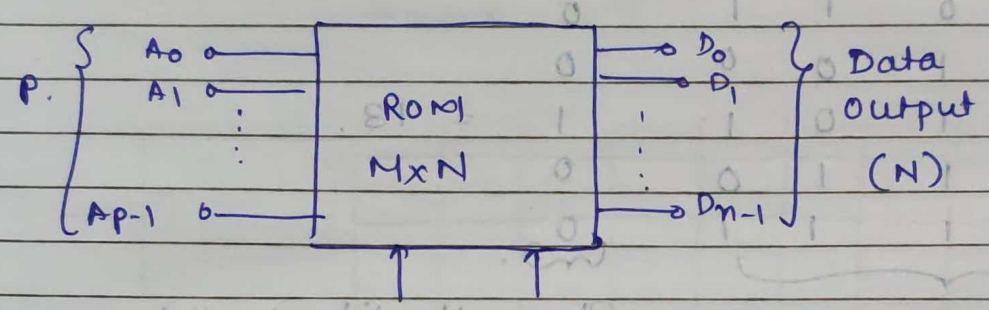
ROM:- Read Only Memory.

→ It is Used as Memory.
→ programmed only once during Manufacturing

→ Size of ROM = M x N.
M = No. of location.
N = Bit word.
P = No. of address lines for M locations.

→ Total No. of location M = 2^P.



Q Draw Logic diagram of circuit Using 16x1 ROM.

16x1 ROM. M = 16
? N = 1.
$2^? = 16$.

$2^4 = 16$.

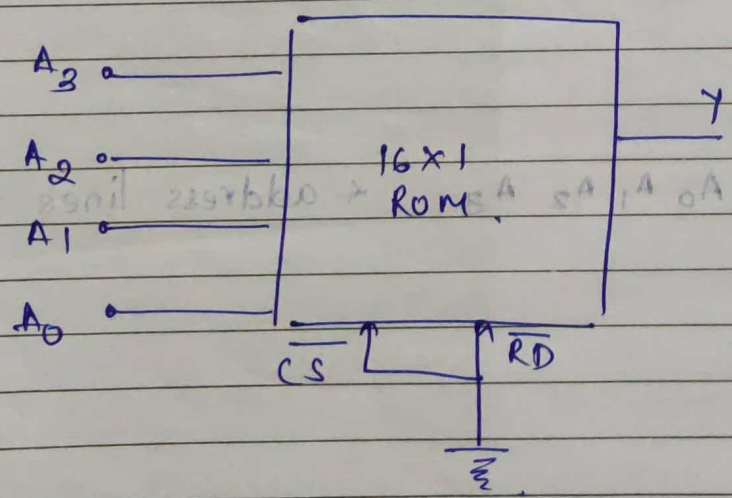
Input = 4. i.e A_0 A_1 A_2 A_3. ← address lines.
Thus p = 4.

A_3	A_2	A_1	A_0	O/P.
0	0	0	0	0
0	0	0	1	0
0	0	1	0	0
0	0	1	1	1
0	1	0	0	1
0	1	0	1	1
0	1	1	0	0
0	1	1	1	0
1	0	0	0	1 = 8
1	0	0	1	1 = 9
1	0	1	0	1 = 10
1	0	1	1	0
1	1	0	0	0
1	1	0	1	1 = 13.
1	1	1	0	0
1	1	1	1	0

address.

Store the bits in this sequence into ROM.

$$Y = \sum_m (0, 3, 4, 5, 8, 9, 10, 13).$$



Classification of ROM.

