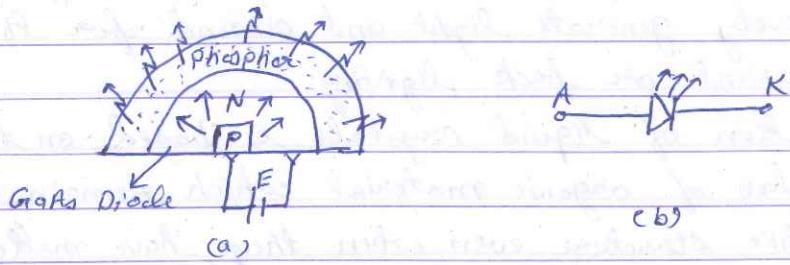


ਧਰਮ:- Electronic Instruments (EL-209)

ਵਾਡਾ:- Describe construction and working of Light Emitting Diode (LED)?

ਬਾਅਦ:-

The LED is basically a semiconductor PN junction diode capable of emitting electromagnetic radiation under forward conditions. These radiations can be either in the visible spectrum or in the infrared region, depending on the type of the semiconductor material used.



(Light Emitting Diode)

Generally, infra-red emitting LED's are coated with Phosphor so that, by the excitation of phosphor visible light can be used.

LEDs are very small devices, and can be used as point source of light. Their light output is function of the current flowing through it. So it can be controlled by the current easily. Different colour o/p such as red, amber, green etc. can be generated using LED, depending upon the material being used for construction. LED's are very fast devices, having a turn on-off time of less than 1 ns. The low supply voltage and current requirements of LEDs make them compatible with DTL and TTL, ICs.

It can be used in various applications for Alphanumeric displays, etc.

9201 - 2

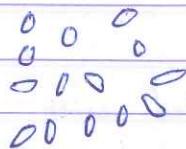
Describe construction and working of LCD?

Ans 3^{CDL}-

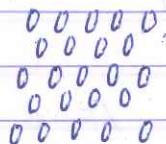
Liquid Crystal Display (LCD) are passive displays characterised by very low power consumption and good contrast ratio. They have the following characteristics in common.

1. They are light scattering.
2. They can operate in a reflective or transmissive configuration.
3. They do not actively generate light and depend for their operations on ambient or back lighting.

The operation of liquid crystals is based on the utilization of a class of organic material which remain a regular crystal-like structure even when they have melted.



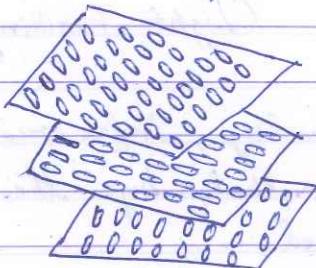
(a)



(b)

Ordinary Liquids

Nematic Liquid Crystal
(NLC)



(c)

Cholesteric Liquid Crystal
(CLC)

The most popular liquid crystal structure is the nematic liquid crystal (NLC). The liquid is normally transparent, but if it is subjected to a strong electric field, ions move through it and disrupt the well ordered crystal structure, causing the liquid to polarise and hence turn opaque. The removal of the applied field allows the crystal structure to reform and the material regains its transparency.

