

PHY102 Quiz 2

Full marks : 20

Time 45 mins

1. A thick spherical shell (inner radius a and outer radius b) is made of dielectric material of susceptibility χ_e with a "frozen-in" polarization

$$\vec{P}(\vec{r}) = \frac{k}{r} \hat{r}$$

where k is the constant and r is the distance from the center. Find electric field in all three regions. [10 points]

2. An equilateral triangle is carrying a current I anti-clockwise (as shown in the figure). Find the magnetic field at the center of the triangle. What is the magnetic moment of the current distribution. [10 points]