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FINALTERM EXAMINATION
Spring 2010
CS401- Computer Architecture and Assembly Language Programming (Session - 2)

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

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, 5** the 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: 27   (Marks: 2)

How can we improve the speed of multitasking?

Ans:
We can improve the speed of multitasking by changing the frequency of timer interrupt.

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.

Ans:

Mov ax , [0025]

mov[0fff], ax

mov ax , [0010]
  mov [002f] , ax

Question No: 29   (Marks: 2)

 Write types of Devices?

Ans:
There are two types devices used in pc.
1. Input devices(keyboard, mouse,)
2. Output devices.(monitor, printer)

Question No: 30   (Marks: 2)

 What dose descriptor 1st 16 bit tell?

Ans:
Each segment is describe by the descriptor like
1. base,
2. limit,
3. and attributes,
it basically define the actual base address.

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: 33   (Marks: 3)

How many Types of granularity also name them?
Ans:
There are three types of granuality :
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?

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: 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
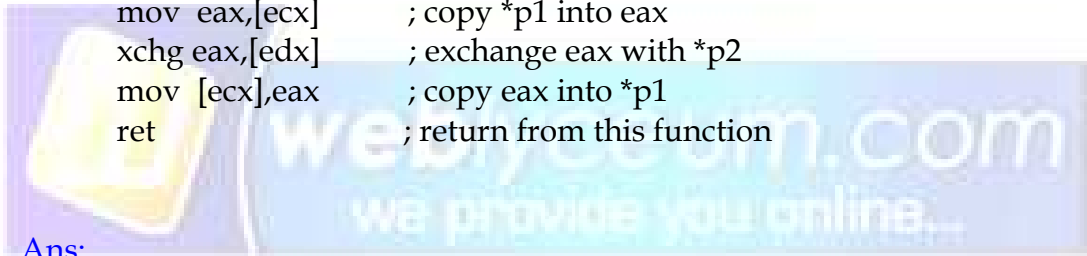
Ans:
The above code will assemble in c through this command. Other aurwise error will occur.
Nasm-f win32 swap .asm

This command will generate swap.obj file.
The code for given program will be as follow.

```
#include <stdio.h>
Void swap(int* pl, int* p2);
Int main()
{
    Int a=10,
    Int b= 20;
Print f ("a=%d b=%d\n" , a ,b);

Swap (&a ,&b);

Print f ("a=%d b=%d\n" , a ,b);
```

System ("pause");

Return 0;

}

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

```asm
        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
```