Emission from excited hydrogen atoms is used for a photoelectric experiment using metal of work-function 1.7 eV for which the stopping potential is found to be 10.4 V. The series from hydrogen emission responsible for this is:

(A) Lyman Series	(B) Balmer Series
(C) Paschen Series	(D) Pfund Series

Solution

We have, $hv = \phi + eV$

 $\therefore hv = 1.7 + 10.4e = (1.7 + 10.4)eV = 12.1eV$

This energy is coming from electron transitions happening in hydrogen atom.

$$12.1 \approx 13.6 \left(\frac{1}{1^2} - \frac{1}{3^2}\right)$$

It corresponds to 3 to 1 transition which belongs to Lyman Series.

Option (A)