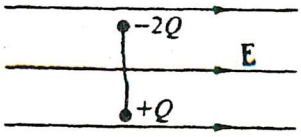
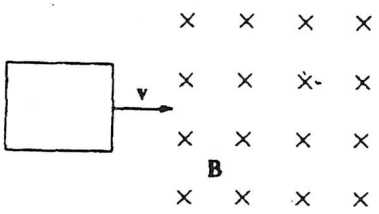


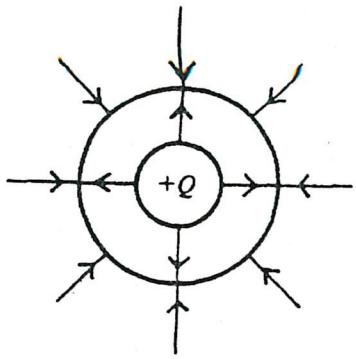
62. A rigid insulated rod, with two unequal charges attached to its ends, is placed in a uniform electric field **E** as shown above. The rod experiences a

(A) net force to the left and a clockwise rotation
(B) net force to the left and a counterclockwise rotation
(C) net force to the right and a clockwise rotation
(D) net force to the right and a counterclockwise rotation
(E) rotation, but no net force



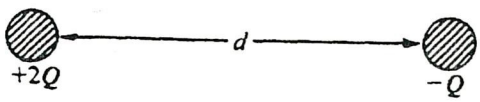
63. A loop of wire is pulled with constant velocity **v** to the right through a region of space where there is a uniform magnetic field **B** directed into the page, as shown above. The magnetic force on the loop is

(A) directed to the left both as it enters and as it leaves the region
(B) directed to the right both as it enters and as it leaves the region
(C) directed to the left as it enters the region and to the right as it leaves
(D) directed to the right as it enters the region and to the left as it leaves
(E) zero at all times



64. The electric field of two long coaxial cylinders is represented by lines of force as shown above. The charge on the inner cylinder is $+Q$. The charge on the outer cylinder is

(A) $+3Q$ (B) $+Q$ (C) 0
(D) $-Q$ (E) $-3Q$



65. Two identical conducting spheres are charged to $+2Q$ and $-Q$, respectively, and are separated by a distance d (much greater than the radii of the spheres) as shown above. The magnitude of the force of attraction on the left sphere is F_1. After the two spheres are made to touch and then are reseparated by distance d, the magnitude of the force on the left sphere is F_2. Which of the following relationships is correct?

(A) $2F_1 = F_2$
(B) $F_1 = F_2$
(C) $F_1 = 2F_2$
(D) $F_1 = 4F_2$
(E) $F_1 = 8F_2$