

## JEE MAIN ATOMS — ATOMIC SPECTRA, SPECTRAL SERIES OF HYDROGEN — PYQS

**Max. Marks: 20**
**Questions: 5**

### Section A (MCQ) — 5 questions

- Q.1** The ratio of momentum of the photons of the 1<sup>st</sup> and 2<sup>nd</sup> line of Balmer series of Hydrogen atoms is  $\alpha/\beta$ . The possible values of  $\alpha$  and  $\beta$  are :

[JEE Main 2026 (Online) 6th April Morning Shift]

- (1) 27 and 20                      (2) 3 and 16  
(3) 5 and 36                      (4) 20 and 27

Scan or tap for the full solution 

- Q.2** In the hydrogen atom, the electron makes a transition from the higher orbit (i) to a lower orbit (f). The ratio of the radius of the orbits is given by  $r_i:r_f = 16:4$ . The wavelength of photon emitted due to this transition is \_\_\_\_\_ nm.

(Given Rydberg constant =  $1.0973 \times 10^7/\text{m}$ )

[JEE Main 2026 (Online) 5th April Morning Shift]

- (1) 121                      (2) 242                      (3) 486                      (4) 974

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- Q.3** In hydrogen atom spectrum, ( $R \rightarrow$  Rydberg's constant)

- A. the maximum wavelength of the radiation of Lyman series is  $\frac{4}{3R}$   
 B. the Balmer series lies in the visible region of the spectrum  
 C. the minimum wavelength of the radiation of Paschen series is  $\frac{9}{R}$   
 D. the minimum wavelength of Lyman series is  $\frac{5}{4R}$   
 Choose the correct answer from the options given below :

[JEE Main 2026 (Online) 23rd January Morning Shift]

- (1) A, B Only                      (2) B, D Only  
(3) A, B and D Only                      (4) A, B and C Only

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- Q.4** The smallest wavelength of Lyman series is 91 nm. The difference between the largest wavelengths of Paschen and Balmer series is nearly \_\_\_\_\_ nm.

[JEE Main 2026 (Online) 22nd January Evening Shift]

- (1) 1784                      (2) 1875                      (3) 1217                      (4) 1550

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- Q.5** For a hydrogen atom, the ratio of the largest wavelength of Lyman series to that of the Balmer series is \_\_\_\_\_

[JEE Main 2025 (Online) 7th April Morning Shift]

- (1) 5:27                      (2) 27:5                      (3) 3:4                      (4) 5:36

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### ANSWER KEY

| Ques. | 1 | 2 | 3 | 4 | 5 |  |  |  |  |  |  |
|-------|---|---|---|---|---|--|--|--|--|--|--|
| Ans.  | 4 | 3 | 4 | 3 | 1 |  |  |  |  |  |  |