



Video Solution on Website:-

<https://physicsaholics.com/home/courseDetails/34>

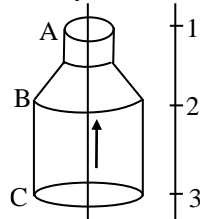
Video Solution on YouTube:-

<https://youtu.be/hFp6iIDSj1c>

Written Solution on Website:-

<https://physicsaholics.com/note/notesDetailis/50>

- Q 1. A current  $I$  flows along the length of an infinitely long, straight and thin-walled hollow pipe. Then
- The magnetic field at all points inside the pipe is the same but not zero
  - The magnetic field at any point inside the pipe is zero
  - The magnetic field is zero only on the axis of the pipe
  - The magnetic field is different at different points inside the pipe
- Q 2. A long solenoid of length  $L$  has a mean diameter  $D$ . It has  $n$  layers of windings of  $N$  turns each. If it carries a current ' $i$ ' the magnetic field at its centre will be
- Proportional to  $D$
  - Inversely proportional to  $D$
  - Independent of  $D$
  - Proportional to  $L$
- Q 3. A long solenoid carrying a current produces a magnetic field  $B$  along its axis. If the current is doubled and the number of turns per cm is halved, then new value of the magnetic field is -
- $B$
  - $2B$
  - $4B$
  - $B/2$
- Q 4. A long, straight, hollow conductor (tube) carrying a current has two sections A and C of unequal cross-sections joined by a conical section B. 1, 2 and 3 are points on a line parallel to the axis of the conductor. The magnetic fields at 1, 2 and 3 have magnitudes  $B_1$ ,  $B_2$  and  $B_3$  respectively, then :

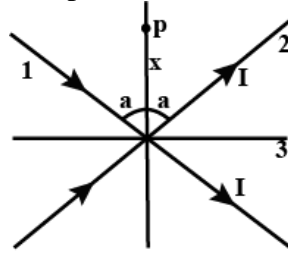


- $B_1 = B_2 = B_3$
  - $B_1 = B_2 \neq B_3$
  - $B_1 < B_2 < B_3$
  - $B_2$  cannot be found unless the dimensions of the section B are known
- Q 5. A long wire carries a steady current. It is bent into a circle of one turn and the magnetic field at the centre of the coil is  $B$ . It is then bent into a circular loop of  $n$  turns. The magnetic field at the centre of the coil will be





electrically insulated from each other and all of them are in the plane of paper. Which of the following is correct about point P which is also in the same plane?



- (a) Magnetic field intensity at P is zero for all values of x, whatever is the current in the third wire.
- (b) If the current in the third wire is  $\frac{2I}{\sin a}$  (left to right), then magnetic field will be zero at P for all values of x.
- (c) If the current in the third wire is  $\frac{2I}{\sin a}$  (right to left), then magnetic field will be zero at P for all values of x.
- (d) none of these

Q 12. A hollow cylindrical conductor of inner radius a and outer radius b carries a current I uniformly spread over its cross-section. Find the magnetic field induction at a point inside the body of the conductor at a distance r [where  $a < r < b$ ] from the axis of the cylinder-

- (a)  $\frac{\mu_0 I (r^2 - a^2)}{2\pi r (b^2 - a^2)}$
- (b)  $\frac{\mu_0 I (r^2 - a^2)}{2\pi (b^2 - a^2)}$
- (c)  $\frac{\mu_0 I (b^2 - a^2)}{2\pi (r^2 - a^2)}$
- (d)  $\frac{\mu_0 I (r^2 - a^2)}{2r (b^2 - a^2)}$

## Answer Key

<b>Q.1 b</b>	<b>Q.2 c</b>	<b>Q.3 a</b>	<b>Q.4 a</b>	<b>Q.5 b</b>
<b>Q.6 a</b>	<b>Q.7 a</b>	<b>Q.8 b</b>	<b>Q.9 d</b>	<b>Q.10 d</b>
<b>Q.11 c</b>	<b>Q.12 a</b>			