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Exam-2/Unit-01
Paper-2/112-Physics

Free Damped →

'Free' implies no external driving force is applied after initial displacement and 'damped' implies the amplitudes decay over time. A Free damped coupled pendulum system consists of two pendulums connected by a weak spring (coupling) and subject to energy dissipation forces, such as air resistance or pivot friction. The spring allows energy to transfer between the two pendulums resulting in a beat phenomenon where one pendulum stops while the other moves and vice versa. The amplitudes of both pendulums decay exponentially over time due to air resistance or pivot friction, causing the total energy of the system to decrease. Thus it has damping. In symmetric normal mode both pendulums swing together. The coupling spring is not stretched or compressed. and In Antisymmetric normal mode pendulum swing in opposite directions. The coupling spring is stretched/compressed, causing a higher frequency.