

CHEMISTRY

1. The frequency of an electromagnetic radiation is 2×10^6 Hz. What is its wavelength in metres (Velocity of light = 3×10^8 ms⁻¹)
 - (1) 6.0×10^{14}
 - (2) 1.5×10^4
 - (3) 1.5×10^2
 - (4) 0.66×10^{-2}
2. Which of the following transitions have minimum wavelength?
 - (1) $n_4 \rightarrow n_1$
 - (2) $n_2 \rightarrow n_1$
 - (3) $n_4 \rightarrow n_2$
 - (4) $n_3 \rightarrow n_1$
3. The de-Broglie wavelength of a particle with mass 1 gm and velocity 100 m s⁻¹ is
 - (1) 6.63×10^{-33} m
 - (2) 6.63×10^{-34} m
 - (3) 6.63×10^{-35} m
 - (4) 6.65×10^{-35} m
4. The uncertainty in momentum of an electron is 1×10^{-5} kg - m / s. The uncertainty in its position will be ($h = 6.62 \times 10^{-34}$ kg - m² s⁻¹)
 - (1) 1.05×10^{-28} m
 - (2) 1.05×10^{-26} m
 - (3) 5.27×10^{-30} m
 - (4) 5.25×10^{-28} m
5. Which of the following sets is possible for quantum numbers?
 - (1) $n = 4, l = 3, m = -2, s = 0$
 - (2) $n = 4, l = 4, m = +2, s = -\frac{1}{2}$
 - (3) $n = 4, l = 4, m = -2, s = +\frac{1}{2}$
 - (4) $n = 4, l = 3, m = -2, s = +\frac{1}{2}$
6. The number of radial nodes of 3s and 2p orbitals are respectively.
 - (1) 2, 0
 - (2) 0, 2
 - (3) 1, 2
 - (4) 2, 1
7. The third line in Balmer series corresponds to an electronic transition between which Bohr's orbits in hydrogen
 - (1) $5 \rightarrow 3$
 - (2) $5 \rightarrow 2$
 - (3) $4 \rightarrow 3$
 - (4) $4 \rightarrow 2$
8. What is the wave number of 4th line in Balmer series of Hydrogen spectrum? ($R = 1,09,677$ cm⁻¹)
 - (1) 24,630 cm⁻¹
 - (2) 24,360 cm⁻¹
 - (3) 24,730 cm⁻¹
 - (4) 24,372 cm⁻¹
9. Which of the following factors affects the adsorption of a gas on solid?
 - (1) T_c (critical temp.)
 - (2) Temperature of gas
 - (3) Pressure of gas
 - (4) All of them
10. The volume of gases NH₃, CO₂ and CH₄ adsorbed by one gram of charcoal at 298 K are in
 - (1) CH₄ > CO₂ > NH₃
 - (2) NH₃ > CH₄ > CO₂
 - (3) NH₃ > CO₂ > CH₄
 - (4) CO₂ > NH₃ > CH₄