

NEET ATOMS — ENERGY LEVELS AND LINE SPECTRA — PYQS

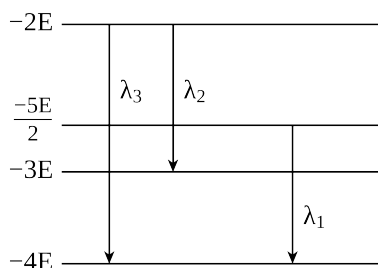
Max. Marks: 36

Questions: 9

Section A (MCQ) — 9 questions

- Q.1** Some energy levels of a molecule are shown in the figure with their wavelengths of transitions. Then :

[RE-NEET (UG) 2024]



- (1) $\lambda_3 > \lambda_2$, $\lambda_1 = 2\lambda_2$ (2) $\lambda_3 > \lambda_2$, $\lambda_1 = 4\lambda_2$
 (3) $\lambda_1 > \lambda_2$, $\lambda_2 = 2\lambda_3$ (4) $\lambda_2 > \lambda_1$, $\lambda_2 = 2\lambda_3$

Scan or tap for the full solution 

- Q.2** Hydrogen atom in ground state is excited by a monochromatic radiation of $\lambda = 975 \text{ \AA}$. Number of spectral lines in the resulting spectrum emitted will be

[AIPMT 2014]

- (1) 3 (2) 2 (3) 6 (4) 10

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- Q.3** An electron of a stationary hydrogen atom passes from the fifth energy level to the ground level. The velocity that the atom acquired as a result of photon emission will be

[AIPMT 2012 (Prelims)]

- (1) $\frac{24hR}{25m}$ (2) $\frac{25hR}{24m}$ (3) $\frac{25m}{24hR}$ (4) $\frac{24m}{25hR}$

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- Q.4** An electron in the hydrogen atom jumps from excited state n to the ground state. The wavelength so emitted illuminates a photosensitive material having work function 2.75 eV. If the stopping potential of the photoelectron is 10 V, then the value of n is

[AIPMT 2011 (Mains)]

- (1) 2 (2) 3 (3) 4 (4) 5

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- Q.5** Out of the following which one is not a possible energy for a photon to be emitted by hydrogen atom according to Bohr's atomic model?

[AIPMT 2011 (Mains)]

- (1) 0.65 eV (2) 1.9 eV (3) 11.1 eV (4) 13.6 eV

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- Q.6** The ionization energy of the electron in the hydrogen atom in its ground state is 13.6 eV. The atoms are excited to higher energy levels to emit radiations of 6 wavelengths. Maximum wavelength of emitted radiation corresponds to the transition between

[AIPMT 2009]

- (1) $n = 3$ to $n = 1$ states (2) $n = 2$ to $n = 1$ states
 (3) $n = 4$ to $n = 3$ states (4) $n = 3$ to $n = 2$ states

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- Q.7** Ionization potential of hydrogen atom is 13.6 eV. Hydrogen atoms in the ground state are excited by monochromatic radiation of photon energy 12.1 eV. According to Bohr's theory, the spectral lines emitted by hydrogen will be

[AIPMT 2006]

- (1) one (2) two (3) three (4) four

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- Q.8** Energy levels A, B and C of a certain atom corresponding to increasing values of energy i.e. $E_A < E_B < E_C$. If λ_1 , λ_2 and λ_3 are wavelengths of radiations corresponding to transitions C to B, B to A and C to A respectively, which of the following relations is correct?

[AIPMT 2005]

- (1) $\lambda_3 = \lambda_1 + \lambda_2$ (2) $\lambda_3 = \frac{\lambda_1 \lambda_2}{\lambda_1 + \lambda_2}$
 (3) $\lambda_1 + \lambda_2 + \lambda_3 = 0$ (4) $\lambda_3^2 = \lambda_1^2 + \lambda_2^2$

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- Q.9** Maximum frequency of emission is obtained for the transition

[AIPMT 2000]

- (1) $n = 2$ to $n = 1$ (2) $n = 6$ to $n = 2$
 (3) $n = 1$ to $n = 2$ (4) $n = 2$ to $n = 6$

Scan or tap for the full solution 

ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9		
Ans.	4	3	1	3	3	3	3	2	1		