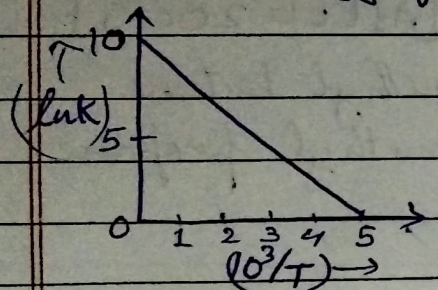
Q→ The rate constant (K) of a reaction is measured at different temperatures (T), and the data are plotted in the given figure. The activation energy of the reaction in KJmol^{-1} is: [JEE Main 2020 (Online)]



(A) R
(B) 2R
(C) $\frac{1}{R}$
(D) $\frac{1}{2R}$

Ans: (B)

Explanation: Arrhenius Equation: $\ln K = \ln A - \frac{E_a}{RT}$

$\rightarrow$ Slope $= \frac{-E_a}{10^3 R} = \frac{-10}{5}$

$\rightarrow E_a = 2R$ KJ/mol