Magnetic field of a rectangular current loop. A rectangular wire loop of edge lengths a and b in air carries a steady current of intensity I ($I > 0$), as shown in Fig. Q4.3. The magnetic flux density vector $\mathbf{B}$ at the point M in the figure can be represented as
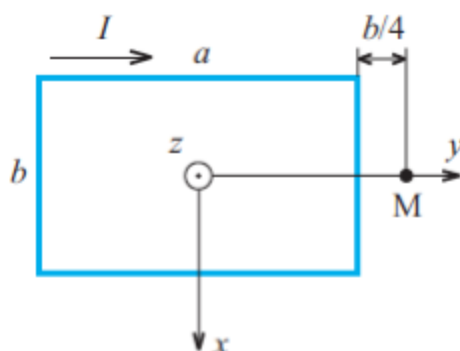

Figure Q4.3 Rectangular wire loop with a steady current; for Question 4.5.

(A) $\mathbf{B} = B_x\mathbf{a}_x$, where $B_x > 0$.
(B) $\mathbf{B} = B_x\mathbf{a}_x$, where $B_x < 0$.
(C) $\mathbf{B} = B_z\mathbf{a}_z$, where $B_z > 0$.
(D) $\mathbf{B} = B_z\mathbf{a}_z$, where $B_z < 0$.
(E) $\mathbf{B} = B_x\mathbf{a}_x + B_y\mathbf{a}_y$, where $B_x \neq 0$ and $B_y \neq 0$.

Solution: (C)
Answer: (C)