



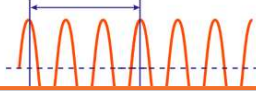
Name _____ Class _____ Date _____

- 1 In a **vacuum**, light with a **frequency of 5.0×10^{14} hertz** has a **wavelength of**
- A 6.0×10^{-21} m
 - B 6.0×10^{-7} m
 - C 1.7×10^6 m
 - D 1.5×10^{23} m

- 2 A beam of monochromatic light travels through **flint glass**, **crown glass**, **Lucite**, and **water**. The **speed** of the light beam is **slowest** in
- A flint glass
 - B crown glass
 - C Lucite
 - D water



- 3 Which characteristic of **electromagnetic radiation** is **directly proportional** to the **energy of a photon**?
- A wavelength
 - B period
 - C frequency



- 4 A monochromatic ray of light ($f=5.09 \times 10^{14}$ hertz) traveling in air is incident upon medium A at an angle of 45° . If the **angle of refraction** is 29° , **medium A** could be
- A water
 - B fused quartz



PREVIEW

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- 7
- B X-ray
 - C infrared
 - D microwave



- A 0.75
- B 1.3
- C 2.3
- D 4.0

- 9 Waves pass through a **10-centimeter opening** in a barrier **without being diffracted**. This observation provides evidence that the **wavelength** of the waves is
- A much shorter than 10 cm
 - B equal to 10 cm
 - C longer than 10 cm, but shorter than 20 cm
 - D longer than 20 cm

- 10 White light is passed through a cloud of cool **hydrogen gas** and then examined with a **spectroscope**. The **dark lines observed on a bright background** are caused by
- A the hydrogen emitting all frequencies in white light
 - B the hydrogen absorbing certain frequencies of the white light
 - C diffraction of the white light
 - D constructive interference



ANSWER KEY

In a **vacuum**, light with a **frequency of 5.0×10^{14} hertz** has a **wavelength of**

- A 6.0×10^{-21} m
- B 6.0×10^{-7} m
- C 1.7×10^6 m
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(b)

A beam of monochromatic light travels through **flint glass**, **crown glass**, **Lucite**, and **water**. The **speed** of the light beam is **slowest** in

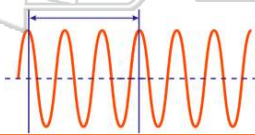
- A flint glass
- B crown glass
- C Lucite
- D water



(a)

Which characteristic of **electromagnetic radiation** is **directly proportional** to the **energy of a photon**?

- A wavelength
- B period
- C frequency
- D path



(c)

A monochromatic ray of light ($f=5.09 \times 10^{14}$ hertz) traveling in air is incident upon medium A at an angle of 45° . If the **angle of refraction is 29°** , **medium A** could be

- A water
- B fused quartz
- C Lucite

(b)



PREVIEW

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D microwave



- A 0.75
- B 1.3
- C 2.3
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Waves pass through a **10-centimeter opening** in a barrier **without being diffracted**. This observation provides evidence that the **wavelength** of the waves is

- A much shorter than 10 cm
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(a)

White light is passed through a cloud of cool **hydrogen gas** and then examined with a **spectroscope**. The **dark lines observed on a bright background** are caused by

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(b)