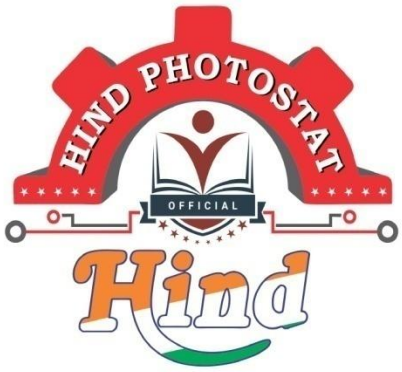

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MADE EASY

ELECTRONICS ENGINEERING

Microprocessor

By- M.V.R . Shastri Sir

- Theory
- Explanation
- Derivation
- Example
- Shortcuts
- Previous Years Question With Solution

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MICROPROCESSOR:.

i) 8085. (Gate – in detail) → 2M/3M GATE → 20 Marks to 40 Marks IES.
ii) 8086.
iii) 8051.

Note:.

** IAS/IPS
ELECTRICAL OPTIONAL (MAINS)
↓
ECE + EEE

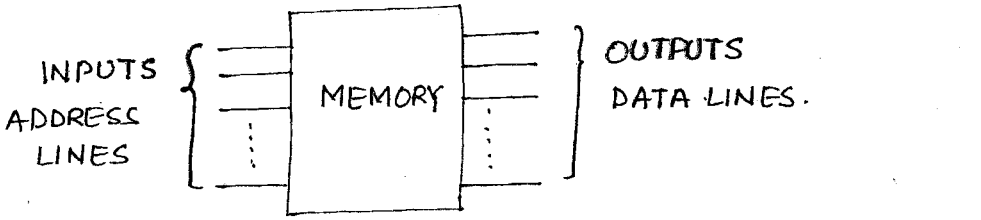
** BEFORE 2011
IAS PRELIMS ELECTRICAL GATE STANDARD (OBJECTIVE).

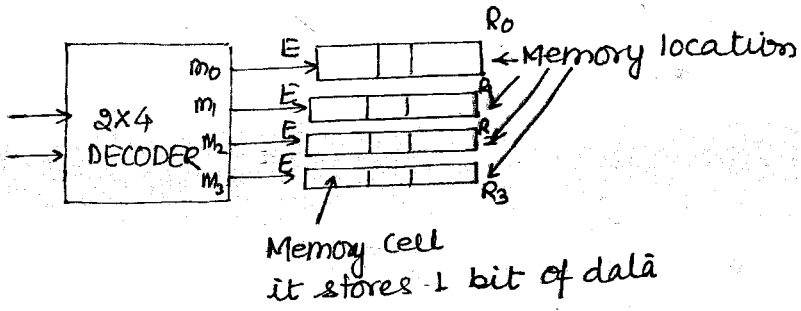
8085 SYLLABUS:.

i) Memories.]
ii) 8085 Basics.] 1Marks GATE
iii) Instruction set]
iv) Programming] ** 2MARKS GATE
v) Interfacing]

*MEMORIES:.

*Used for storage.





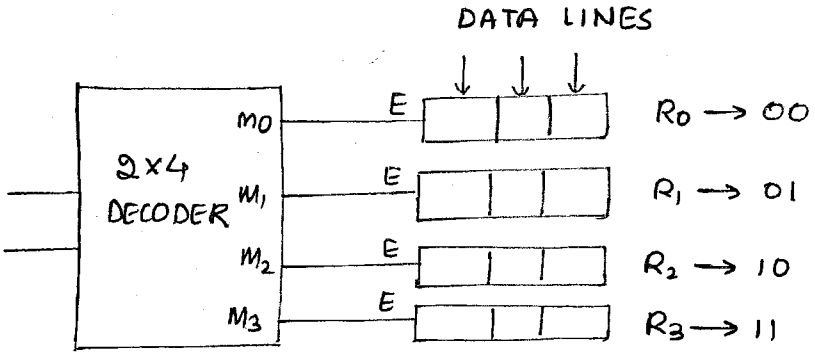
Note:.

* By giving input 00, m_0 will get selected hence the address of R_0 is 00.
* By giving input 01, m_1 will get selected hence the address of R_1 is 01.

MEMORY LOCATION	ADDRESS
R_0	00
R_1	01
R_2	10
R_3	11

* ADDRESS:.

