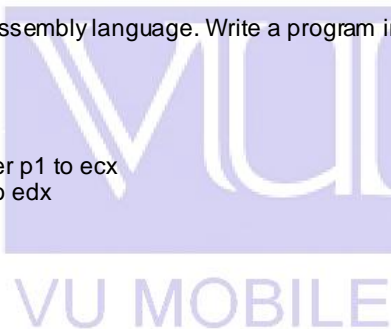
```
#include <stdio.h>
void swap( int* p1, int* p2 );
int main()
{
  int a = 10, b = 20;
  printf( "a=%d b=%d\n", a, b );
  swap(&a, &b );
  printf( "a=%d b=%d\n", a, b );
  system( "PAUSE" );
  return 0;
}
```

Question No: 36 (Marks: 5)
Write the code of "break point interrupt routine".
Answer:- rep

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Question No: 27 (Marks: 2)
What are device drivers? give your answer in two to three lines.
Answer:- rep

Question No: 28 (Marks: 2)
For what purpose "INT 1" is reserved ?



Answer:- rep

Question No: 29 (Marks: 2)

How interrupts are handled in protected mode.

Answer:- (Page 182)

Handling interrupts in protected mode is also different. Instead of the IVT at physical address 0 there is the IDT (interrupt descriptor table) located at physical address stored in IDTR, a special purpose register. The IDTR is also a 48bit register similar in structure to the GDTR and loaded with another special instruction LGDT.

Question No: 30 (Marks: 2)

Which bit of acknowledge is used to generate IRQ7

Answer:- (Page 125)

Bit "4" of acknowledge is used to generate IRQ7

Question No: 31 (Marks: 3)

Write the name three flags which are not used for mathematical operations.

Answer:- (Page 133)

The three flags not used for mathematical operations are the direction flag, the interrupt flag and the trap flag.

Question No: 32 (Marks: 3)

"INT 13 - DISK - GET DRIVE PARAMETERS" uses which registers to return error flag and error number.

Answer:- (Page 156)

CF = error flag

AH = error code

Question No: 33 (Marks: 3)

Who is responsible for removing the parameter from the stack when we call a function in C and Pascal?

Answer:- (Page 187)

In C the caller removes the parameter while in Pascal the callee removes them. The C scheme has reasons pertaining to its provision for variable number of arguments.

Question No: 34 (Marks: 5)

Read the passage carefully and choose proper word for each blank space from the list given below .

In descriptors the 32bit base is scattered into different places because of compatibility reasons. The limit is stored in 20 bits but the ...G.....defines that the limit is in terms of bytes of 4K pages therefore a maximum

of 4GB size is possible. TheP..... must be set to signal that this segment is present in memory. DPL is the descriptor privilege level again related to the protection levels in 386.D..... defines that this segment is to execute code is 16bit mode or 32bit mode.C..... is conforming bit that we will not be using.R.....signals that the segment is readable. A bit is automatically set when the segment is accessed.

(A bit, C bit, G bit, D bit, P bit , R bit, B bit)

Answer: (Page 176)

The 32bit base in both descriptors is scattered into different places because of compatibility reasons. The limit is stored in 20 bits but the G bit defines that the limit is in terms of bytes of 4K pages therefore a maximum of 4GB size is possible. The P bit must be set to signal that this segment is present in memory. DPL is the descriptor privilege level again related to the protection levels in 386. D bit defines that this segment is to execute code is 16bit mode or 32bit mode. C is conforming bit that we will not be using. R signals that the segment is readable. A bit is automatically set whenever the segment is accessed.

Question No: 35 (Marks: 5)

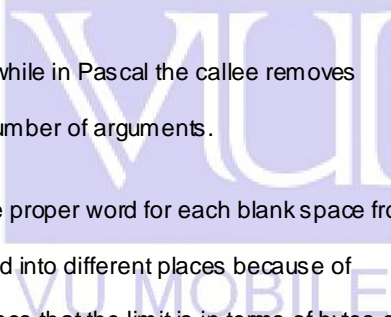
Write assembly language instructions to set the timer interrupt frequency at 1 ms.

Answer: (Page 143)

```
mov ax, 1100
out 0x40, al
mov al, ah
out 0x40, al
```

Question No: 36 (Marks: 5)

In the context of " INT 13 - DISK - WRITE DISK SECTOR(S)" fill the blanks by choosing the correct answer against each blank space from the list given at the bottom.



