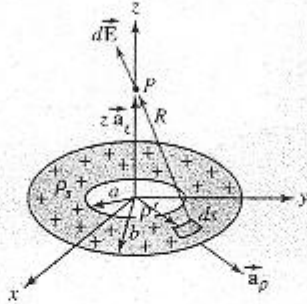


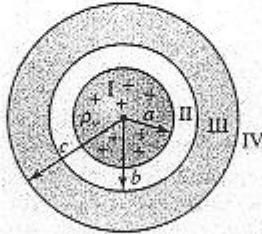
國立中央大學九十一學年度碩士班研究生入學試題卷

所別: 大氣物理研究所 不分組 科目: 電磁學 共 2 頁 第 1 頁

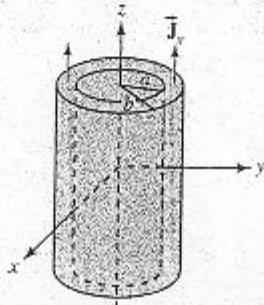
1. A thin annular disc of inner radius a and outer radius b carries a uniform surface charge density ρ_s . Determine the electric field intensity at any point in the z axis. (20%)



2. Charge is uniformly distributed within a spherical region of radius a . An isolated conducting spherical shell with inner radius b and outer radius c is placed concentrically, as shown in Figure. Determine the electric field intensity everywhere in the regions I, II, III and IV. (20%)



3. A very long, hollow conductor of inner radius a and outer radius b is located along the z axis and carries a current I in the z direction, as depicted in Figure. If the current distribution is uniform, determine the magnetic field intensity at any point in space. (20%)

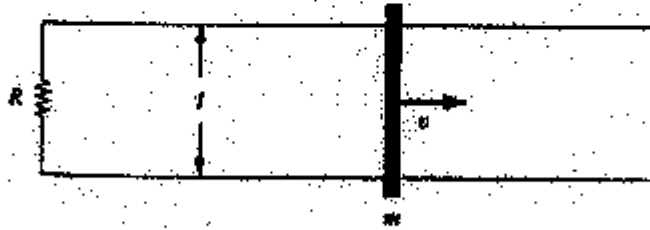


注：此題不計分

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4. A metal bar of mass m slides frictionlessly on two parallel conducting rails a distance l apart (see the figure below). A resistor R is connected across the rails and a uniform magnetic field B , pointing into page, fills the entire region. (20%)



5. What are: (20%)
- (a) Maxwell's equations (5%)
 - (b) plane wave (5%)
 - (c) Lenz's law (5%)
 - (d) steady state (5%)