

CPSC 425 Image Formation, Cameras and Lenses 18 (Term 2)
Practice Questions
Solutions

Multiple Part True/False Questions. For each question, indicate which of the statements, (A)–(D), are **true** and which are **false**? Note: Questions may have zero, one or multiple statements that are true.

Question 1: Which of the following statements are **true** of a pinhole camera? Which are **false**?

- (A) A pinhole camera is a box with a small hole in it.
- (B) Images in a pinhole camera are upside down.
- (C) A pinhole camera has a fixed focal length, f .
- (D) Images in a pinhole camera are a perspective projection.

Solution : (A) True, (B) True, (C) False, (D) True.

Question 2: Which of the following statements are **true** of an actual pinhole camera. Which are **false**?

- (A) It takes too long to acquire an image.
- (B) It uses an orthographic projection.
- (C) It works only for black and white (B&W), not for colour.
- (D) It has too small a depth of field (i.e., too small a range of object distances for which the image is in sharp focus).

Solution : (A) True, (B) False, (C) False, (D) False.

Question 3: Lens vignetting is a type of image distortion. Which of the statements, (A)–(D), are **true** of lens vignetting and which are **false**?

- (A) Vignetting is a slight curvature of straight lines away from the center of the image.
- (B) Vignetting is a shift in colour owing to the varying refraction of light at different wavelengths.

- (C) Vignetting is a darkening of an image towards its edges.
- (D) Vignetting makes it difficult to bring all parts of an image into focus at the same time.

Solution : (A) False, (B) False, (C) True, (D) False.

Question 4: Consider Snell's law. Which of the following statements are **true**? Which are **false**?

- (A) It describes how light bends when passing from one material into another.
- (B) It describes how fast light travels in one material compared to another.
- (C) It describes the angle at which light bounces off a mirror surface.
- (D) It describes how much light is reflected and how much passes through the boundary between two materials.

Solution : (A) True, (B) True, (C) False, (D) False.