*ADDRESS is a binary code which enables a particular location



*In order to store data in memory the following sequence has to be followed:.

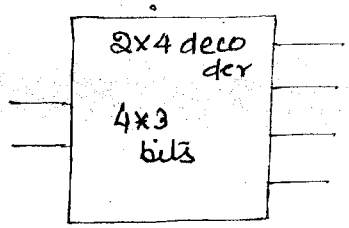
i) Select the location by giving an appropriate address.

ii) give the data through the Data lines.

*SIZE OF

*Size of Memory is measured in bits and is equal to NO. of memory locations multiplied with NO. of bits/location

Memory size = NO. of memory location x NO. of bits/location

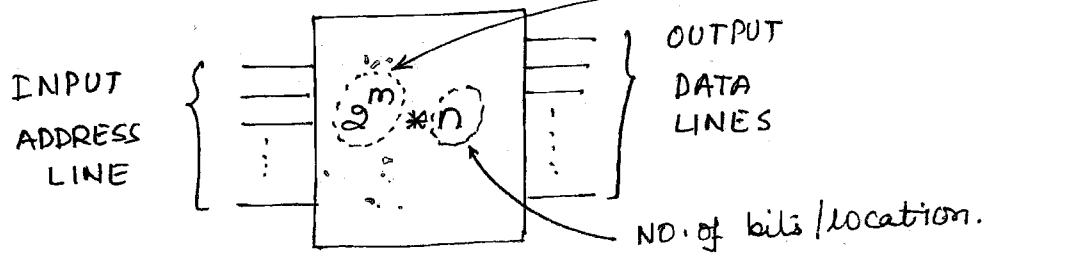


4 → locations.

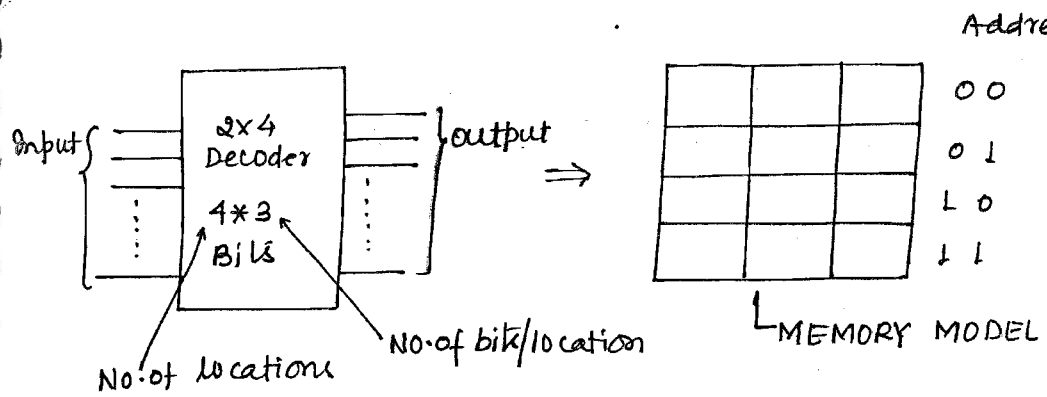
3 → bits/location.

*For m address lines, no. of location is 2^m.

* NO. of data lines = NO. of bits/location.



* MODEL OF MEMORY:.



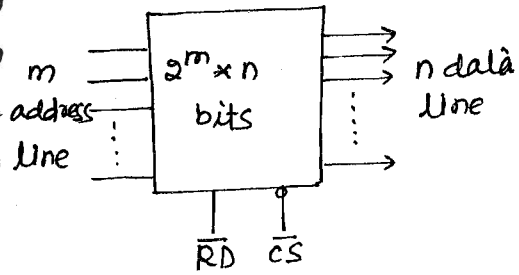
* Two types of Memory:.

i) Read only Memory (ROM)

ii) Read/write Memory (RWM)

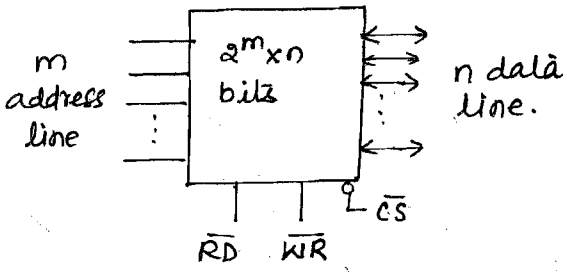
↳ commercially called RAM.

