**Given:** A spherical capacitor, see sketch.

It consists of an inner conducting sphere with a radius “a”, and a concentric conducting shell with an inner radius “b” and an outer radius “c”. The shell is grounded. There is a positive charge +Q on the inner sphere.

Determine the magnitude of the field at the point $P$ located at the top on the outer surface of the shell.

A) $E_A = k \frac{Q}{b^2}$

B) $E_A = k \frac{Q}{c^2}$

C) $E_A = 0$
Suppose there were charges at the surface of the shell, there would be an electric field perpendicular to the surface, since

\[ E_\perp = \frac{\sigma_{\text{surface}}}{\epsilon_0}. \]

In turn, there would be a charge flow between the surface of the shell and the ground. This is contrary to the fact that the shell is grounded; i.e., there is no potential difference between the shell and the ground. So there can be no field at the surface.

Answer C.

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