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**MATRIC NUMBER: 208077**

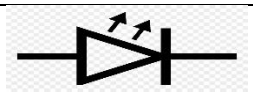
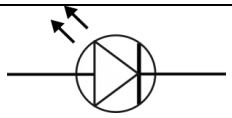
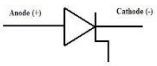
**DEPARTMENT: COMPUTER SCIENCE (200level)**

**COURSE: CSC 213 (DIGITAL LOGIC DESIGN)**

**ASSIGNMENT**

Write short notes on 10 different types of diodes. Make sure to include their symbols.

**SOLUTION**

| S/N | NAME | SYMBOL | NOTE |
|---|---|---|---|
| 1 | **Photodiode** |  | A photodiode is a semiconductor p-n junction device that converts light into an electrical current. The current is generated when photons are absorbed in the photodiode. Photodiodes may contain optical filters, built-in lenses, and may have large or small surface areas. It converts light into current. |
| 2 | **Light Emitting Diode (LED)** |  | A light-emitting diode (LED) is a semiconductor light source that emits light when current flows through it. Electrons in the semiconductor recombine with electron holes, releasing energy in the form of photons. |
| 3 | **Laser Diode** |  | A Laser Diode is a semiconductor device similar to a light-emitting diode (LED). It uses p-n junction to emit coherent light in which all the waves are at the same frequency and phase. This coherent light is produced by the laser diode using a process termed as “Light Amplification by Stimulated Emission of Radiation”, which is abbreviated as LASER. |
| 4 | **Shockley Diode** |  | In a Schottky diode metal replaces the p-type semiconductor. This metal can range from platinum to tungsten, molybdenum, gold, etc. When metal is combined with an n-type semiconductor an m-s junction is formed. This junction is referred to as a Schottky Barrier. |
| 5 | **Step Recovery Diode** |  | The step recovery diode is a form of semiconductor diode that can be used as a charge controlled switch and it has the ability to generate very sharp pulses. The step recovery diode, SRD is a rather specialist device that finds a number of applications in microwave radio frequency electronics. is a |

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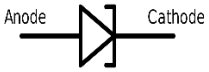
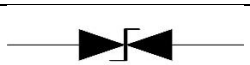
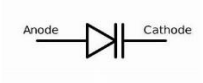
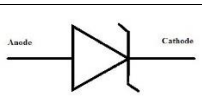
| | | | semiconductor junction diode having the ability to generate extremely short pulses. |
| 6 | **Thermal Diode** |  | The thermal diode is a (possibly non-electrical) device which allows heat to flow preferentially in one direction. |
| 7 | **Tunnel Diode** |   | A tunnel diode is a type of semiconductor diode that has effectively negative resistance due to the quantum mechanical effect called tunneling. Tunnel diode can be used as a switch, amplifier, and oscillator. Since it shows a fast response, it is used as high frequency component. |
| 8 | **Transient Voltage Suppression (TVS)** |  | A transient-voltage-suppression *(*TVS*)* diode*,* also transil or thyrector, is an electronic component used to protect electronics from voltage spikes induced on connected wires. |
| 9 | **Varactor or Varicap Diode** |   | Varactor or varicap diodes are used mainly in radio frequency or RF circuits to provide voltage controlled variable capacitance. These electronic components can be used in a whole variety of ways where a capacitance level needs to be controlled by a voltage. |
| 10 | **Zener Diode** |   | A Zener diode is a silicon semiconductor device that permits current to flow in either a forward or reverse direction. The Zener diode has a well-defined reverse-breakdown voltage, at which it starts conducting current, and continues operating continuously in the reverse-bias mode without getting damaged. |