[Question - 1 ~~Part~~ Section - 1]

Answer

(a) OTDR ⇒ OTDR stands for optical fibre time domain reflectometer is an optoelectronic instrument used to characterize an optical fibre. An OTDR is the equivalent of an electronic time domain reflector. It injects a series of optical pulses into the fibre under test and ~~experts~~ extracts, from the same end of the fibre, light the scattered or reflect back from point along the fibre. The scattered or reflected light that is gathered back is used to characterized the optical fibre. This is the equivalent to the way that an electronic time domain meter measures reflection caused by changes in the impedence of the cable under test.

(c) Semiconductor injection Laser :—

The electroluminescent properties of the forward-biased p-n junction diode have been considered in the preceding section. stimulated emission by the recombination of the injected carriers in encouraged in the semiconductor injection laser (also called the injection laser diode) or simply injection laser by the provision of an optical cavity in the crystal structure in order to provide the feedback photons. This gives the injection laser several major advantages over other semiconductor sources (e.g. LEDs) that may be used for optical communication. These are as follows :—

(I) High radiance due to amplifing effect stimulated emission
(II) Injection laser will generally supply milliwatts of optical output power.
(III) narrow linewidth on the order of 1nm (10Å) or less which is useful in minimizing the effect of material dispersion.