

- 1
 - a
 - i
 - The extension of a spring is directly proportional to a force applied, provided the spring is below the limit of proportionality
 - ii
 - That the gradient is static and the line goes through the origin
 - iii
 - In Paper
 - b
 - i
 - $\Delta W = F\Delta s$ so area beneath graph is work done or energy used to compress. The energy used is stored in the spring as elastic potential. By using the area of a triangle, $\frac{1}{2}(l \times w)$, we find the energy stored, $E = \frac{1}{2}Fe$.
 - ii
 - In Paper
- 2
 - a
 - In Paper
 - b
 - i
 - In Paper
 - ii
 - The gravitational potential energy gets converted to kinetic energy, which is converted to thermal energy, due to air resistance
- 3
 - a
 - In Paper
 - b
 - monochromatic light - Light of a single wavelength
 - coherent light - light of the same phase difference and wavelength
 - c
 - If light of a longer λ was used, maxima will become further apart, and maxima are wider.
 - d

- Lower Intensity
 - Increased Separation
- e
 - In Paper
- 4
 - When two waves travel in opposite directions, and have the same frequency, they will superpose together, which will cause a standing wave.
 - There are 4 nodes and 3 antinodes, where there is no amplitude and maximum amplitude respectively.
 - There is a λ of 0.80m
 - Waves reflect off of clamp and interfere with waves coming from oscillator
 - Energy is not transferred along the string
- 5
 - In Paper
- 6
 - In Paper
- 7
 - a
 - In Paper
 - b
 - In Paper
 - c
 - Total Internal reflection does not occur when light travels from a high n to a lower n
 - d
 - In Paper
 - e
 - In Paper