

## Phys102 Assignment Cover Sheet

First Name: \_\_\_\_\_ Last Name: \_\_\_\_\_ Mark: \_\_\_\_\_

Student ID: \_\_\_\_\_ Date: \_\_\_\_\_ Section: \_\_\_\_\_

### Phys102 Written Assignment #7

# Cancelled

Textbook (Giancoli, SFU edition), page 864, question #72.

72. A slab of thickness  $D$ , whose two faces are parallel, has index of refraction  $n$ . A ray of light incident from air onto one face of the slab at incident angle  $\theta_1$  splits into two rays A and B. Ray A reflects directly back into the air, while B travels a total distance  $l$  within the slab before reemerging from the slab's face a distance  $d$  from its point of entry. (a) Derive expressions for  $\theta_1$  and  $d$  in terms of  $D$ ,  $n$ , and  $\theta_1$ . (b) For normal incidence (i.e.,  $\theta_1 = 0^\circ$ ) show that your expressions yield the expected values for  $\theta_1$  and  $d$ .

