

Atoms

1. The first model of atom in 1898 was proposed by

- (a) Ernst Rutherford
- (b) Albert Einstein
- (c) J.J. Thomson
- (d) Niels Bohr

▼ **Answer**

Answer: c

2. In Geiger-Marsden scattering experiment, the trajectory traced by an α -particle depends on

- (a) number of collision
- (b) number of scattered α -particles
- (c) impact parameter
- (d) none of these

▼ **Answer**

Answer: c

3. In the Geiger-Marsden scattering experiment the number of scattered particles detected are maximum and minimum at the scattering angles respectively at

- (a) 0° and 180°
- (b) 180° and 0°
- (c) 90° and 180°
- (d) 45° and 90°

▼ **Answer**

Answer: a

4. In the Geiger-Marsden scattering experiment, in case of head-on collision the impact parameter should be

- (a) maximum
- (b) minimum
- (c) infinite
- (d) zero

▼ **Answer**

Answer: a

5. Rutherford's experiments suggested that the size of the nucleus is about

- (a) 10^{-14} m to 10^{-12} m
- (b) 10^{-15} m to 10^{-13} m
- (c) 10^{-15} m to 10^{-14} m
- (d) 10^{-15} m to 10^{-12} m

▼ **Answer**

Answer: c

6. Which of the following spectral series falls within the visible range of electromagnetic radiation?

- (a) Lyman series
- (b) Balmer series
- (c) Paschen series
- (d) Pfund series

▼ **Answer**

Answer: b

7. The first spectral series was discovered by

- (a) Balmer

- (b) Lyman
- (c) Paschen
- (d) Pfund

▼ Answer

Answer: a

8. Which of the following postulates of the Bohr model led to the quantization of energy of the hydrogen atom?

- (a) The electron goes around the nucleus in circular orbits.
- (b) The angular momentum of the electron can only be an integral multiple of $h/2\pi$.
- (c) The magnitude of the linear momentum of the electron is quantized.
- (d) Quantization of energy is itself a postulate of the Bohr model.

▼ Answer

Answer: b

9. The Bohr model of atoms

- (a) assumes that the angular momentum of electrons is quantized.
- (b) uses Einstein's photoelectric equation.
- (c) predicts continuous emission spectra for atoms.
- (d) predicts the same emission spectra for all types of atoms.

▼ Answer

Answer: a

10. If n is the orbit number of the electron in a hydrogen atom, the correct statement among the following is

- (a) electron energy increases as n increases.
- (b) hydrogen emits infrared rays for the electron transition from $n = \infty$ to $n = 1$
- (c) electron energy is zero for $n = 1$ (<0 electron energy varies as n^2).

▼ Answer

Answer: a

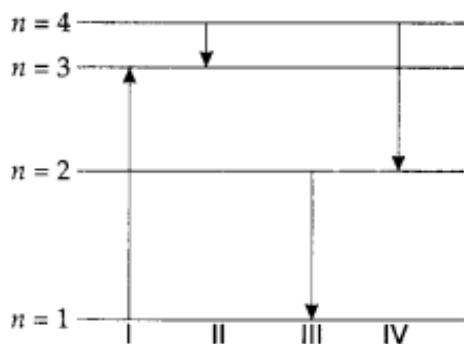
11. If the radius of inner most electronic orbit of a hydrogen atom is 5.3×10^{-11} m, then the radii of $n = 2$ orbits is

- (a) $1.12 \text{ \AA}$
- (b) $2.12 \text{ \AA}$
- (c) $3.22 \text{ \AA}$
- (d) $4.54 \text{ \AA}$

▼ Answer

Answer: b

12. The diagram shows the energy levels for an electron in a certain atom. Which transition shown represents the emission of a photon with the most energy?

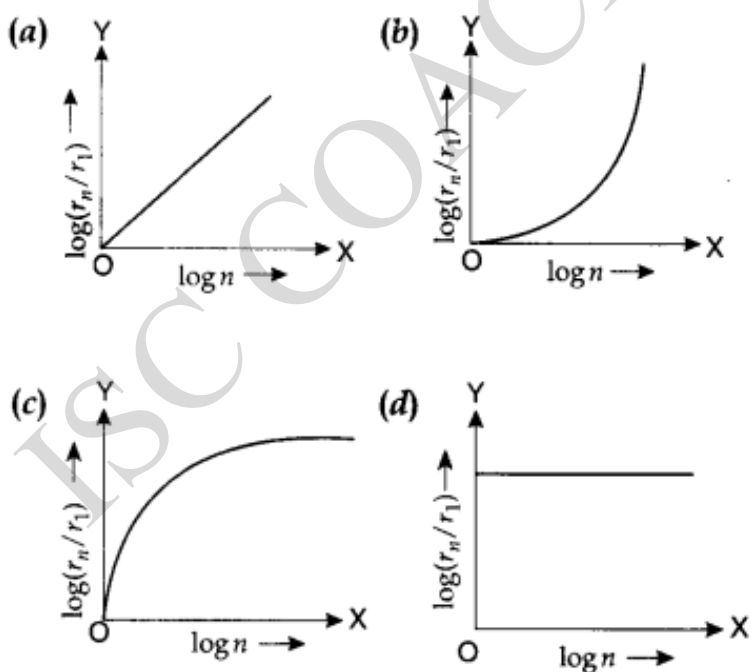


- (a) I
- (b) II
- (c) III
- (d) IV

▼ Answer

Answer: c

13. In a hydrogen atom, the radius of n^{th} Bohr orbit is r_n . The graph between $\log(r_n/r_1)$ and $\log n$ will be



▼ Answer

Answer: a