Answer:- (Page 156)

AH = 03h

AL = number of sectors to write (must be nonzero)

CH = low eight bits of cylinder number

CL = sector number 1-63 (bits 0-5)

high two bits of cylinder (bits 6-7, hard disk only)

DH = head number

DL = drive number (bit 7 set for hard disk)

ES:BX -> data buffer

(Number of sectors to write, head number, 03h, data buffer, low eight bits of cylinder number)

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How many bytes floppy root directory entry has? (2)

Answer: Click here for detail

224 bytes for a 3 1/2 inch floppy

How many calling convention also tell the names? (2)

Answer:- (Page 187)

Two prevalent calling conventions are the C calling convention and the Pascal calling convention.

Which register is used as thread local variable? (2)

Answer:- (Page 141)

SP (stack pointer) register used as thread local variable

Write down the operations of CMP instruction? (2)

Answer:- (Page 39)

The operation of CMP is to subtract the source operand from the destination operand, updating the flags without changing either the source or the destination.

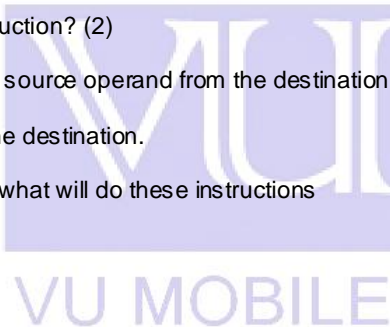
It is the part of Multitasking TSR caller, what will do these instructions comment against them (3)

Mov al, [chars+bx]

Mov [es:40],al

Inc bx

Answer:- rep



Differentiate synchronous transmission and asynchronous transmission? (3)

Answer:- (Page 103)

Asynchronous means that the interrupts occur, independent of the working of the processor, i.e. independent of the instruction currently executing. Synchronous events are those that occur side by side with another activity.

List some architecture? (3)

Answer:-

iAPX88 architecture

Motorolla 68K

x86 series architecture

SPARC stands for Scalable Processor ARChitecture

1. What information is required to be provided for the service "INT14-SERIAL WRITE CHARACTER TO PORT" in the following registers? (5 marks)

AH=_____

AL=_____

DX=_____

Answer:- (Page 172)

AH = 01h

AL = character to write

DX = port number (00h-03h)

2. Write into C language (5 marks)

[section.txt]

Global swap

swap: mov ecx,[esp+4] copy parameters p1 to ecx

mov edx[esp+8] copy parameters p2 to edx

mov eax,[ecx] copy *p1 to eax
xchg eax,[edx] exchange eax to *p2
mov [ecx],eax copy eax to *p1
ret return
Answer:- rep

3. Which instruction makes trap flag zero? If there is not any then how we make it zero?
(5 marks)

Answer:- (Page 133)

There is no instruction to set or clear the trap flag like there are instructions for the interrupt and direction flags. We use two special instructions PUSHF and POPF to push and pop the flag from the stack. We use PUSHF to place flags on the stack, change TF in this image on the stack and then reload into the flags register with POPF.

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25. Division by zero is done by which interrupt.

Answer:- (Page 105)

Division by zero is done by INT 0 interrupt.

26. Define Hardware Interrupt & I/O ports (5 marks)

Answer:- (Page 113-114)

Hardware interrupts

Hardware interrupts are the real interrupts generated by the external world. there are many devices generating interrupts and there is only one pin going inside the processor and one pin cannot be technically derived by more than one source a controller is used in between called the Programmable Interrupt Controller (PIC).

I/O ports

For communicating with peripheral devices the processor uses I/O ports. There are only two operations with the external world possible, read or write. Similarly with I/O ports the processor can read or write an I/O port.

When an I/O port is read or written to, the operation is not as simple as it happens in memory.

27. Five BIOS video services used in text mode (3 marks)

Answer:- rep

28. DOS allocate memory for program execution and then de-allocate , explain memory management in DOS (10 marks)

Answer:- (Page 121)

At physical address zero is the interrupt vector table. Then are the BIOS data area, DOS data area, IO.SYS, MSDOS.SYS and other device drivers. In the end there is COMMAND.COM command interpreter. The remaining space is called the transient program area as programs are loaded and executed in this area and the space reclaimed on their exit. A freemem pointer in DOS points where the free memory begins. When DOS loads a program the freemem pointer is moved to the end of memory, all the available space is allocated to it, and when it exits the freemem pointer comes back to its original place thereby reclaiming all space. This action is initiated by the DOS service 4C. The second method to legally terminate a program and give control back to DOS is using the service 31. Control is still taken back but the memory releasing part is modified. A portion of the allocated memory can be retained. So the difference in the two methods is that the freemem pointer goes back to the original place or a designated number of bytes ahead of that old position.

