20. Astronomers use the following relationship to determine the distance, d, to a star.

$$F = \frac{L}{4\pi d^2}$$

For a particular star the following measurements are recorded:

apparent brightness, $F = 4{\cdot}4 \times 10^{-10}\,\text{W m}^{-2}$

luminosity, $L = 6{\cdot}1 \times 10^{30}\,\text{W}$

Based on this information, the distance to this star is

A $3{\cdot}3 \times 10^{19}\,\text{m}$

B $1{\cdot}5 \times 10^{21}\,\text{m}$

C $3{\cdot}7 \times 10^{36}\,\text{m}$

D $1{\cdot}1 \times 10^{39}\,\text{m}$

E $3{\cdot}9 \times 10^{39}\,\text{m}$.

[END OF SECTION 1. NOW ATTEMPT THE QUESTIONS IN SECTION 2 OF YOUR QUESTION AND ANSWER BOOKLET]