

Paper Code: EE208

Duration: 1 hour

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Max. Marks: 15

- Qns 1 (i) Write various status flags of 8085 microprocessor.
- (ii) Write down the names of various registers in 8085 microprocessor.
- (iii) Explain length of Instruction of 8085 microprocessor
- (iv) What is ALE.
- (v) What is working of \overline{RD} , \overline{WR} and IO/\overline{M} signals.
- Qns 2 Explain various addressing modes of 8085 microprocessor.
- Qns 3 Explain Pin Configuration of 8085 microprocessor.
- Qns 4 Explain the following instructions:
- | | |
|----------------|-------------------------|
| (i) RAL | (iii) ADD M |
| (ii) MVI A, 05 | (iv) M ORA C |

Ans

Solution of BEE 208

Ans 1 (i) Status flags of 8085 microprocessor

- (a) Carry flag (b) Parity flag (c) Zero flag
(d) Sign flag (e) Auxiliary carry.

(ii) Name of various registers in 8085 microprocessor.

(a) General Purpose Register \Rightarrow B, C, D, E, H, L

(b) Special purpose registers

- \rightarrow Accumulator.
- \rightarrow ~~Temporary~~ Temporary register
- \rightarrow Status Register.
- \rightarrow Instruction Register.

(iii) In 8085, three length of instructions are

(a) In one byte instruction, only ~~one~~ opcode will present
Ex:- ADD B, SUB C

(b) In two byte instruction, Ist byte is opcode and IInd byte is data or address 8bit
Ex:- MVI A, 25 ; IN 05

(c) In three byte instruction, Ist is opcode, IInd byte is lower order address or data and IIIrd byte is higher order address or data.

Ex: STA 2600

(iv) Address Latch Enable (ALE) is used to demultiplex address and data line (bus)

If $ALE = 1 \Rightarrow$ address line

$ALE = 0 \Rightarrow$ Data line

(v) \overline{RD} = It is used to generate active low read operation

\overline{WR} = It is used to generate active low write operation

IO/\overline{M} = It is used to provide operation on memory or IO devices

If $IO/\overline{M} = 0 \Rightarrow$ memory

$IO/\overline{M} = 1 \Rightarrow$ IO Device

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Ans 2 Various Addressing modes of 8085 microprocessor.

(a) Register Addressing Mode

Operand will present in microprocessor register.

Ex: MOV A, B ; SUB C

(b) Immediate Addressing Mode

Data operand is specified within instruction itself.

Ex: MVI A, 25H ; ADI 37H

(c) Direct Addressing Mode

Address of Operand is directly specified with in the instruction itself.

Ex: STA 3600 ; IN 05

(d) Indirect Addressing Mode

Operand will present in memory where address of memory location will present in register pair

Ex: MOV A, M ; ADD M

(e) Implicit Addressing Mode

Operation are perform in Accumulator and no Operand present in instruction.

Ex: NOP ; CMA

Ans 4 (i) RAL (Rotate Accumulator left through Carry)

(a) 1 byte (b) 1 m/c (opcode fetch) (c) 4T state

(d) Implicit addressing mode

(e) Only carry flag affect. ~~(F) Operand~~

(ii) ADD M

(a) Operation $[A] \leftarrow [A] + [M]$

(b) 1 byte (c) 2 m/c (opcode fetch + 1 memory read)

(d) 7T state (e) Indirect Addressing mode

(f) All flags affected.

Ans 4

(iii) MVI A, 05

(a) Operation $[A] \leftarrow [05H]$

(b) 2 byte (c) 2m/c (opcode fetch + 1 memory read)

(d) 7T state (e) Immediate addressing mode

(f) No flag affected

(iv) ORA C

(a) Operation $[A] \leftarrow [A] \vee [C]$

(b) 1 byte (c) 1m/c (opcode fetch) (d) 4T state

(e) Register addressing mode

(f) All flag affected $CY=0, AC=0$

Ans 3 Pin Configuration of 8085 microprocessor.

X_1	1	40	V_{CC}
X_2	2	39	HOLD
RESET OUT	3	38	HLDA
SOD	4	37	CLK
SID	5	36	RESET IN
TRAP	6	35	READY
RST 7.5	7	34	IO/M
RST 6.5	8	33	S_1
RST 5.5	9	32	\overline{RD}
INTR	10	31	\overline{WR}
\overline{INTA}	11	30	ALE
AD_0	12	29	S_0
AD_1	13	28	A_{15}
AD_2	14	27	A_{14}
AD_3	15	26	A_{13}
AD_4	16	25	A_{12}
AD_5	17	24	A_{11}
AD_6	18	23	A_{10}
AD_7	19	22	A_9
V_{SS}	20	21	A_8

8085
MP

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Power Supply (Pin 40) :- 8085 MP Operate on +5V connected to V_{cc}

Ground Signal (Pin 20) :- Ground reference connected to V_{ss} .

Multiplexed Address/Data Bus (Pin 12 to Pin 19)

Lower ordered address bus & Data bus is multiplexed.

If $ALE = 1 \Rightarrow$ multiplex bus act as address

$ALE = 0 \Rightarrow$ multiplexed bus act as data

Serial IO Control

It is used to provide serial communication b/w μP and other serial IO devices.

SID and SOD pins are used to provide serial interface.

Time and Control Unit

It is used to generate all timing and control signals.

X_1 and X_2 pins are used to connect external crystal to generate internal clock.

Clockout pin will provide output clock for other devices

ALE :- It is used to demultiplexed address and data bus.

$\overline{RD}/\overline{WR}$:- It is used to generate active low read or write operation.

IO/\overline{M} :- It is used to provide operation on memory or IO devices

S_1, S_0 :- They are status signal used to identify status of μP .

IO/\overline{M}	S_1	S_0	Operation
0	1	1	Opcode fetch
0	1	0	Memory read
0	0	1	Memory write
1	1	0	IO Read
1	0	1	IO Write

READY :- It provide synchronization b/w μP and other slow devices

RESET IN and RESET OUT are reset signal in microprocessor.

If $\overline{RESET IN} = 0$ then Program Counter = 0000H
and status of this indicating is RESET OUT

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HOLD and HLDA signal are used for Direct memory access (DMA) operation.

Direct memory access is used to transfer data directly b/w memory and IO devices without μP program intervention.

HOLD is a request signal to μP , requesting bus for DMA operation.

If HOLD signal is received, μP complete current machine cycle then it will release bus to external devices by issuing HLDA signal.

Interrupt Control

It is used to provided external interrupt to μP . In 8085 microprocessor, there are five interrupt

- (a) TRAP (b) RST 7.5 (c) RST 6.5 (d) RST 5.5 (e) INTR

Parameter	TRAP	RST 7.5	RST 6.5	RST 5.5	INTR
Priority	Highest	Second	Third	fourth	Lowest
Maskability	Non maskable	Maskable	Maskable	Maskable	Maskable
Vectorability	Vectored	Vectored	Vectored	Vectored	Non vectored
Address Location	0024H	003CH	0034H	002CH	X
Triggering	Both edge and Level	Edge	Level	Level	Level