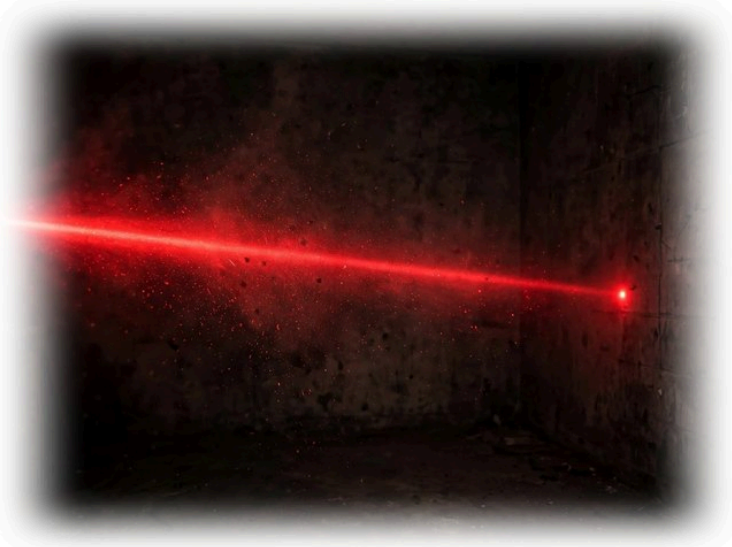
ARIZONA PHYSICS · UNIT 4 · 10 QUESTIONS

Light and Modern Physics — Practice Test

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

1 **Light travels at $3.0 \times 10^8 \ \frac{m}{s}$ in a vacuum and at $2.0 \times 10^8 \ \frac{m}{s}$ in a material. The refractive index of the material is**



A 0.67

B 1.5

C 2.0

D 6.0

Understand It with Pulse

Flag a mistake

2 **A sample of 96 g of a radioactive material decays through two half lives. The mass remaining is**

- A 192 g
- B 48 g
- C 24 g
- D 12 g

Understand It with Pulse | Flag a mistake

3 **Use hc = 1240 eV nm. A photon of wavelength 800 nm has energy, in electron volts, of ____**

ANSWER _____

Understand It with Pulse | Flag a mistake

4 **A nucleus with mass number 238 emits an alpha particle. The mass number of the remaining nucleus is**



A 242

B 238

C 236

D 234

Understand It with Pulse | Flag a mistake

5 **The Sun produces energy mainly by nuclear**

A fission

B fusion

C beta decay

D chemical burning

Understand It with Pulse | Flag a mistake

6 **Light shows interference like a wave, but it also arrives in discrete packets of energy. The packets show light also has**

A particle behavior

B magnetic behavior only

C chemical behavior only

D no behavior at all

Understand It with Pulse | Flag a mistake

7 **Light from a galaxy moving toward Earth is blueshifted, which means its wavelength is**

- **A** longer
- **B** shorter
- **C** zero
- **D** unchanged

Understand It with Pulse | Flag a mistake

8 **Light of frequency 4×10^{14} Hz travels at 3.0×10^{8} $\frac{m}{s}$. Its wavelength, in nanometers, is ____**

ANSWER _____

Understand It with Pulse | Flag a mistake

9 **For an atom to absorb a photon, the photon energy must match the**

A difference between two energy levels

B mass of the nucleus

C speed of the electron

D temperature of the atom

Understand It with Pulse | Flag a mistake

10 **Total internal reflection in a fiber happens only when the angle of incidence is**

A zero

B below the critical angle

C above the critical angle

D equal to zero degrees

Understand It with Pulse | Flag a mistake

ANSWER KEY

1. B
2. C
3. 1.55
4. D
5. B
6. A
7. B
8. 750
9. A
10. C

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