SNS COLLEGE OF TECHNOLOGY
(An Autonomous Institution)
Coimbatore-641035
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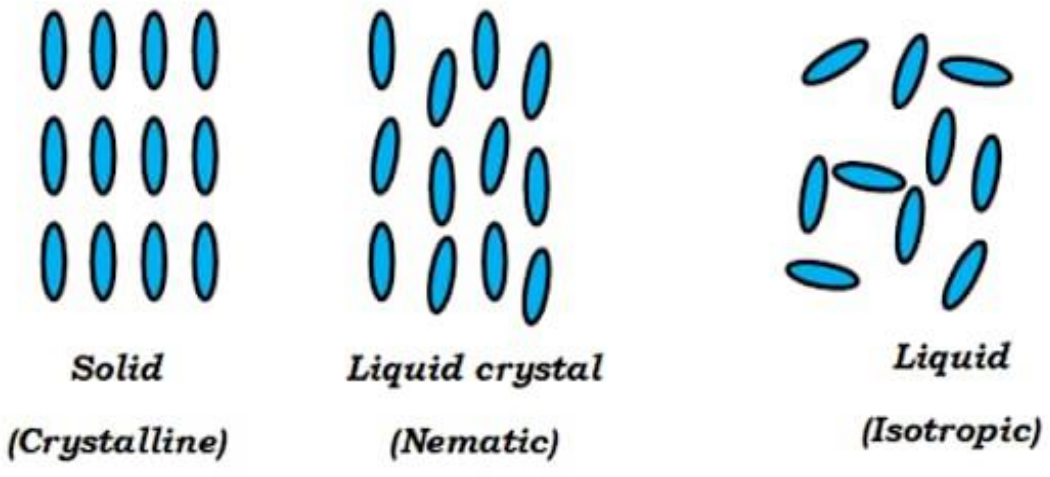
UNIT:5 - LCD (Liquid Crystal Display)

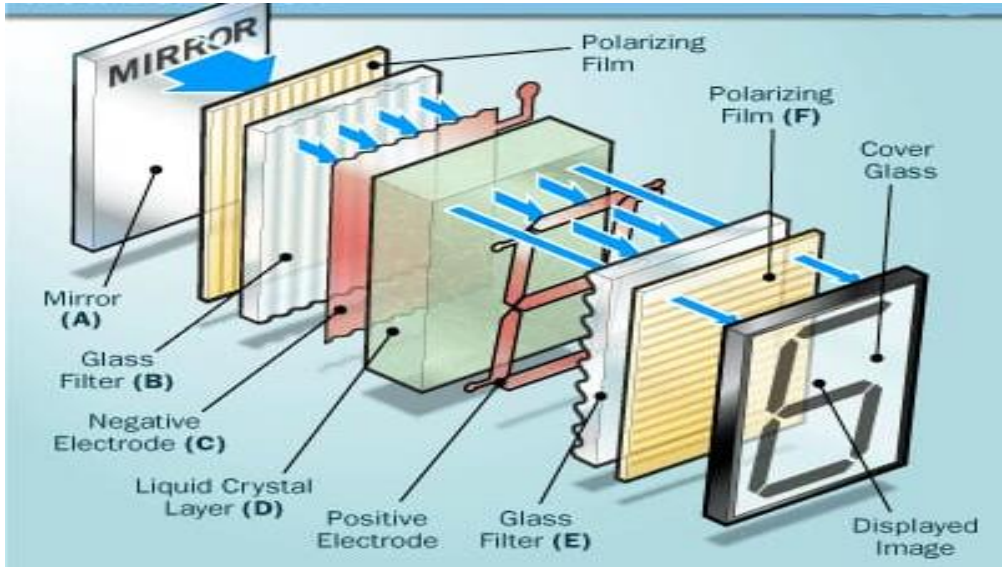
LCD – (Liquid Crystal Display)

Liquid Crystal Display (LCD) is an flat display screen used in electronic devices such as laptop, computer, TV, cellphones and portable video games. As the name says liquid crystal is a material which flows like a liquid and shows some properties of solid. These LCD are vey thin displays and it consumes less power than LEDs.



