

Oscillations

Specification reference	Checklist questions	
5.3.1 a	Can you describe displacement, amplitude, period, frequency, angular frequency, and phase difference?	<input type="checkbox"/>
5.3.1 b	Can you calculate angular frequency $\omega = 2\pi/T$ or $\omega = 2\pi f$?	<input type="checkbox"/>
5.3.1 f	Can you understand isochronous oscillators (the period of a simple harmonic oscillator is independent of its amplitude)?	<input type="checkbox"/>
5.3.1 c i	Can you calculate simple harmonic motion, $a = -\omega^2 x$?	<input type="checkbox"/>
5.3.1 c ii	Can you describe techniques and procedures used to determine the period and frequency of simple harmonic oscillations?	<input type="checkbox"/>
5.3.1 d	Can you calculate solutions to the equation $a = -\omega^2 x$?	<input type="checkbox"/>
5.3.1 e	Can you calculate velocity $v = \pm\omega \sqrt{A^2 - x^2}$, hence $v_{\max} = \omega A$?	<input type="checkbox"/>
5.3.1 g	Can you explain graphical methods to relate the changes in displacement, velocity, and acceleration during simple harmonic motion?	<input type="checkbox"/>
5.3.2 a	Can you describe the interchange between kinetic and potential energy during simple harmonic motion?	<input type="checkbox"/>
5.3.2 b	Can you describe energy–displacement graphs for a simple harmonic oscillator?	<input type="checkbox"/>
5.3.3 b i	Can you explain the effects of damping on an oscillatory system?	<input type="checkbox"/>
5.3.3 a	Can you define free and forced oscillations?	<input type="checkbox"/>
5.3.3 c	Can you explain natural frequency and resonance?	<input type="checkbox"/>

Specification reference	Checklist questions	
5.3.3 b ii	Can you describe observing forced and damped oscillations for a range of systems?	<input type="checkbox"/>
5.3.3 d	Can you describe amplitude-driving frequency graphs for forced oscillators?	<input type="checkbox"/>
5.3.3 e	Can you explain practical examples of forced oscillations and resonance?	<input type="checkbox"/>