

G.4

62. An electron in the ground state of the hydrogen atom is pulled apart by absorption of a 70 nm photon. The kinetic energy of the ejected electron will be about
- (A) 3.6 eV.
 - (B) 2.8 eV.
 - (C) 4.2 eV.
 - (D) 5.3 eV.
63. Which of the following fields cannot be associated with the electric field produced by some electrostatic charge distribution
- (A) $F_x = 2yz(1 - 6xyz)$, $F_y = 2xz(1 - 6xyz)$, $F_z = 2xy(1 - 6xyz)$.
 - (B) $F_x = y^2 + z^2 + 2(xy + yz + zx)$, $F_y = z^2 + x^2 + 2(xy + yz + zx)$, $F_z = x^2 + y^2 + 2(xy + yz + zx)$.
 - (C) $F_x = 2x^2yz$, $F_y = 2xy^2z$, $F_z = 2xyz^2$.
 - (D) $F_x = x/(x^2 + y^2 + z^2)$, $F_y = y/(x^2 + y^2 + z^2)$, $F_z = z/(x^2 + y^2 + z^2)$.
64. Assuming one free electron per atom to contribute to current through a copper wire, the number of charge carriers per cubic meter of copper (atomic weight=63.5 g/mol, density=8.92 g/cc)
- (A) 2.8×10^{22} .
 - (B) 6.2×10^{24} .
 - (C) 8.5×10^{28} .
 - (D) 4.8×10^{23} .
65. If $y_1 = a \sin(\omega t - kx)$ and $y_2 = a \sin(kx - \omega t)$ then
- (A) both y_1 and y_2 describe harmonic waves travelling in the positive x -direction.
 - (B) both y_1 and y_2 describe harmonic waves travelling in the negative x -direction.
 - (C) while y_1 describes a harmonic wave travelling in the positive x -direction, y_2 describes that travelling in the negative x -direction.
 - (D) while y_1 describes a harmonic wave travelling in the negative x -direction, y_2 describes that travelling in the positive x -direction.