Q 5. A current of 1.5 A is flowing through a triangle, of side 9 cm each. The magnetic field at the centroid of the triangle is :
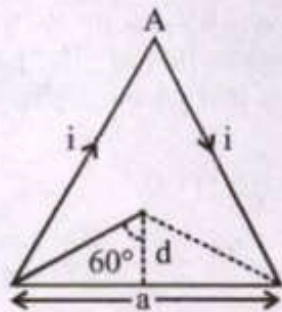
(Assume that the current is flowing in the clockwise direction.)　　　　　　　[Aug. 31, 2021 (II)]

(a) 3×10^{-7} T, outside the plane of triangle.

(b) $2\sqrt{3} \times 10^{-7}$ T, outside the plane of triangle.

(c) $2\sqrt{3} \times 10^{-5}$ T, inside the plane of triangle.

(d) 3×10^{-5} T, inside the plane of triangle.

Ans (d)

$$B = 3\left[\frac{\mu_0 i}{4\pi d}(\sin 60° + \sin 60°)\right]$$

$$\tan 60° = \frac{a/2}{d}$$

put $a = 9 \times 10^{-2}$ m

$$\Rightarrow d = \frac{9 \times 10^{-2}}{2\sqrt{3}} m$$

$B = 3 \times 10^{-5}$ T.

$\vec{B}$ is into the plane of triangle.