

Name: KEY

Score: 0 / 20 points (0%) [3 open-ended questions not graded]

Chapter 10 Self-Quiz

Part A Modified True/False

Indicate whether the sentence or statement is true or false. If false, change the identified word or phrase to make the sentence or statement true.



1. Light is a form of matter. _____

RESPONSE:

ANSWER: F,energy

POINTS: 0 / 1



2. Translucent objects block all light. _____

RESPONSE:

ANSWER: F,Opaque

POINTS: 0 / 1



3. A slow long wave has a higher frequency than a fast, short wave. _____

RESPONSE:

ANSWER: F,lower frequency

POINTS: 0 / 1



4. Gamma rays have the highest frequency and energy. _____

RESPONSE:

ANSWER: T

POINTS: 0 / 1



5. Of the visible light colours, red light has the highest frequency and energy.

RESPONSE:

ANSWER: F,violet light

POINTS: 0 / 1

Part B Matching

Match the following wave characteristics with the descriptions below.

a. amplitude

d. crest

b. frequency

e. trough

c. hertz


f. wavelength



- _____ 6. cycles per second

ANSWER: C

POINTS: 0 / 1

-  ____ 7. the farthest point below the resting point

ANSWER: E

POINTS: 0 / 1

- ____ 8. a measure of the amount of energy transferred


ANSWER: A

POINTS: 0 / 1

- ☒ ____ 9. the distance between two troughs

ANSWER: F

POINTS: 0 / 1

-  ____ 10. the number of cycles in a period of time

ANSWER: B

POINTS: 0 / 1

- X** ____ 11. the farthest point above the resting point

ANSWER: D

POINTS: 0 / 1

Part C Completion

Complete each sentence or statement.

12. A measure of how much light can pass through a material is called _____.

RESPONSE:

ANSWER: transparency

POINTS: 0 / 1

13. We see the colour blue because the blue wavelength is _____.


RESPONSE:

ANSWER: reflected

POINTS: 0 / 1

Part D Multiple Choice

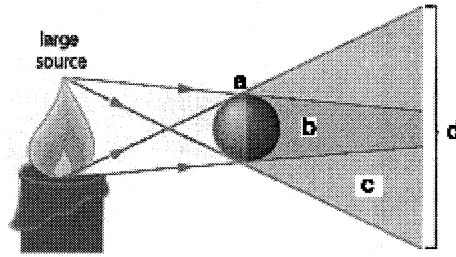
Identify the letter of the choice that best completes the statement or answers the question.

-  ____ 14. Objects that emit energy in the form of light are called
- | | |
|----------------|-----------------|
| a. luminous | c. incandescent |
| b. nonluminous | d. fluorescent |

ANSWER: A

POINTS: 0 / 1

Figure 10.1



- ☒ 15. In Figure 10.1, which part is the umbra?
- a. a
b. b

c. c
d. d

ANSWER: B

POINTS: 0 / 1

- ☒ 16. When asphalt absorbs light some is converted into
- a. electric energy
b. thermal energy

c. chemical energy
d. light energy

ANSWER: B

POINTS: 0 / 1

- ☒ 17. We see certain colours because
- a. all light is reflected and none is absorbed
b. all light is refracted and none is absorbed
c. some light is absorbed and some is reflected
d. some light is absorbed and some is refracted

ANSWER: C

POINTS: 0 / 1

- ☒ 18. We see black when
- a. all light is absorbed
b. some light is absorbed

c. no light is absorbed
d. all light is reflected

ANSWER: A

POINTS: 0 / 1

- ☒ 19. The frequency of a wave is measured in
- a. amplitude
b. hertz

c. km/s
d. seconds

ANSWER: D

POINTS: 0 / 1

- ☒ 20. A device that converts light energy into electrical energy is a
- a. dry cell
b. battery

c. solar cell
d. generator

ANSWER: C

POINTS: 0 / 1

Part E Short Answer

Use sentences to answer the following questions.



21. Incandescent light bulbs are not very efficient. Explain why.

RESPONSE:

ANSWER: In order for incandescent bulbs to become luminous they get very hot. A large amount of energy is lost to heat.

POINTS: -- / 1



22. Define the terms transmit, reflect, and absorb. Include examples to support your answers.

RESPONSE:

ANSWER: If any object/material transmits light, it allows the light to pass through. Any transparent or translucent objects/materials transmit light. Objects that reflect light "bounce" or deflect light. Opaque objects that are shiny, smooth, and/or light-coloured readily reflect light. Objects that absorb light take the light energy. Opaque objects that are dull, rough, and dark-coloured will absorb at least some light energy..

