

- (b) The Brewster angle is $\theta_b = 40.9^\circ$.
 (c) It is impossible, $\sin \theta < \tan \theta$ for any θ between 0° and 90° .

Solution P5.4

- (a) For E layer, $f_p = 2.84 \text{ MHz}$.
 For F layer, $f_p = 6.95 \text{ MHz}$.
 (b) In E layer, $\theta_t = \sin^{-1} [1.04 \sin \theta]$.
 In F layer, $\theta_t = \sin^{-1} [1.39 \sin \theta]$.
 (c) For E layer total reflection happens when $f < \frac{2}{\sqrt{3}} f_p = 3.27 \text{ MHz}$.
 For F layer total reflection happens when $f < \frac{2}{\sqrt{3}} f_p = 8.03 \text{ MHz}$.