from (I) & (II)

$$E 4\pi r^2 = \frac{\sigma 4\pi R^2}{\varepsilon_0}$$

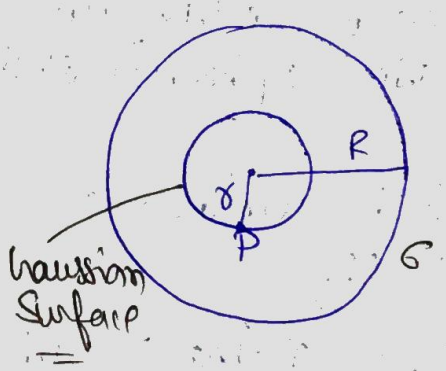
$$\boxed{E = \frac{q}{4\pi\varepsilon_0 r^2}} \qquad \boxed{E \propto \frac{1}{r^2}} \text{ for outside.}$$

(ii) field at surface of shell.

$$\boxed{E = \frac{q}{4\pi\varepsilon_0 R^2}} \qquad \boxed{r = R}$$

(iii) field inside the shell.

the point P inside the shell.




Here Gaussian Surface encloses no charge.

$$\phi = E\,\Delta S$$

$$\phi = 4\pi r^2$$

$$\phi = E 4\pi r^2 \quad \text{(I)}$$

$$\phi = \frac{q_{en}}{\varepsilon_0}$$

$$\phi = \frac{0}{\varepsilon_0} = 0 \quad \text{(II)}$$

$$\boxed{E = 0}$$