

61. (a) Every time one more destructive (constructive) fringe appears the increase in thickness of the air gap is  $\lambda/2$ . Now that there are 6 more destructive fringes in addition to the one at point  $A$ , the thickness at  $B$  is  $t_B = 6(\lambda/2) = 3(600 \text{ nm}) = 1.80 \mu\text{m}$ .
- (b) We must now replace  $\lambda$  by  $\lambda' = \lambda/n_w$ . Since  $t_B$  is unchanged  $t_B = N(\lambda'/2) = N(\lambda/2n_w)$ , or

$$N = \frac{2t_B n_w}{\lambda} = \frac{2(3\lambda)n_w}{\lambda} = 6n_w = 6(1.33) = 8 .$$