READ ONLY MEMORY:.



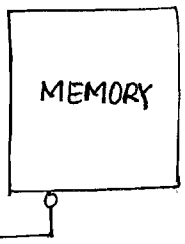
* Unidirectional data line to only Read data.

RANDOM ACCESS MEMORY

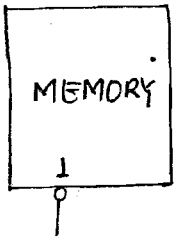


* Bidirectional data line to Read and write data

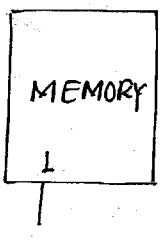
Note:.



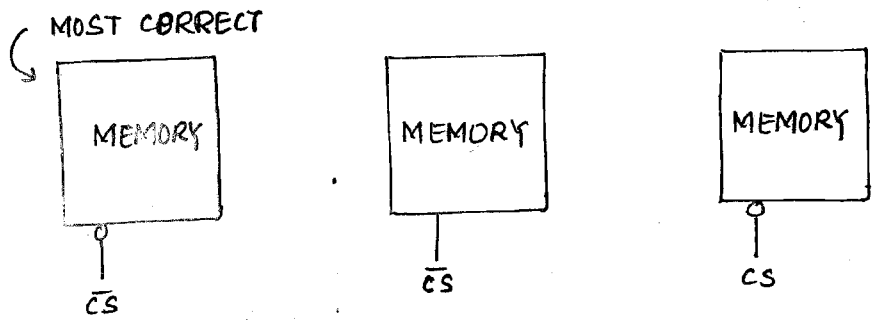
$\overline{CS}$ CHIP SELECT (ENABLE PIN)



$\overline{CS} = 0$ ACTIVE LOW



CS = 1 ACTIVE HIGH

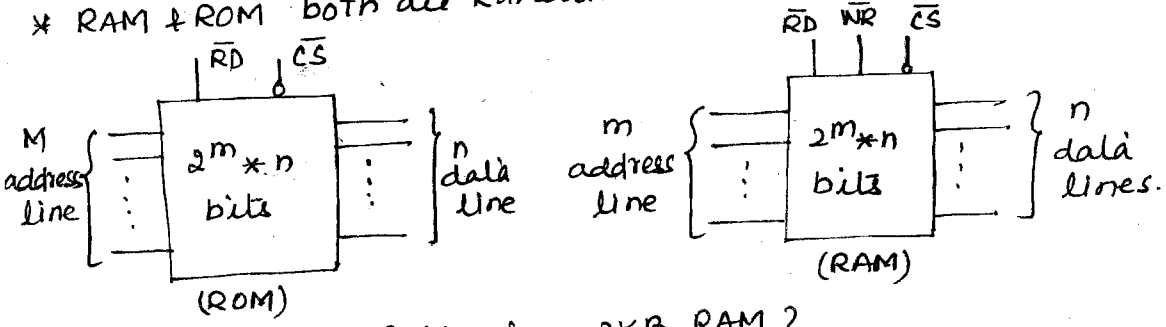


*Note!.
*All are 3 possible ways of Representing CHIP SELECT.

*RAM
*Random Access V/S Serial Access!.

*In Random access we directly give the address and reach the location where data is stored, but in serial access to reach some location we have to go serially

* RAM & ROM both are Random Access.



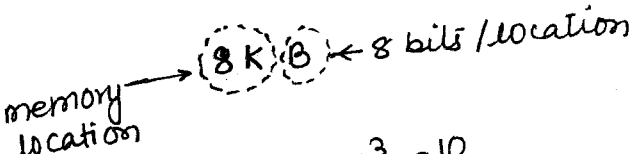
Q1) Construct 8 KB RAM using 2KB RAM ?

Soln:. KILO $\rightarrow 2^{10}$ Bits ; MEGA $\rightarrow 2^{20}$ Bits ; GIGA $\rightarrow 2^{30}$ Bits.

