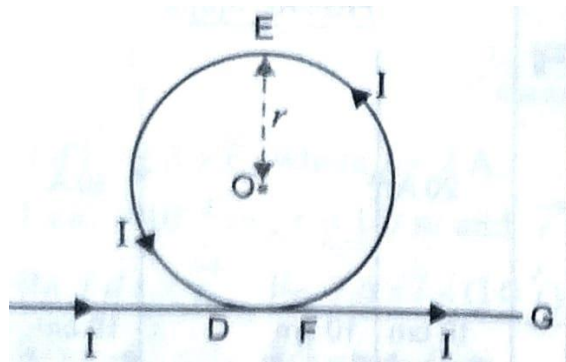


10 very important numerical

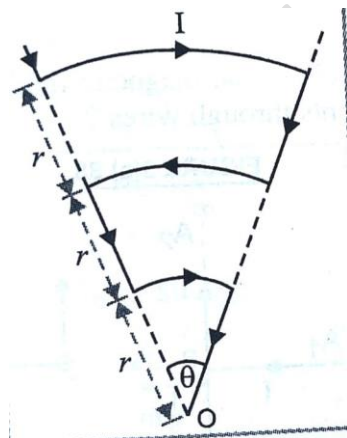
(Magnetic effect of current / ch-4)

1. Two wires A and B have the same length equal to 44cm . and carry a current of 10A each . Wire A is bent in circle and B as a square .(a) obtain the magnetic field by both the coils at the center ,(b) which has more field at their centre?
2. A straight long thick wire of uniform cross-section (radius $r=10\text{cm}$) carries current 10A through it . Calculate the ratio of magnetic field at a point $r/2$ above the surface and a point $r/2$ below the surface. What is the maximum field due to this current carrying wire?
3. Two identical circular coil each of radii 10cm and having number of turns 100 are laying in perpendicular plane such that they have common center. Find the resultant magnetic field at the center of the coil if they carry current 3A.
4. Find the magnetic field at point o

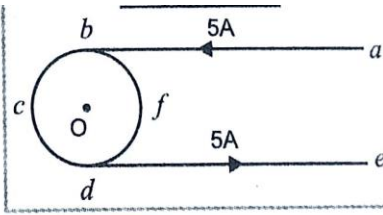
(a)



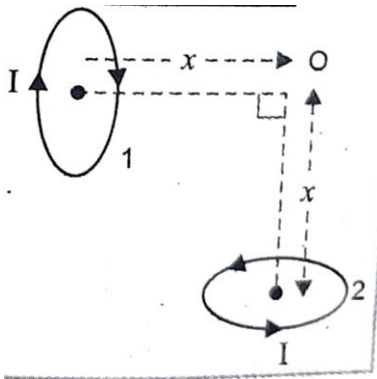
(b)



(c)

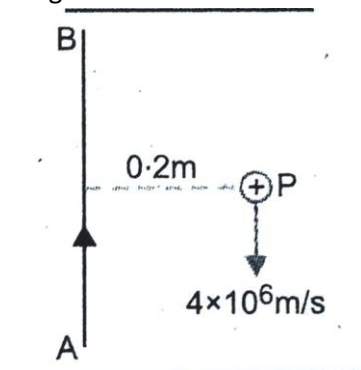


(d)

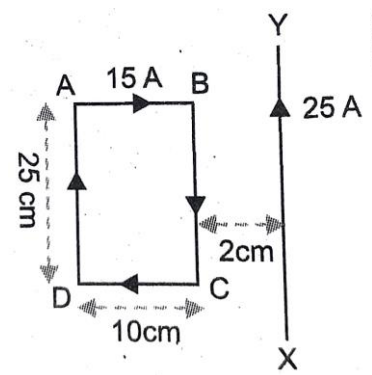


5. A proton a deuteron and α -particle whose kinetic energies are same , enters perpendicularly in a uniform magnetic field , compare the radii of their circular paths.

6. A long straight wire AB carries a current of 4 A. A proton p travels at $4 \times 10^6 \text{ m/s}$ parallel to the wire, 0.2 m fro it as shown in the fig . opposite to the direction of current . Calculate the force which the magnetic field of current exerts on the proton . Also specify the direction of force.



7. As shown in the fig. a current carrying rectangular loop placed 2cm away from a long straight current carrying conductor . What is the magnitude and direction of the force acting on the loop?



8. A wire AB is carrying a steady current 5A is lying on the table. Another wire CD held above AB at a height 1mm . Find the mass per unit length of the wire CD so that it remain suspended at the position when left free. Give the direction of current flowing in CD with respect to that in AB . $g = 9.8 \text{ m/s}^2$.
9. A galvanometer having 30 divisions has a current sensitivity of $20 \times 10^{-6} \text{ A}$. It has a resistance of 25ohm . How will you convert it into an ammeter up to 1 A ? How will you convert this ammeter into a voltmeter up to 1 volt?
10. An electron beam passes through a magnetic field $4 \times 10^{-3} \text{ Wb/m}^2$, and an electric field of $2 \times 10^4 \text{ V/m}$, both acting simultaneously . The path of electrons remaining un deviated , calculate the speed of the electron . If the electric field is removed , what will be the radius of the electron's path?

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