Physics-401

Semiconductor Device

☆ In LEDs, light is given off due to **reverse bias/ ground state** of electrons and holes.

☆ LEDs emit light only when in **Forward** biased.

☆ A seven-segment LED array can display digits **0 to 9.**

☆ Photo-voltaic cells do not need an external **power** supply.

☆ A photodiode is essentially a **reverse** biased pn-junction which is illuminated with radiation.

☆ Incident radiations in a photodiode increase its **increase** current.

☆ The colour of light emitted by a LED depends on **material.**

☆ A pn-junction diode that radiates energy as light instead of heat is called **LED.**

☆ The unit of illumination is **mw/cm2.**

☆ **LED** diode is used in seven-segment displays.

☆ LEDs are made from **Ga, As, P**.

☆ LED is a device which converts **electrical** energy into **light** energy.

☆ A LED made by using gallium arsenide will emit **Infrared** light.

☆ A LED made with gallium phosphate will emit **red / green** light.

☆ The process of emitting photons from a semi-conductor material is called photons ~~**emition, recombining of e⁻.**~~

☆ When a light increases, the reverse current in a photo diode is **increases.**

☆ For a given reverse voltage, the reverse current in a passing through the photo diode increases as the illumination is **increases.**

☆ Photo diode converts **light** energy into **electrical** energy.

☆ In photo diode dark current flows when **no light**.

☆ The reverse current passes through the photo diode, when no light is incident on the ph-junction of photo diode is called **Dark current**.

☆ Solar cells are made from **silicon** materials.

☆ The basic principle of the solar cell is to convert the solar light energy into the **electrical** energy.

☆ In a solar cell p and n region are thin and its doping concentration is **highly.**

☆ A varactor diode is a **voltage** dependent variable capacitor.

☆ A varactor diode is always in **reverse** biased.

☆ The capacitance of a varactor diode can be changed by **reverse voltage**.

☆ A semiconductor device that resembles a voltage variable capacitor is known as **varactor** diode.

☆ When the reverse bias voltage of varactor diode increases, its **capacitance**

☆ Another name of solar cell is **photovoltaic cell**.

☆ Thermister made up from **cobalt, copper, iron, zinc, nickel, manganese.**

☆ Thermistor decreases its resistance with increases its temperature, it is called **NTC** type of thermistor.

☆ Thermistor increases its resistance with increases its temperature, it is called **PTC** type of thermistor.

☆ Thermistor is a **temperature** dependent resistor.

☆ Explain the working of a LED.

☆ What is LED?

☆ Give two applications of LEDs.

☆ Why do LEDs need series current-limiting resistors?

- ☆ How does LED differ from an ordinary diode?
- ☆ What is a photo-diode?
- ☆ Give two applications of photo-diodes.
- ☆ What is an optoisolator?
- ☆ What is a tunnel diode?
- ☆ Explain the V-I characteristics of a tunnel diode.
- ☆ Explain the working of tunnel diode oscillator.
- ☆ What is a varactor diode?
- ☆ Explain the working of varactor diode.
- ☆ Give one application of varactor diode.
- ☆ Explain the working of Shockley diode.
- ☆ Why is LED not made of silicon or germanium?
- ☆ Where do we use seven-segment display
- ☆ What is dark resistance of photo-diode?