32. The Balmer series in the hydrogen spectrum corresponds to the transition from n1 = 2 to n2 = 3,4,..........
This series lies in the visible region. Calculate the wavenumber of the line associated with the transition in
Balmer series when the electron moves to n = 4 orbit. (RH= 109677 cm-1)

Solution:

According to Bohr's model for the hydrogen atom

$v = R_H(1/n_1^2 - 1/n_2^2) cm^{-1}$

here, n1 = 2 and n2 = 4 and H = Rydberg's constant = 109677

Hence, wave number -v= 109677 (¼-1/16)

= 20564.44cm-1