

Vivekanand Education Society's Institute of Technology
Department of Computer Engineering



Subject: - Microprocessor

**Class:-T.E.
(D12)**

Semester:- V

Div:-C

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Exp. No:	Title: <u>Assignment -1</u>		
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GRADE:		LAB OUTCOMES : LO1,LO2,LO3	SIGNATURE:

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Ru: - DMC

Assignment No 1

Q1) Explain the general purpose register of 8086

a) There are 4 general purpose register AX, BX, CX and DX

b) AX - The I/O instructions use the AX [AH, AL] for inputting / outputting 16 or 8 bit data from I/O port.

c) BX - (Base register) :- It is used as a base register. It is used to store starting base address of the memory area within the data segment.

d) DX (Data register) - It is used to hold the high 16 bit result in 16x16 multiplication or the high 16 bit dividend data before a 32-16 division and 16 bit remainder.

e) CX (Carry register) :- It is used a loop instruction to store the loop counter instruction such as SHIFT, ROTATE and loop

Q2) Mention the addressing mode of following

① MOV BL, [437AH]

→ Direct Addressing Mode

② XCHG BL, CX

→ Register Addressing Mode

③ ADD [1050], 2233H

→ Immediate addressing

④ CMC → Implied Addressing mode.

93) Discuss the change in different flag bit status after execution of following instructions.

(i) ADD CX, PX

Depending on the values auxiliary carry flag, parity flag, carry flag and overflow flag might change. Rest remain same.

(ii) CMP AL, BL

Depending on value the sign flag, zero carry and parity flag might change. Rest flags are set original values.

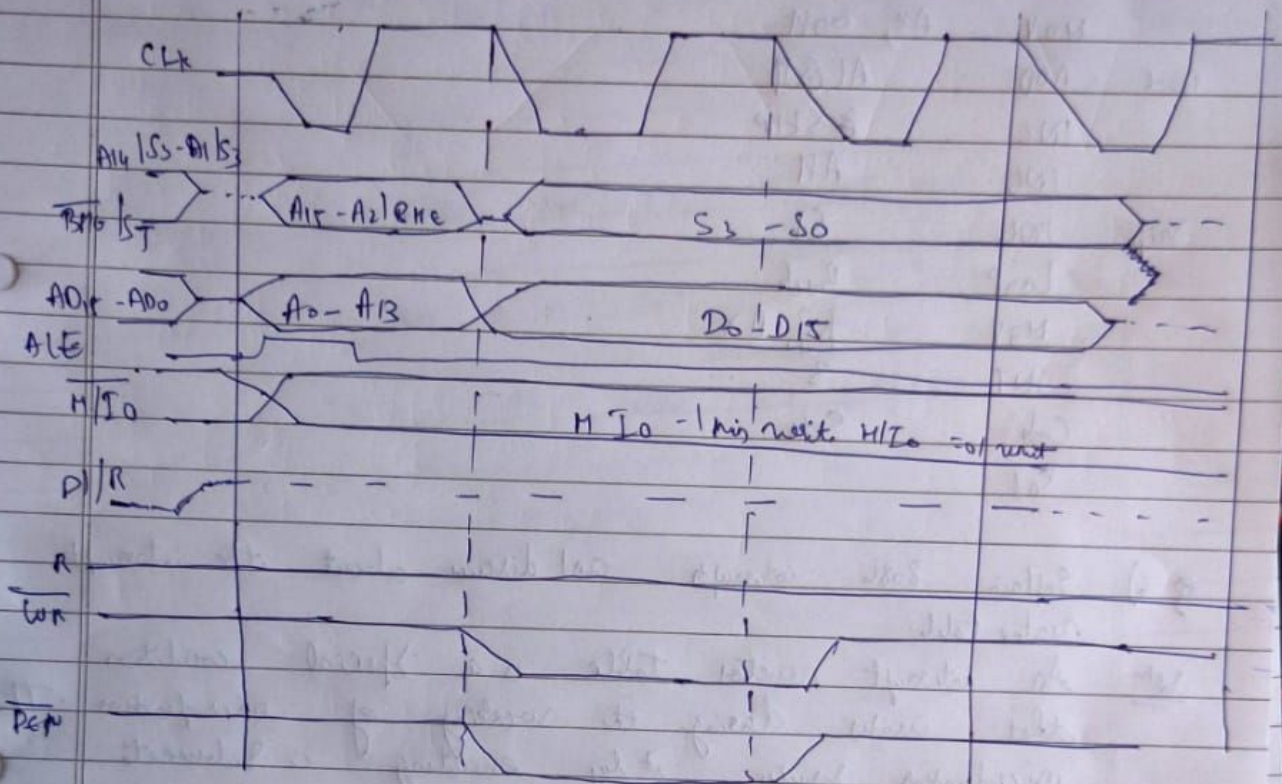
(iii) CLD

changes in only direction flag.

(iv) XOR CX, 123H

Depending on the value parity and zero flag might change. Rest remain default.

Q4) Draw the timing diagram of the cycle for minimum mode



Q5) write an Assembly Language Program (ALP) to find sum of numbers in a given array containing 8 bit numbers stored in consecutive memory location and store the result in another location.

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    CODE    segment
    Assume  cs CODE
    MOV     AX, 2000H
    MOV     DS, AX
    MOV     SI, 0000H

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MOV CL, 000H
MOV AL, 00H
MOV AH, 00H
Back: ADD AL, 01H
      INC AX SKIP
      INC AH
Skip: INC SI
      LOOP Back
      MOV [SI], AX
      INT 3
      CMB
      End.

```

Q 6) Explain 8086 interrupts and discuss about the interrupt vector table.

Ans An interrupt vector table is a special condition that arises during the working of microprocessor. The microprocessor services it by executing a sub-routine called.

Interrupt Service Routine (ISR). There are 3 sources of interrupt for 8086.

① Hardware Interrupt (external signal). These interrupt occur as signal on the external pins of the microprocessor 8086 hardware NMI and INTR.

② Software Interrupt (Special Instruction) The interrupt occur as signal

Software interrupt interrupt INT n can be value 0 to 255 (00H to FFH). Hence all 256 included by software.

- ③ Initially generated interrupt is 8086 in interrupt when some special conditions occur while in the program.

Interrupt Vector Table (IVT): The IVT contains 15K address for 256 interrupt. Each ISR address is of 4 bit (2-15) and address 4 locations to be stored. There are 256 interrupt INT0 ... INT255 the table size of IVT is 256K.