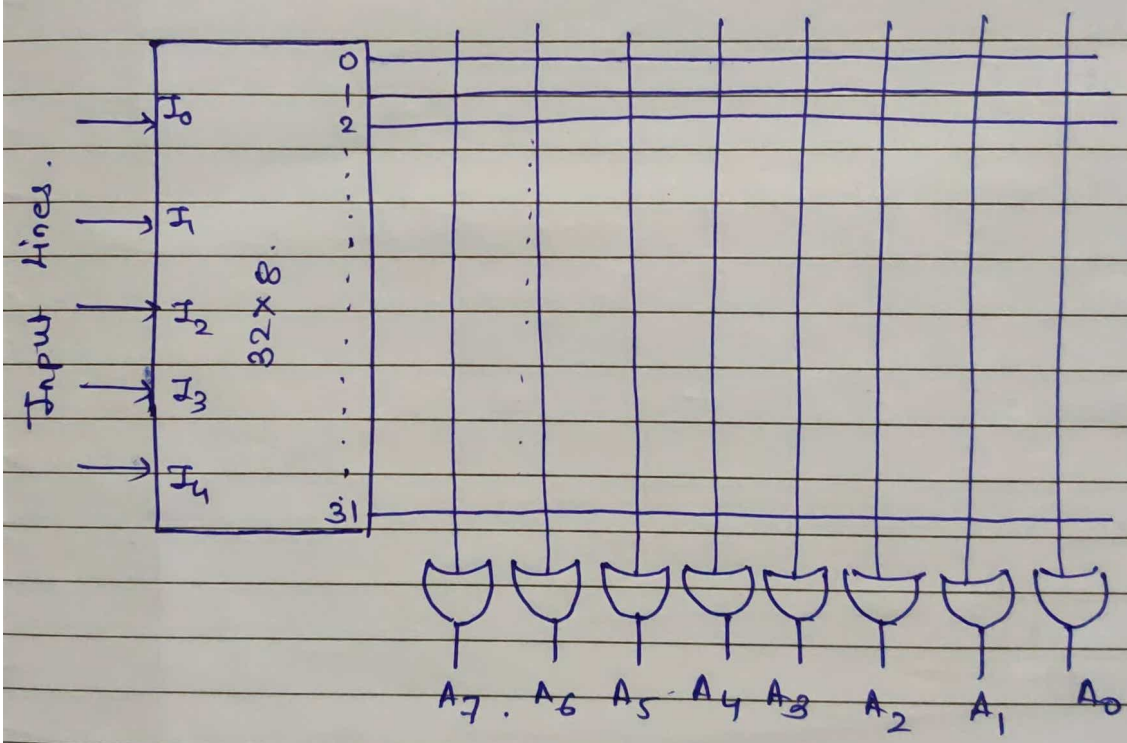
- ROM
- PROM
- EPROM
- UV EPROM.
- E^2PROM.

PROM.

- Programmable ROM.

- Programmed Only once after fabrication.
→ No data is stored into them.

32 × 8 ROM.



?

$2 = 32$.

$2^5 = 32$.

Input lines $\boxed{P = 5}$ address lines.

→ each 32 lines are Connected to each 8 OR gate. Thus OR gate has 32 input.

→ $32 \times 8 = 256$ Internal Connections.

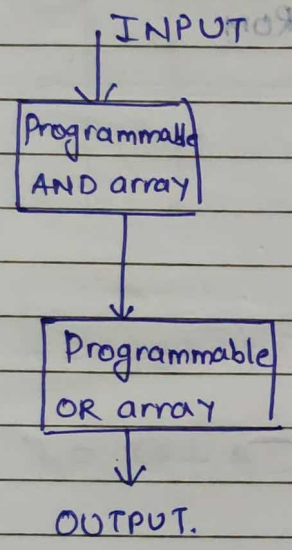
Types of PLD.

Unit 6

Programmable Logic Device.

PLA.

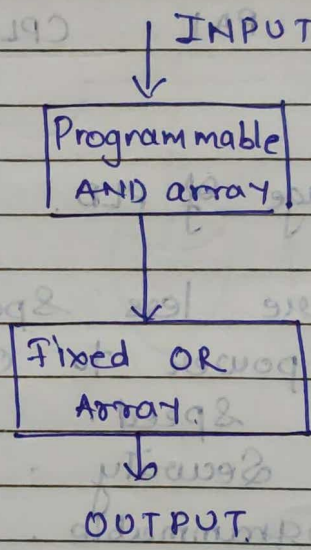
- Programmable Logic array.
- Limited or finite number of functions can be Implemented.
- AND array = programmable
  OR array = programming.



- Slower Speed.
- High Complex.
- High cost.
- less used.

PAL.

- programmable array logic.
- Massive number of functions can be Implemented.
- AND array = programmable.
  OR array = fixed.



