

- 29** A beacon of power 10 W emits green light of frequency  $6.20 \times 10^{14}$  Hz uniformly in all directions. An observer has a telescope with an aperture of area  $2.00 \times 10^{-3} \text{ m}^2$ . His eye-brain system perceives a flash of light when 50 or more photons are incident on a small area of his retina in less than 0.10 s.

What is the approximate maximum range at which the beacon might be detected by the observer using the telescope?

- A**  $2.78 \times 10^6 \text{ m}$                       **B**  $4.82 \times 10^6 \text{ m}$
- C**  $5.56 \times 10^6 \text{ m}$                       **D**  $2.85 \times 10^4 \text{ m}$

