

68. (a) In order to have net charge  $-10\ \mu\text{C}$  when  $-14\ \mu\text{C}$  is known to be on the outer surface, then there must be  $+4\ \mu\text{C}$  on the inner surface (since charges reside on the surfaces of a conductor in electrostatic situations).
- (b) In order to cancel the electric field inside the conducting material, the contribution from the  $+4\ \mu\text{C}$  on the inner surface must be canceled by that of the charged particle in the hollow. Thus, the particle's charge is  $-4\ \mu\text{C}$ .