POINTS: -- / 1



23. Explain the relationship between the wavelength and frequency of a wave.

RESPONSE:

ANSWER: It is an inverse relationship. When the wavelength increases, the frequency decreases.

A wave with a shorter wavelength will have a higher frequency.

POINTS: -- / 1

Name: KEY

Score: 0 / 15 points (0%) [5 open-ended questions not graded]

Chapter 11 Self-Quiz**Part A Modified True/False**

Indicate whether the sentence or statement is true or false. If false, change the identified word or phrase to make the sentence or statement true.



1. A reflected ray is a ray of light that travels towards a reflecting surface.

RESPONSE:**ANSWER:** F, away from**POINTS:** 0 / 1

2. Specular reflection occurs off of smooth, shiny surfaces.

RESPONSE:**ANSWER:** T**POINTS:** 0 / 1

3. A virtual image can be projected onto a screen.

RESPONSE:**ANSWER:** F, real**POINTS:** 0 / 1

4. Convex mirrors produce a larger field of view than plane mirrors.

RESPONSE:**ANSWER:** T**POINTS:** 0 / 1

5. The angle of refraction is the same as the angle of reflection.

RESPONSE:**ANSWER:** F,**POINTS:** 0 / 1**Part B Completion**

Complete each sentence or statement.



6. The reflection of light off a smooth, shiny surface is called _____ reflection.

RESPONSE:**ANSWER:** specular**POINTS:** 0 / 1

- ☒ 7. An image that can only be seen with an optical device is called a _____.

RESPONSE:

ANSWER: virtual image

POINTS: 0 / 1

- ☒ 8. In a convex lens the position where parallel light rays come together is called the _____.

RESPONSE:

ANSWER: principal focus

POINTS: 0 / 1

Part C Multiple Choice

Identify the letter of the choice that best completes the statement or answers the question.

- ☒ 9. What is the angle of reflection if the angle of incidence is 37° ?
- | | |
|---------------|----------------|
| a. 53° | c. 143° |
| b. 90° | d. 37° |

ANSWER: D

POINTS: 0 / 1

- ☒ 10. Which of the following is an example of a virtual image?
- a. a slide projector image on a screen
 - b. the image seen in a microscope
 - c. the image seen on film in a camera
 - d. the image seen through a pinhole camera

ANSWER: B

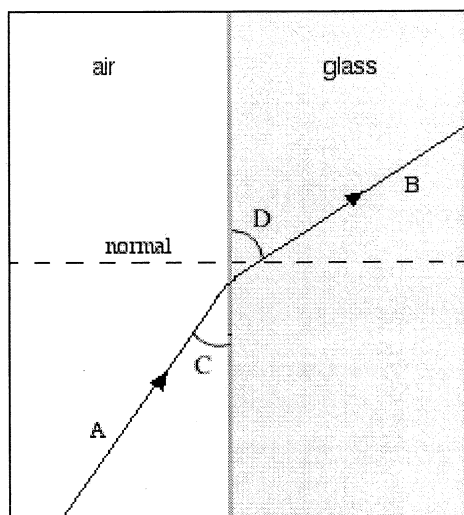
POINTS: 0 / 1

- ☒ 11. Which of the following mirrors is best suited for surveillance?
- | | |
|--------------------|---------------------|
| a. a plane mirror | c. a concave mirror |
| b. a convex mirror | d. all of the above |

ANSWER: B

POINTS: 0 / 1

Figure 11.1



- ☒ 12. In Figure 11.1, which letter indicates the angle of refraction?
- | | |
|------|------|
| a. A | c. C |
| b. B | d. D |

ANSWER: D

POINTS: 0 / 1

- ☒ 13. In Figure 11.1, which letter indicates the angle of incidence?
- | | |
|------|------|
| a. A | c. C |
| b. B | d. D |

ANSWER: C

POINTS: 0 / 1

- ☒ 14. In Figure 11.1, which letter indicates the ray of refraction?
- | | |
|------|------|
| a. A | c. C |
| b. B | d. D |

ANSWER: B

POINTS: 0 / 1

- ☒ 15. In Figure 11.1, which letter indicates the incident ray?
- | | |
|------|------|
| a. A | c. C |
| b. B | d. D |

ANSWER: A

POINTS: 0 / 1

Part D Short Answer

Use sentences to answer the following questions.

- ☒ 16. List three sports or games where knowledge about the laws of reflection of light off of a smooth, flat surface would be useful.

RESPONSE:

ANSWER: Answer will vary, but could include bouncing balls in basketball, tennis or

soccer; playing pool or air hockey; playing table tennis, racquetball, or squash.