* Requirement is 8 KB

B : Bytes

8 bits make a Byte



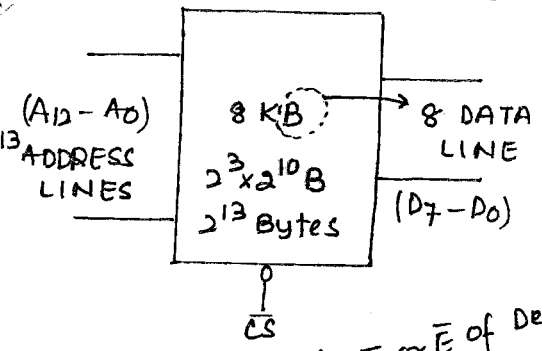
$8K \rightarrow 2^3 \times 2^{10}$

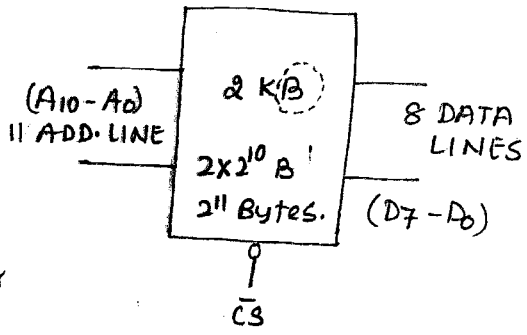
$= 2^{13} = 2^m.$

$\boxed{m = 13}$ ← Address lines.

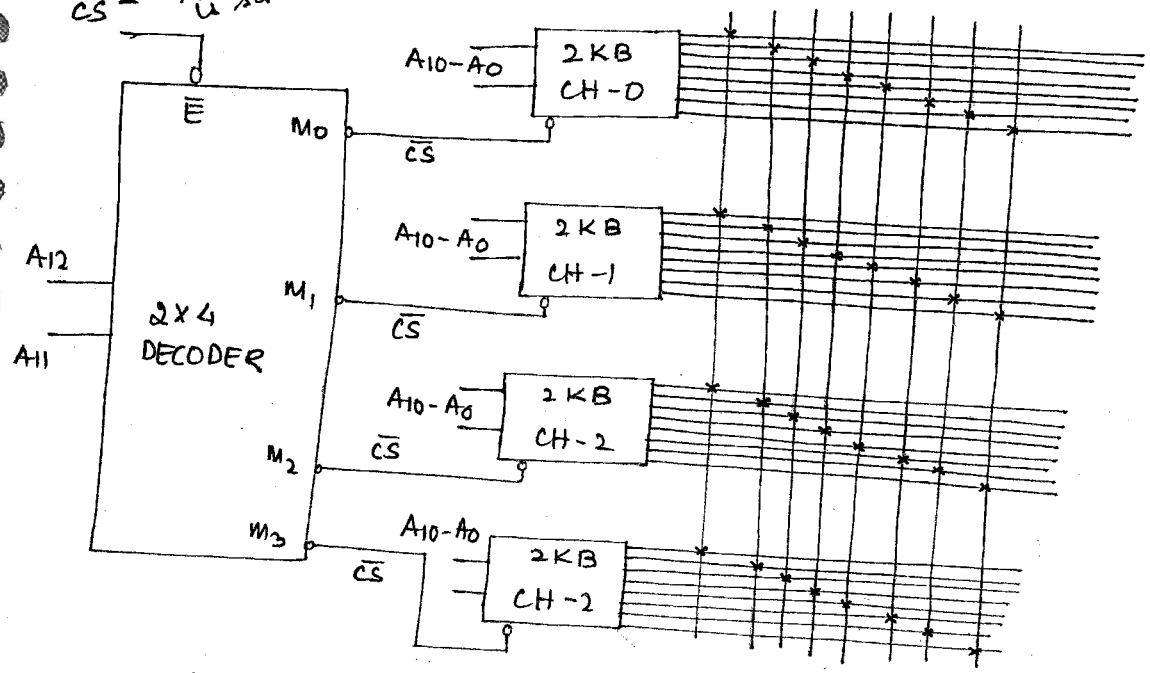
$\boxed{\text{data lines} = 8}$

B → Bytes ie 8 bits





$\overline{CS}$ ← of 8 KB RAM is same as $\overline{CS}$ or $\overline{E}$ of Decoder



