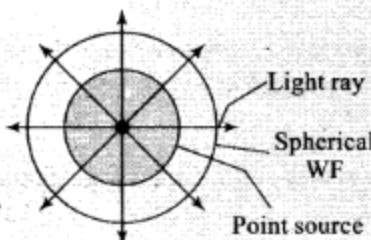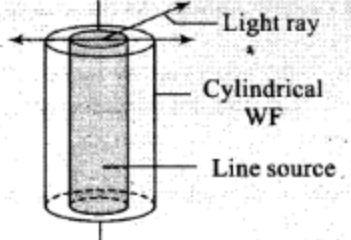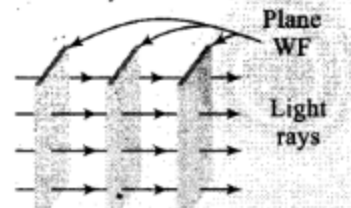**Q1. For light diverging from a point source,**
(a) the wavefront is spherical
(b) the intensity decreases in proportion to the distance squared
(c) the wavefront is parabolic
(d) the intensity at the wavefront does not depend on the distance
Solution: (a, b)

Type of wavefront	Intensity	Amplitude
Spherical	$I \propto \dfrac{1}{r^2}$	$A \propto \dfrac{1}{r}$
Cylindrical	$I \propto \dfrac{1}{r}$	$A \propto \dfrac{1}{\sqrt{r}}$
Plane	$I \propto r^0$	$A \propto r^0$

Due to the point source light propagates in all directions symmetrically and hence, wavefront will be spherical as shown in the diagram.

As intensity of the source will be·

$$I \propto \frac{1}{r^2}$$

where, r is radius of the wavefront at any time.

Hence the intensity decreases in proportion to the distance squared.