POINTS: -- / 1



17. Explain why the lettering on the front of some vehicles is backwards?

POLICE

RESPONSE:

ANSWER: Emergency vehicles often have backwards lettering so that drivers of the cars in front will see the letter the correct way through the rear-view mirror and get out of the way.

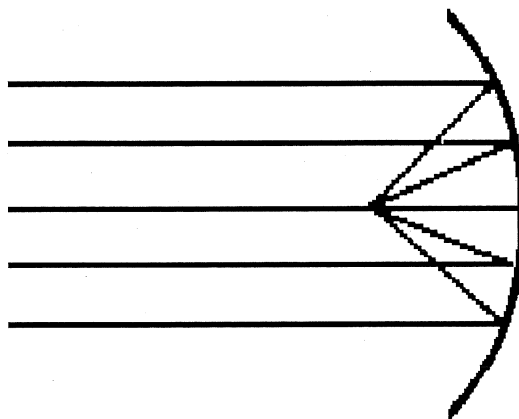
POINTS: -- / 1



18. Describe what happens when the curve of a concave lens is flattened. Use a diagram to support your answer.

RESPONSE:

ANSWER: The focal length increases.



POINTS: -- / 1



19. Briefly explain why light bends as it travels from water into air.

RESPONSE:

ANSWER: As light travels from water into air, it changes speed and this change in speed causes the light to bend or refract.

POINTS: -- / 1



20. What type of lens is a magnifying glass? How do you know?

RESPONSE:

ANSWER: A magnifying glass is a convex lens. We know this because it converges the light rays that hit it.

POINTS: -- / 1

Name: KEY

Score: 0 / 15 points (0%) [5 open-ended questions not graded]

Chapter 12 Self Quiz

Part A Modified True/False

Indicate whether the sentence or statement is true or false. If false, change the identified word or phrase to make the sentence or statement true.



1. The image on your retina is upside down and reversed.

RESPONSE:

ANSWER: T

POINTS: 0 / 1



2. Vision defects are known as reflective vision problems.

RESPONSE:

ANSWER: F, refractive

POINTS: 0 / 1



3. A person with myopia can see distant objects clearly but cannot focus on nearby objects.

RESPONSE:

ANSWER: F, hyperopia

POINTS: 0 / 1



4. Shining light through green and blue filters produces the colour white.

RESPONSE:

ANSWER: F, green and magenta

POINTS: 0 / 1



5. Your cones can only detect the primary light colours.

RESPONSE:

ANSWER: T

POINTS: 0 / 1

Part B Completion

Complete each sentence or statement.



6. Laser surgery modifies the shape of the _____.

RESPONSE:

ANSWER: cornea

POINTS: 0 / 1



7. Experts believe the decrease in the length of daylight causes changes in the amount of the hormones serotonin and _____.

RESPONSE:**ANSWER:** melatonin**POINTS:** 0 / 1**Part C Multiple Choice***Identify the letter of the choice that best completes the statement or answers the question.*

- ☒ ____ 8. Which part(s) of the eye are sensitive to the level of light?
- a. rods
 - b. cones
 - c. optic nerve
 - d. sclera

ANSWER: A**POINTS:** 0 / 1

- ☒ ____ 9. The part of the eye that is similar to the diaphragm of a camera or a microscope is the
- a. pupil
 - b. iris
 - c. retina
 - d. ciliary muscle

ANSWER: B**POINTS:** 0 / 1

- ☒ ____ 10. Which of the following are the light receptor cells of the eye?
- a. pupil and iris
 - b. iris and retina
 - c. rods and cones
 - d. cornea and lens

ANSWER: C**POINTS:** 0 / 1

- ☒ ____ 11. When the focal point occurs in front of the retina a person has
- a. myopia
 - b. presbyopia
 - c. hyperopia
 - d. astigmatism

ANSWER: A**POINTS:** 0 / 1

- ☒ ____ 12. Hyperopia can be corrected with
- a. a concave lens
 - b. a convex lens
 - c. a lens implant
 - d. retinal implant

ANSWER: B**POINTS:** 0 / 1

- ☒ ____ 13. Which of the following combinations will produce a magenta colour?
- a. green and red
 - b. green and blue
 - c. blue and red
 - d. all of the above


ANSWER: C**POINTS:** 0 / 1

- ☒ ____ 14. A person does not need glasses to play sports but does need them to read. What refractive vision problem is most likely?
- a. hyperopia
 - c. astigmatism


b. myopia

d. presbyopia

ANSWER: A**POINTS: 0 / 1**

-  15. What would be the best location to build a telescope to view stars?
- a. at sea level
 - b. below sea level
 - c. in a desert at sea level
 - d. on a mountain


ANSWER: D**POINTS: 0 / 1****Part D Short Answer**

-  16. When you come into a dark room after being out in the bright sunlight you often have difficulty seeing for a short time. Explain why this happens and what happens to allow you to see properly.