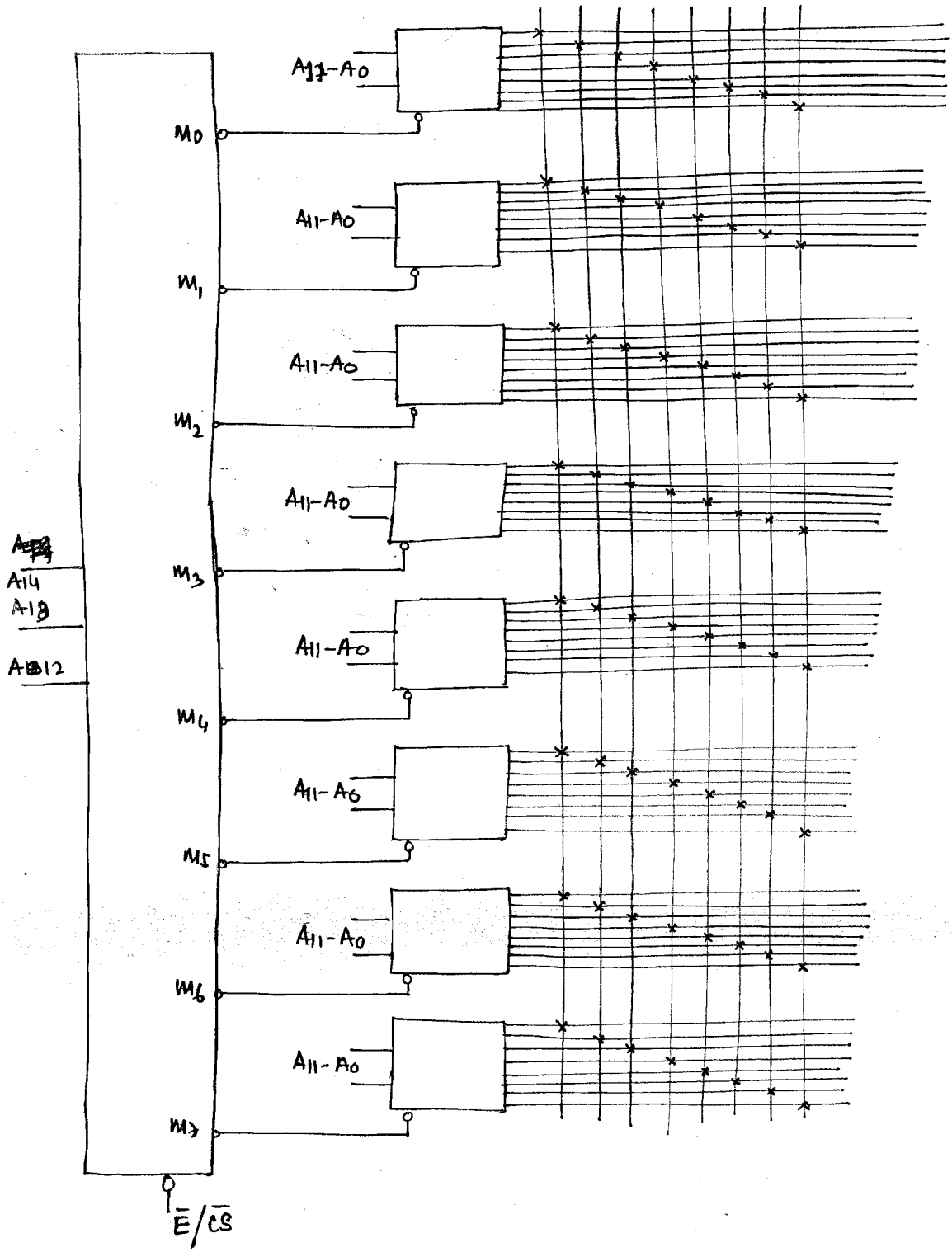
Note:

		2KB RAM										
A_{12}	A_{11}	A_{10}	A_9	A_8	A_7	A_6	A_5	A_4	A_3	A_2	A_1	A_0
0	0	CHIP 0										
0	1	CHIP 1										
1	0	CHIP 2										
1	1	CHIP 3										

Q2) Construct 32 KB RAM using 4 KB ROM.

Soln:

32 KB ROM	4 KB ROM
$2^5 \times 2^{10}$ Bytes	$2^2 \times 2^{10}$ Bytes
Address lines = 15	Address line = 12.
Data line = 8	Data line = 8.


A11-A0
M0
A11-A0
M1
A11-A0
M2
A11-A0
M3
A14
A13
A12
A11-A0
M4
A11-A0
M5
A11-A0
M6
A11-A0
M7
Ē/C̄S̄