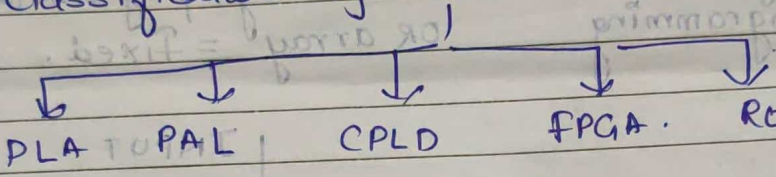
- Speed is Higher
- less Complex
- low cost.
- Highly Used.

PLD: Programmable Logic Device.

→ It has Replaced all Small Scale ICs like multiplexer, De-mux etc.

→ It looks like small box and many programmable switches as well as logic gates.

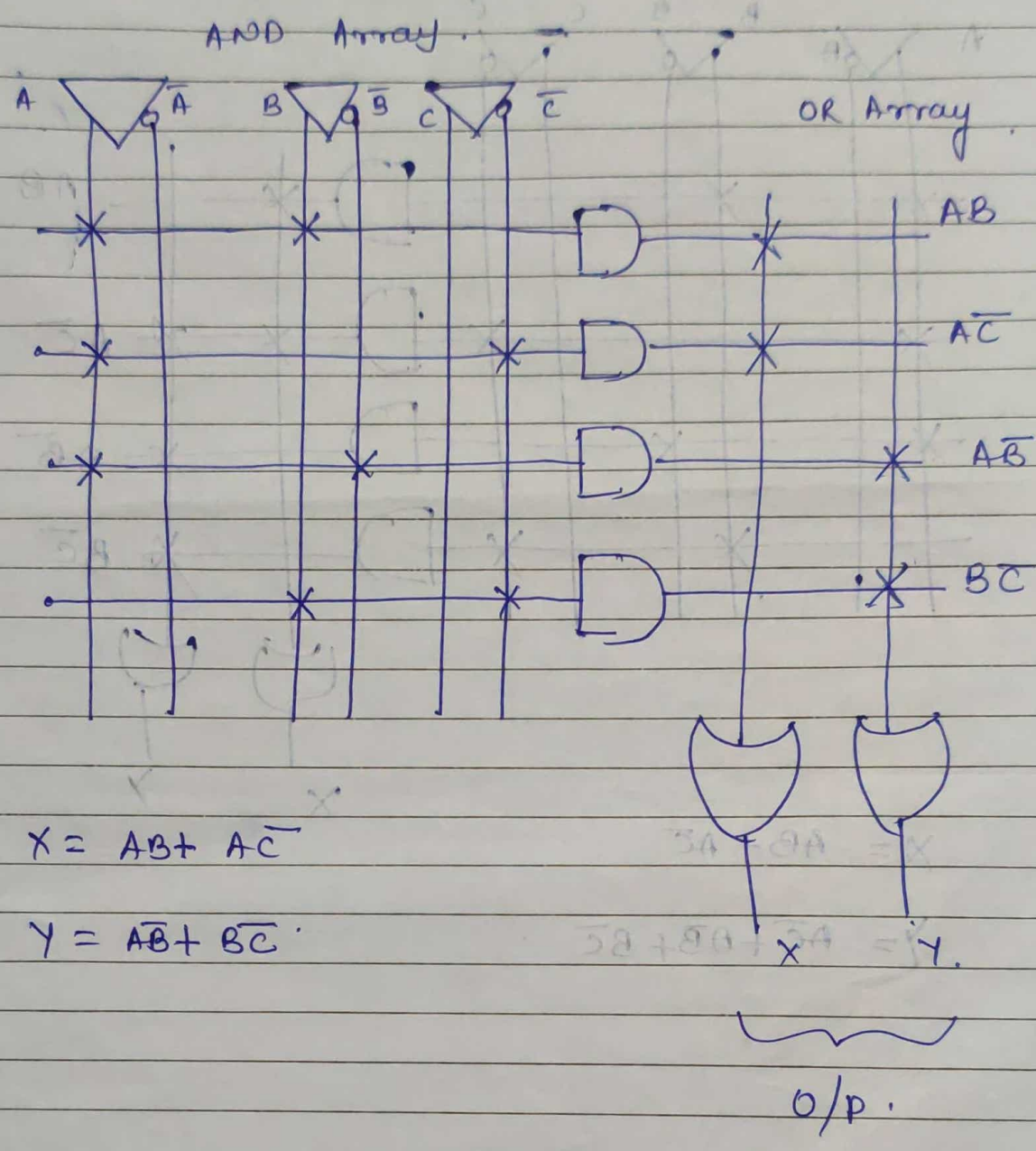
→ Classification of PLD.



