Magnetic field due to three solenoid coils. Three identical solenoidal coils, wound uniformly and densely with N turns of thin wire, are positioned in space as shown in Fig. Q4.4. The axes of coils lie in the same plane and the permeability everywhere is μ_o. Let I_1, I_2 and I_3 denote the intensities of time-invariant currents in the coils. Consider the following two cases: (a) $I_1 = I_2 = I_3 = I$ and (b) $I_1 = I, I_2 = I_3 = 0$. If $I > 0$, the magnetic flux density at the center of the system (the point P) for case (a) is

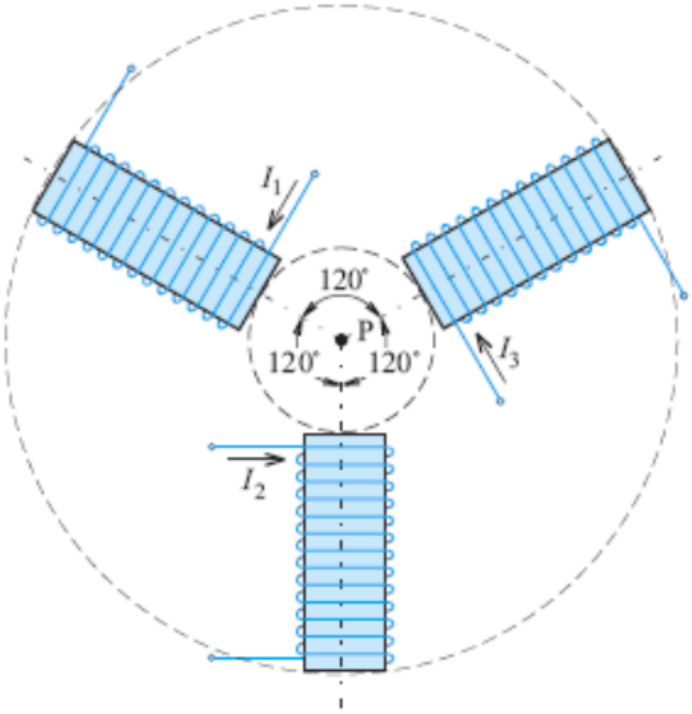

Figure Q4.4 Three solenoidal coils with steady currents; for Question 4.6.

(A) larger than
(B) the same as
(C) smaller than

the magnetic flux density at the same point for case (b).

Solution: (C)
Answer: (C)