RESPONSE:

ANSWER: When you are outside in the bright sunlight, the muscles of the iris keep the size of the pupil very small to allow only a small amount of light in. When you enter a dark room the pupil takes a bit of time to get larger. The iris relaxes in the absence of bright light and the pupil gets larger letting in more light.


POINTS: -- / 1

-  17. Why are the most common vision problems called refractive vision problems?

RESPONSE:

ANSWER: In order for a proper image to form on the retina, all of the light rays from the object must be focused on the retina. The light rays entering the eye are first refracted or bent by the curved cornea. Then they are further refracted by the lens, which can change shapes depending on the distance of the object. Most vision problems result from improper refraction, and an image forms either in front of or behind the retina.


POINTS: -- / 1

-  18. Give the complementary colours for the following colours:
- red
 - green
 - yellow
 - blue

RESPONSE:

ANSWER: red - cyan
green - magenta
yellow - blue
blue - yellow

POINTS: -- / 1

-  19. A television screen is made of three different coloured pixels that glow when they are struck with electricity. What colours would these pixels have to be to produce all of the

colours we see on our TVs? Which part(s) of the eye does the screen resemble?

RESPONSE:

ANSWER: Red, green and blue would have to be the three colours. The screen resembles the retina with its cones.

POINTS: -- / 1



20. Why are there more people in Canada with SAD (Seasonal Affective Disorder) than in Mexico?

RESPONSE:

ANSWER: SAD occurs when there is less sunlight. Mexico is a tropical country where the length of the day does not change much throughout the year. SAD occurs in Canada through the fall and winter.

POINTS: -- / 1

Name: KEY**Score:** 0 / 24 points (0%) [6 open-ended questions not graded]**Unit D Self Quiz****Part A Modified True/False**

Indicate whether the sentence or statement is true or false. If false, change the identified word or phrase to make the sentence or statement true.



1. Opaque objects absorb or reflect all light.

RESPONSE:**ANSWER:** F, some light**POINTS:** 0 / 1

2. The farthest point in a wave above the resting position is called the trough.

RESPONSE:**ANSWER:** F, the crest**POINTS:** 0 / 1

3. The angle of incidence and the angle of reflection always add up to 90°.

RESPONSE:**ANSWER:** F, could**POINTS:** 0 / 1

4. The reflected image in a plane mirror appears twice as large as the mirror.

RESPONSE:**ANSWER:** F, the same size**POINTS:** 0 / 1

5. The blind spot is located on the cornea.

RESPONSE:**ANSWER:** F, retina**POINTS:** 0 / 1

6. Laser surgery techniques modify the shape of the lens.

RESPONSE:**ANSWER:** F, cornea**POINTS:** 0 / 1**Part B Matching**

Match the electromagnetic waves to the characteristics below.

- | | |
|------------------|----------------|
| a. ultraviolet | d. X-rays |
| b. infrared | e. radio waves |
| c. visible light | |

☒ ____ 7. photographing internal parts of the body

ANSWER: D

POINTS: 0 / 1

☒ ____ 8. causes suntans and sunburns

ANSWER: A

POINTS: 0 / 1

☒ ____ 9. television waves

ANSWER: E

POINTS: 0 / 1

☒ ____ 10. remote controls

ANSWER: B

POINTS: 0 / 1

☒ ____ 11. splits into coloured bands

ANSWER: C

POINTS: 0 / 1

Part C Completion

Complete each sentence or statement.

☒ 12. The result of a vibration that transfers energy from one location to another is a _____.

RESPONSE:

ANSWER: wave

POINTS: 0 / 1

☒ 13. The lowest point of a wave is the _____.

RESPONSE:

ANSWER: trough

POINTS: 0 / 1

☒ 14. When light travels from air into other materials it changes direction or _____.

RESPONSE:

**ANSWER: refracts or
bends**

POINTS: 0 / 1

☒ 15. The diaphragm of a camera and the _____ of the eye control the amount of light.

RESPONSE:

ANSWER: iris
POINTS: 0 / 1

Part D Multiple Choice

Identify the letter of the choice that best completes the statement or answers the question.