Advantage of PLD.

→ Require less space.
→ less power to operate.
→ High speed.
→ High Security.
→ Reprogrammable.
→ Flexible to design.
→ Low cost.

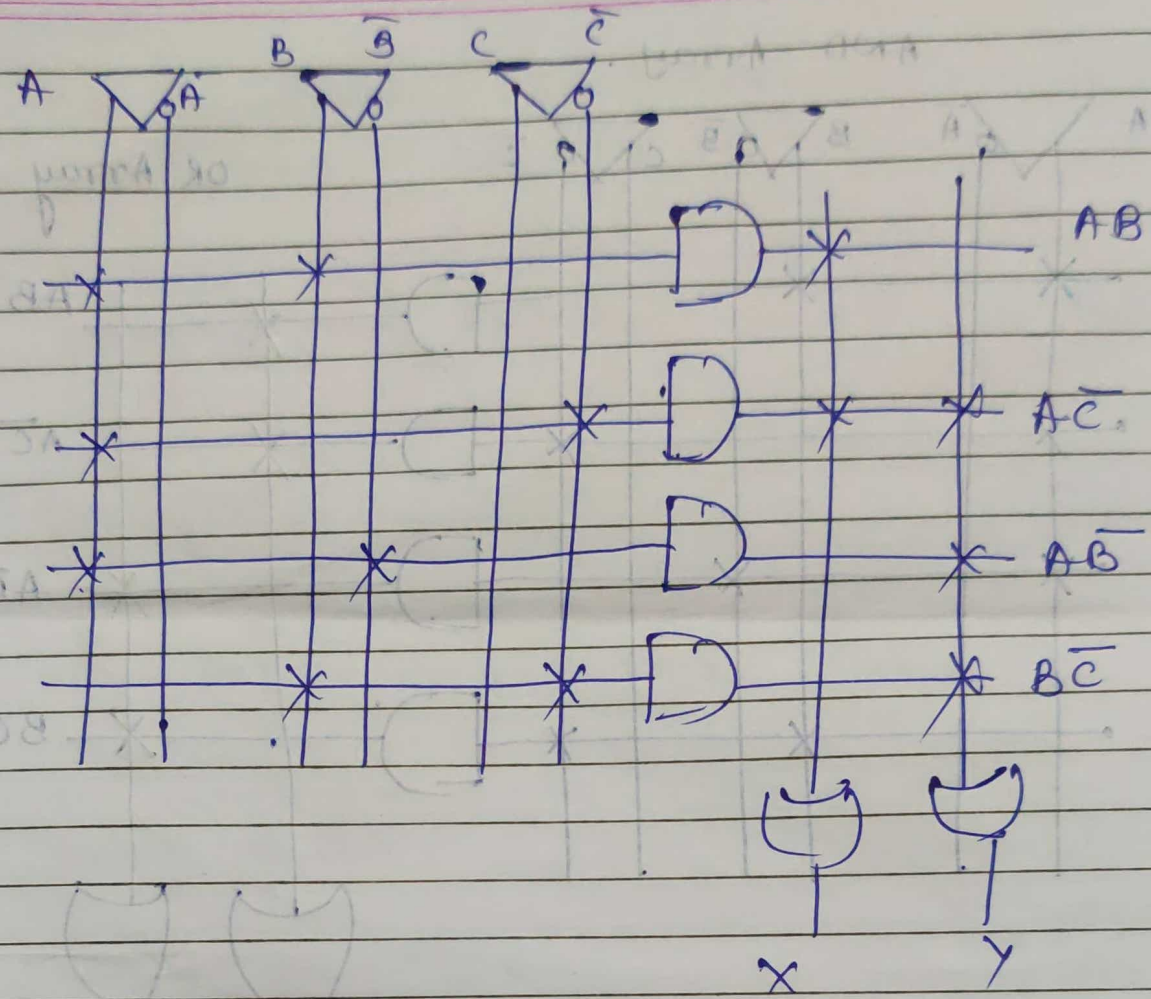
PAL.



$X = AB + A\bar{C}$

$Y = A\bar{B} + B\bar{C}$

PLA



$X = AB + A\bar{C}$

$Y = A\bar{C} + A\bar{B} + B\bar{C}$