

Insertion of a metallic slab in a uniform electric field. A uniform electric field, of intensity vector \mathbf{E}_0 , is established in the air-filled space between two metallic electrodes, as portrayed in Fig. Q.16(a). If an uncharged (thick) metallic slab is then inserted in this space, without touching the electrodes, which gives the structure in Fig. Q1.16(b), the electric field intensity vector in region 3 (above the slab) in the new electrostatic state is

- (A) $\mathbf{E}_3 = 0$.
- (B) $\mathbf{E}_3 = -\mathbf{E}_0$.
- (C) $\mathbf{E}_3 = \mathbf{E}_0/3$.
- (D) $\mathbf{E}_3 = 3\mathbf{E}_0/2$.
- (E) $\mathbf{E}_3 = \mathbf{E}_0$.

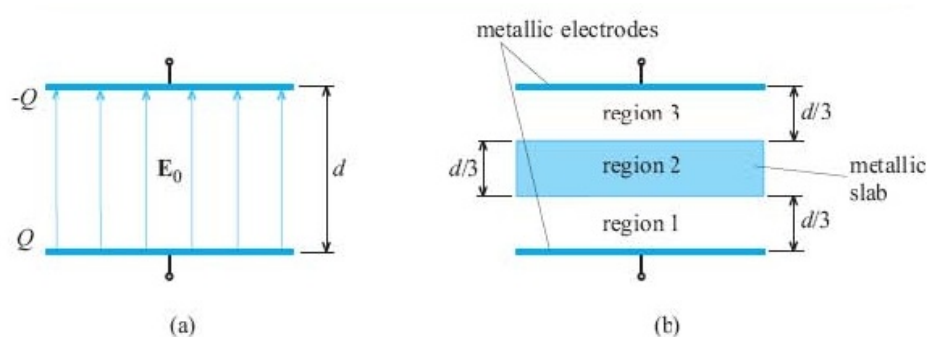


Figure Q1.16 (a) Space with a uniform electric field and (b) insertion of an uncharged metallic slab in this field; for Question 1.22.

Solution: (E)

Answer: (E)