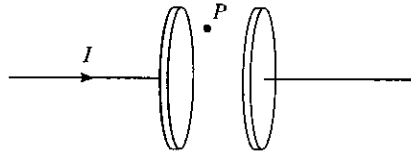


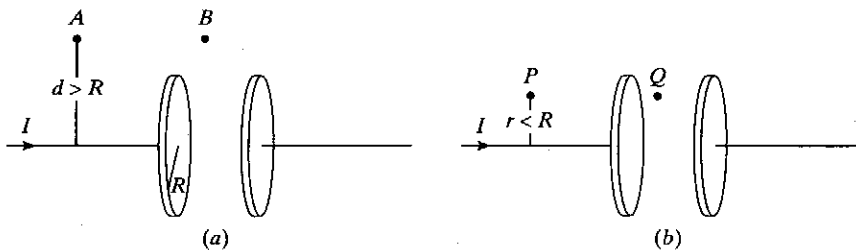
As the capacitor shown below is charged with a constant current I , at point P there is a



1. constant electric field.
2. changing electric field.
3. constant magnetic field.
4. changing magnetic field.
5. changing electric field and a magnetic field.
6. changing magnetic field and an electric field.
7. none of the above.

E increases as Q increases. This creates a magnetic field (const $I \Rightarrow$ constant rate of change of E between plates \Rightarrow constant B)
(constant I_D)

For a charging capacitor, the total displacement current between the plates is equal to the total conduction current I in the wires. The capacitors in the diagram have circular plates of radius R . In (a), points A and B are each a distance $d > R$ away from the line through the centers of the plates; in this case the magnetic field at A due to the conduction current is the same as that at B due to the displacement current. In (b), points P and Q are each a distance $r < R$ away from the center line. Compared with the magnetic field at P , that at Q is



1. bigger.
2. smaller.
3. the same.
4. need more information.

At P , $B \propto I_{enc}$, entire current
 At Q , $B \propto \frac{d\Phi_E}{dt} \propto (E \cdot A)_{enclosed}$: only a fraction r^2/R^2 contributes to the displacement current
 $\Rightarrow B$ at Q is smaller