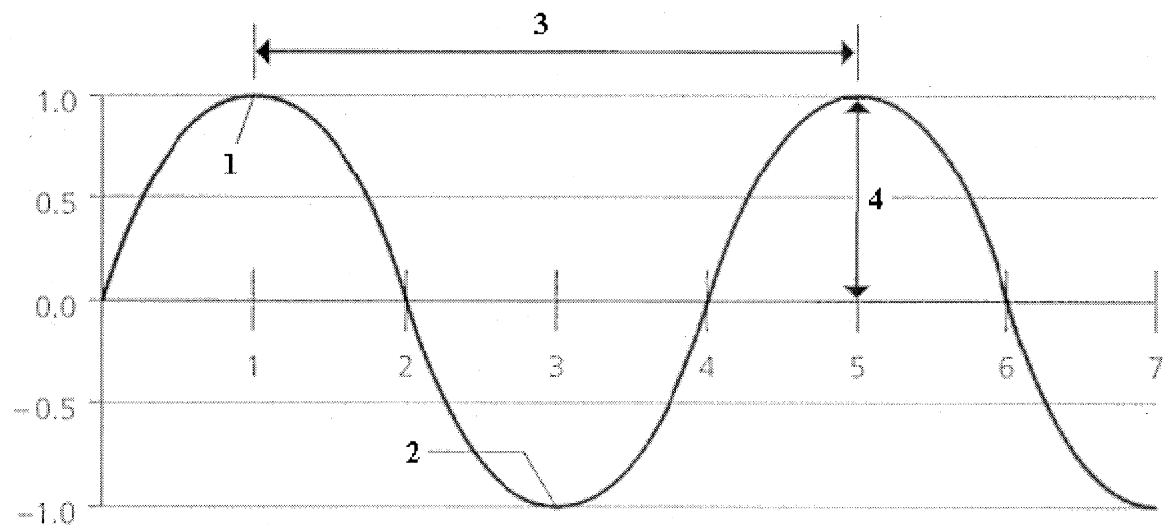
- ☒ 16. The process of emitting light for a short time after receiving energy from another source is called
- | | |
|--------------------|------------------|
| a. bioluminescence | c. incandescence |
| b. phosphorescence | d. fluorescence |

ANSWER: B
POINTS: 0 / 1

- ☒ 17. All electromagnetic radiation
- | | |
|--------------------------------|----------------------------------|
| a. can travel through a vacuum | c. is made of light |
| b. is visible to the human eye | d. has the same amount of energy |

ANSWER: A
POINTS: 0 / 1

Figure 1



- ☒ 18. In Figure 1, which number indicates the crest?
- | | |
|------|------|
| a. 1 | c. 3 |
| b. 2 | d. 4 |

ANSWER: A
POINTS: 0 / 1

- ☒ 19. In Figure 1, which number indicates the wavelength?
- | | |
|------|------|
| a. 1 | c. 3 |
| b. 2 | d. 4 |

ANSWER: C
POINTS: 0 / 1

RESPONSE:

ANSWER: Luminous objects emit their own light. The Sun and a candle flame are examples. Nonluminous objects reflect light. The Moon, your textbook, people, and the ground are examples.

POINTS: -- / 1



26. Explain why it is cooler to wear light or white coloured clothes during hot weather and warmer to wear dark coloured clothes during cold weather.

RESPONSE:

ANSWER: Light and white coloured materials reflect more light away from you, keeping you cooler. Dark materials absorb more light, making you warmer.

POINTS: -- / 1



27. Explain the relationship between the wavelength, frequency and energy of a wave. Give an example.

RESPONSE:

ANSWER: Long wavelengths have a lower frequency and lower energy than short wavelengths, which have a higher frequency and therefore higher energy. X-rays have very short wavelengths, high frequency and high energy.

POINTS: -- / 1



28. How is a reflected ray different than a refracted ray?

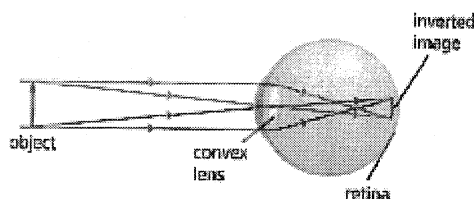
RESPONSE:

ANSWER: Reflected rays bounce away from the surface they reach, whereas refracted rays continue through the surface but at a different angle.

POINTS: -- / 1



29. Using a diagram, demonstrate why the image formed on the retina is inverted. Label the object, lens, retina and image. Use arrows to indicate the direction of light.

RESPONSE:**ANSWER:**

POINTS: -- / 1



30. Explain how the optic nerve and the blind spot are related.

RESPONSE:

ANSWER: The blind spot is where the optic nerve leaves the retina. There are no rods or cones so no image can be received leaving a blind spot.

POINTS: -- / 1