

Question#22680

A point within 5 cm of electric current carrying wire has a large magnetic field of 10 Tesla. What is the magnetic field of a point within 16 cm of the electric current carrying wire ....

Answer:

According to the Biot-Savart law an equation that describes the magnetic field generated by electric current carrying wire is:

$$B = \frac{\mu}{4\pi} \frac{2I}{R}$$

Where  $\mu$  is the magnetic constant,  $I$  is the value of the current,  $R$  is the distance from wire.

Such as magnitude of magnetic field linearly depends from distance, the magnitude in the current point is:

$$B = \frac{R_0}{R} B_0$$

Where  $R_0$  is the distance to the previous point,  $B_0$  is the magnitude in the previous point,  $R$  is the distance of current point.

$$B = \frac{5}{16} 10 = 3.125 \text{ Tesla}$$

**Answer: 3.125 Tesla.**