

Q 14 The resistance of hot tungsten filament is about 10 times the cold resistance. What will be the resistance of 100 W and 200 V lamp when not in use?

[2005]

- (a)  $20\Omega$    (b)  $40\Omega$    (c)  $200\Omega$    (d)  $400\Omega$

$$(b) \quad P = Vi = \frac{V^2}{R}$$

$$R_{\text{hot}} = \frac{V^2}{P} = \frac{200 \times 200}{100} = 400\Omega$$

$$R_{\text{cold}} = \frac{400}{10} = 40\Omega$$