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 1st 16 bit tell?

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

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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;
}
```

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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

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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. The .....**P**..... 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 whenever 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)

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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)

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 conversion 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

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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.

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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.

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 42 How many bytes floppy root directory entry has? (2)
Answer:- rep

Q no 43 Write the programmer view of processor? (2)
Answer:- rep

Q no 44 What is scheduler? (2)
Answer:- rep

Q no 45 Write the names of any two descriptor? (3)
Answer:- rep

Q no 46 Define the protected mode? (3)
Answer:- rep

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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 49 INT 14 serial with character to port (5)
AH=……
AL=……..
AX=……
Answer:- rep

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.

Q no 51 Write the code of "break point interrupt routine"? (5)
Answer:- rep

Q no 52 Describe the format of interrupt descriptor? (5)
Answer:- rep

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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: 29 (Marks: 2)
INT 14 - SERIAL - READ CHARACTER FROM PORT uses which two 8bit registers to return the results ?
Answer:- rep

Question No: 30 (Marks: 2)
Which registers are uses as scratch when we call a function?
Answer:- rep

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: 32 (Marks: 3)
Define the protected mode.
Answer:- rep

Question No: 33 (Marks: 3)
Describe briefly INT 3 functionality.
Answer:- rep

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 .....defines 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)
Answer:- rep

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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

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