

. (a) : Let energy radiated from bigger body be E_1 .

$$[\text{Given, } r = 0.2 \text{ m, } r_1 = 0.8 \text{ m, then } \frac{E}{E_1} = \frac{\sigma A T^4}{\sigma A_1 T_1^4} = \frac{4\pi r^2 T^4}{4\pi r_1^2 T_1^4}]$$

$$\frac{E}{E_1} = \frac{r^2}{r_1^2} \frac{T^4}{T_1^4} = \left(\frac{0.2}{0.8}\right)^2 \times \left(\frac{800}{400}\right)^4 = \frac{1}{16} \times 16 \text{ ; So, } E_1 = E$$