There was fill in blanks question with 10 marks. The choice was given at bottom.

29. Serial Port is also accessible via _____ ports , _____ is accessible via ports 3F8-3FF while _____ is accessible via 2F8 -2FF.

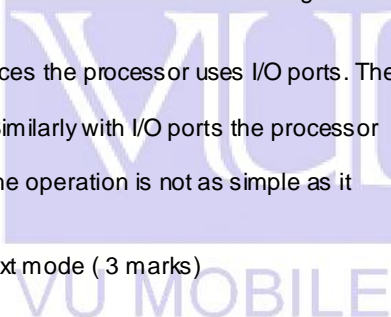
The first register at 3F8 is the _____ holding register if written to and the receiver _____ register if read from.

Other register of our interest include 3F9 whose _____ must be set to enable received data available interrupt and _____ must be set to enable transmitter holding register empty interrupt.

(Transmitter , COM 1 , I/O ports , COM2. bit 0 , Buffer , 3FA)

Answer:- (Page 172)

Serial port is also accessible via I/O ports. COM1 is accessible via ports 3F8-3FF while COM2 is accessible via 2F8-2FF. The first register at 3F8 (or 2F8 for the other port) is the transmitter holding register if written to and the receiver buffer register if read from. Other registers of our interest include 3F9 whose bit 0 must be set



to enable received data available interrupt and bit 1 must be set to enable transmitter holding register empty interrupt.

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Q no 41 Write down purpose of JNZ instruction? (2)

Answer:- (Page 32)

The JNZ instruction is from the program control group and is a conditional jump, meaning that if the condition NZ is true (ZF=0) it will jump to the address mentioned and otherwise it will progress to the next instruction.

Q no 47 Write the algorithm of multiplication of two 4 bits number? (3)

Answer:- (Page 51)

We take the first digit of the multiplier and multiply it with the multiplicand. As the digit is one the answer is the multiplicand itself. So we place the multiplicand below the bar. Before multiplying with the next digit a cross is placed at the right most place on the next line and the result is placed shifted one digit left.

Q no 48 How threads are register in the scheduler? (3)

Q no 50 Define the debugger. How to run the debugger tell the command, and all its parts? (5)

Answer:-A debugger is a computer program that lets you run your program, line by line and examine the values of variables or look at values passed into functions and let you figure out why it isn't running the way you expected it to.

We can run debugger by pressing F1 and F2. The debugger shows the values of registers, flags, stack, our code, and one or two areas of the system memory as data. Debugger allows us to step our program one instruction at a time and observe its effect on the registers and program data.

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Question No: 27 (Marks: 2)

Write instruction to allocate space for 32 PCBs.

Answer:- (Page 141)

pcb: times 32*16 dw 0 ; space for 32 PCBs

Question No: 28 (Marks: 2)

Define short jump

Answer:- (Page 46)

If the offset is stored in a single byte as in 75F2 with the opcode 75 and operand F2, the jump is called a short jump.

Question No: 31 (Marks: 3)

VESA service "INT 10 – VESA – Get SuperVGA Information" uses which registers to return the result?

Answer:- (Page 180)

To return the result, "INT 10 – VESA – Get SuperVGA Information" uses:

Return:

AL = 4Fh if function supported

AH = status

Question No: 34 (Marks: 5)

Read the passage carefully and choose proper word for each blank space from the list given below .

In descriptors the 32bit base is scattered into different places because of compatibility reasons. The limit is stored in 20 bits but thedefines that the limit is in terms of bytes of 4K pages therefore a maximum of 4GB size is possible. The..... must be set to signal that this segment is present in memory. DPL is the descriptor privilege level again related to the protection levels in 386. defines that this segment is to execute code in 16bit mode or 32bit mode. is conforming bit that we will not be using.

.....signals that the segment is readable. A bit is automatically set whenever the segment is accessed.

(A bit, C bit, G bit, D bit, P bit, R bit, B bit)

Answer:- rep

Question No: 35 (Marks: 5)

Answer the following:

§ What is a device driver?



Answer:- rep

§ Why are device drivers necessary, given that the BIOS already has code that communicates with the computer's hardware?

Answer:- rep

X



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