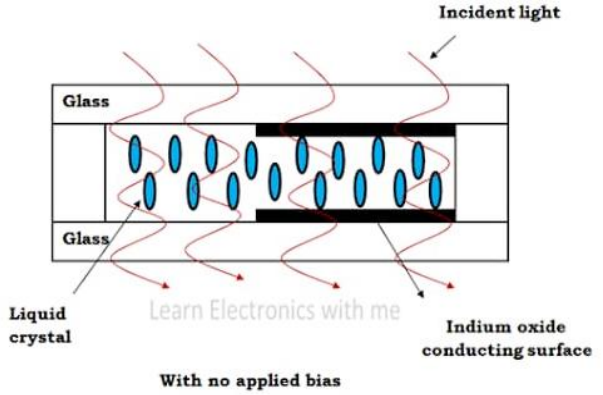
Construction of LCD

- Construction of LCD consists of two polarized glass pieces. Two electrodes are used, one is positive and the other one is negative.
- External potential is applied to LCD through this electrodes and it is made up of indium-tin-oxide. Liquid crystal layer of about 10µm- 20µm is placed between two glass sheets.
- The light is passed or blocked by changing the polarization.

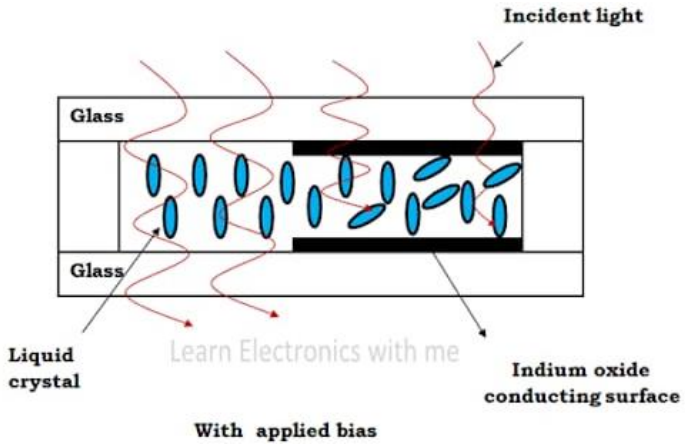


Working of LCD

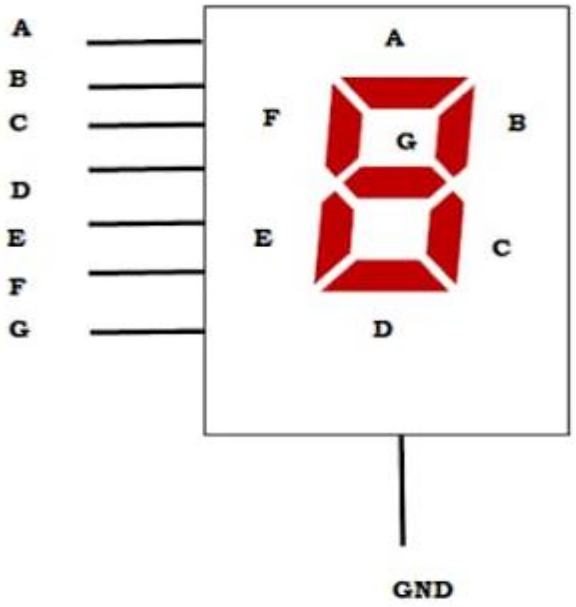
- The basic working principle of LCD is blocking of light. It does not produce light on its own. So external light source is used.
- When the external light passes from one polarizer to the next polarizer, external supply is given to the liquid crystal ,the polarized light aligns itself so that the image is produced in the screen.
- The indium oxide conducting surface is a transparent layer which is placed on both the sides of the sealed thick layer of liquid crystal . When no external bias is applied the molecular arrangement is not disturbed.



- When the external bias is applied the molecular arrangement is disturbed and it and that area looks dark and the other area looks clear.



- In the segment arrangement, the conducting segment looks dark and the other segment looks clear. To display number 2 , the segments A,B,G,E,D are energized.



Advantages of LCD:

- It is thin and compact
- Low power consumption
- Less heat is emitted during operation
- Low cost

Disadvantages of LCD:

- Speed of operation is low
- Lifespan is less
- Restricted viewing angles

Applications of LCD:

- Used in digital wrist watch
- Display images in digital cameras
- Used in numerical counters
- Display screen in calculators
- Mainly used in television
- Used in mobile screens
- Used in video players
- Used in image sensing circuits