

**3. The radius of the second Bohr orbit for the hydrogen atom is :**

(Planck's constant,  $h = 6.262 \times 10^{-34}$  Js; Mass of electron =  $9.1091 \times 10^{-31}$  kg; Charge of electron  $e = 1.60210 \times 10^{-19}$  C; permittivity of vacuum  $\epsilon_0 = 8.854185 \times 10^{-12}$  kg<sup>-1</sup>m<sup>-3</sup>A<sup>2</sup>)

- (1) 1.65 A
- (2) 4.76 A
- (3) 0.529 A
- (4) 2.12 A

**Solution:**

Radius of  $n^{\text{th}}$  Bohr orbit in H atom =  $0.53 \frac{n^2}{Z}$

For hydrogen  $Z = 1$

Radius of  $2^{\text{nd}}$  Bohr orbit in H atom =  $0.53 \times \frac{2^2}{1} = 2.12$

Hence option (4) is the answer.