Study questions for Chapter 22/first part of 23

1. Units: Give the SI units for the following quantities:
   - focal length: \( \text{m} \)
   - index of refraction: N/A - units less
   - speed of light: \( \text{m/s} \)
   - magnification: N/A - units less

II. Multiple Choice

1. When a light beam enters an "optically more dense" material, it is bent:
   A. toward the normal
   B. away from the normal
   C. along the normal
   D. along the surface of the material

2. For certain angles, total internal reflection can occur when light goes from one medium to another which has
   A. a larger index of refraction.
   B. a smaller index of refraction.
   C. the same index of refraction.
   D. an index of refraction of 1.5.

3. When you look into a pond or lake of clear water, the apparent depth is what fraction of the actual depth?
   A. 1/3
   B. 1/4
   C. 1/2
   D. 3/4
   E. 9/10

4. The critical angle in a material is found to be 48 degrees, with air outside the material. What is the index of refraction of the material?
   A. 1.22
   B. 1.35
   C. 1.48
   D. 1.49
   E. 0.743

5. Suppose a lighted candle is placed a short distance from a plane mirror, as shown below. Where will the image of the flame be?
   A
   B
   M (the mirror)

6. If you stand in front of a concave mirror, exactly at its center of curvature
   A. you won't see your image because there is none.
   B. you won't see your image, because it is focused at a different distance.
   C. you will see an upright image that is small.
   D. you will see an inverted image your same size.
   E. you will see an inverted image that is enlarged.

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