P3323 quiz9-2
October 19, 2016

1. A long cylinder is magnetized with uniform magnetization $\mathbf{M}$ parallel to its axis. The magnetic field inside the cylinder is

   A) zero

   B)

   $$\mathbf{B} = \mathbf{M}$$

   C)

   $$\mathbf{B} = \mu_0 \mathbf{M}$$

   D)

   $$\mathbf{B} = \mu_0 (\mathbf{M} \times \hat{\mathbf{n}})$$

2. A long cylinder is magnetized with uniform magnetization $\mathbf{M}$ parallel to its axis. The magnetic field outside the cylinder is

   A) zero

   B)

   $$\mathbf{B} = \mathbf{M}$$

   C)

   $$\mathbf{B} = \mu_0 \mathbf{M}$$

   D)

   $$\mathbf{B} = \mu_0 \mathbf{M} \frac{R}{r}$$

3. A long copper rod of radius R carries uniformly distributed free current I parallel to the axis. Copper is diamagnetic. H inside the rod is

A) zero

B)

$$\mathbf{H} = \frac{Ir}{2\pi R^2}\hat{\mathbf{z}}$$

C)

$$\mathbf{H} = \frac{Ir}{2\pi R^2}\hat{\phi}$$

D)

$$\mathbf{H} = \frac{Ir}{2\pi R^2}\hat{\mathbf{r}}$$

4. A long copper rod of radius R carries uniformly distributed free current I. Copper is diamagnetic. The magnetic field B outside the rod is

A) zero

B)

$$\mathbf{B} = \frac{\mu_0 I}{2\pi r}\hat{\mathbf{z}}$$

C)

$$\mathbf{B} = \frac{\mu_0 I}{2\pi r}\hat{\phi}$$

D)

$$\mathbf{B} = \frac{I}{2\pi r}\hat{\phi}$$