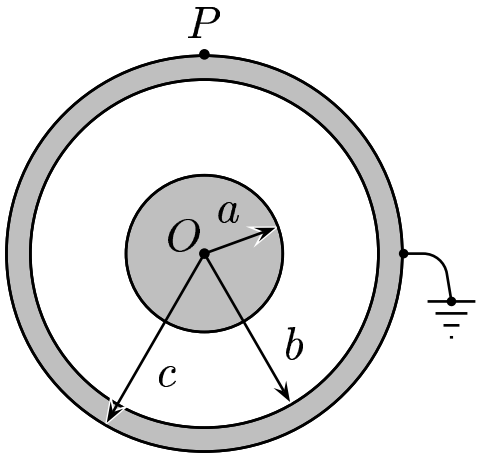
Given: A spherical capacitor, see sketch.

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) $E_A = k\,\dfrac{Q}{b^2}$

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

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

$$E_{\perp} = \frac{\sigma_{surface}}{\epsilon_0} .$$

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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