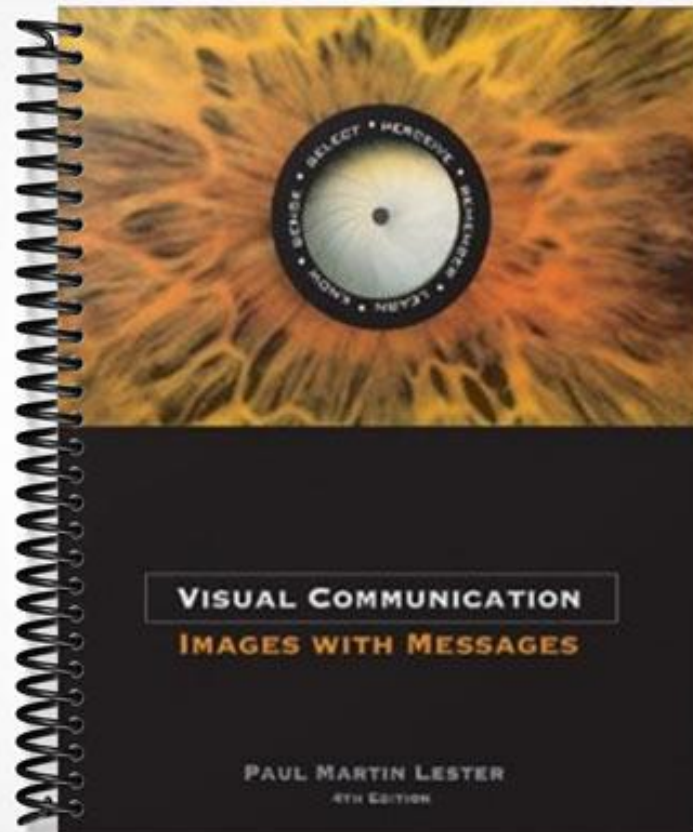


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VISUAL COMMUNICATION
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PAUL MARTIN LESTER
4TH EDITION

CHAPTER 2

LIGHT

MULTIPLE CHOICE

1. Which of the following scientists believed that light originates in the sun, in fire, and in other lit objects rather than from the human eyes?

- A. Empedocles
- B. Euclid
- C. Abu Ali Ibn al-Hayitham
- D. None of these

ANS: C

2. Which of the following is the speed of light?

- A. Just under 761 miles per hour
- B. Just under 7,610 miles per hour
- C. Just under 70 million miles per hour
- D. Just under 700 miles per hour

ANS: D

3. Which of the following argued that light is a particle?

- A. Pythagoras
- B. Aristotle
- C. Sir Isaac Newton
- D. Both Pythagoras and Newton

ANS: D

4. Which of the following believed that light is a series of waves?

- A. Pythagoras
- B. Sir Isaac Newton
- C. Christian Huygens
- D. Both Pythagoras and Newton

ANS: C

5. Max Planck, the Nobel Laureate scientist, argued in favor of which of the following?
- A. Particle theories describe light energy
 - B. Wave theories describe light energy
 - C. Both particle and wave theories describe light energy
 - D. Neither particle nor wave theory describe light energy

ANS: C

6. Which of the following scientists discovered electromagnetic waves that we call radio waves?
- A. Heinrich Hertz
 - B. Guglielmo Marconi
 - C. Wilhelm Röntgen
 - D. Albert Einstein

ANS: A

7. Which of the following statements is **true**?
- A. Gamma rays can be several miles in length.
 - B. A magnetic field in a vacuum travels more slowly than the speed of light.
 - C. Guglielmo Marconi died before he was able to transmit radio waves across the Atlantic.
 - D. Visible light has a slower frequency than ultraviolet light.

ANS: D

8. Wilhelm Röntgen discovered which of the following?
- A. Electromagnetism
 - B. X-rays
 - C. Radio wave transmission
 - D. The photoelectric effect caused by ultraviolet radiation

ANS: B

9. Juan takes off his sweater and sees sparks of light. He is observing which of the following?
- A. Electroluminescence
 - B. Bioluminescence
 - C. Phosphorescence
 - D. Chemiluminescence

ANS: A

10. If a chemical compound is bombarded with a radiant form of energy such as ultraviolet and quits glowing as soon as the energy is turned off, the luminescence is called:

- A. Bioluminescence
- B. Chemiluminescence
- C. Electroluminescence
- D. Fluorescence

ANS: D

TRUE-FALSE

11. Visible light is a chemical reaction that occurs in our brains.

ANS: T

12. Abu Ali Hasan Ibn al-Hayitham (or Alhazen) believed that light rays begin in the human eye and travel outward, illuminating all the objects in the world.

ANS: F

13. According to James Clerk Maxwell, the focus of magnetism and electricity are actually one and the same.

ANS: T

14. In the electromagnetic spectrum AM waves have larger wave lengths than X-rays.

ANS: T

15. "Glow in the dark" watches, light sticks, circles, gels, and so on exhibit bioluminescence.

ANS: F

SHORT ANSWER

16. Light waves travel at least _____ times faster than sound?

ANS: ten (10)

17. Sir Isaac Newton called light particles _____.

ANS: corpuscles

18. Max Planck called discrete packets that constitute energy _____ but these packets were later called photons.

ANS: quanta

19. Sir William Herschel discovered that each color of the visible spectrum has a different _____.

ANS: temperature

20. _____ is a chemical that can even detect blood stains diluted by up to 10,000 times.

ANS: Luminol

ESSAY

21. Identify a scientific fact about light. Use a specific example to explain how that principle can make an image memorable.

ANS: Answers will vary.