Sol: Given equation is $K = (4.5 \times 10^{11}\ s^{-1})\, e^{28000/T}$

By comparing the above equation with the Arrhenius equation,

$$K = Ae^{-E_a/RT}$$

So, by comparision, we can clearly see that,

$$\frac{-E_a}{RT} = \frac{28000}{T}$$

$$-E_a = 28000 \times R \qquad [\because R = 8.314\ J.K^{-1}.mol^{-1}]$$

$$E_a = -28000 \times 8.314$$

$$= -232792 \text{ Joules/mol}$$

But we want our answer in Kcal/mol.

$\because$ 1 calorie = 4.184 Joules

$\therefore$ 1 Joule $= \frac{1}{4.184}$ calories $= 0.239$ calories

$\therefore E_a = -232792 \times 0.239$ cal/mol $\Rightarrow -55638.6233$ cal/mol

$$\therefore E_a = -55.638 \text{ kcal/mol.}$$