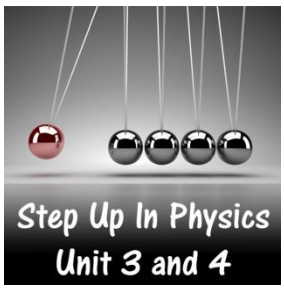
S.H.E.: Wave Particle Duality

Problems Worksheet



1. Laser light is useful in experiments and for use in sensors because of its characteristics. Describe the following characteristics of laser light.

    a. Monochromatic

    b. Coherent

    c. Collimated

    d. Polarised

2. When an electron falls to a lower atomic energy level, producing a photon, the process is usually spontaneous (I.e.: random). Why does the acronym for laser read as "**l**ight **a**mplification by **stimulated** **e**mission of **r**adiation"?

3. In the context of lasers, describe what a population inversion is and why the medium in which laser light is produced must be in a state of population inversion.

4. Photovoltaic cells require sunlight in order to function. Briefly describe the role light plays in a photovoltaic cell.