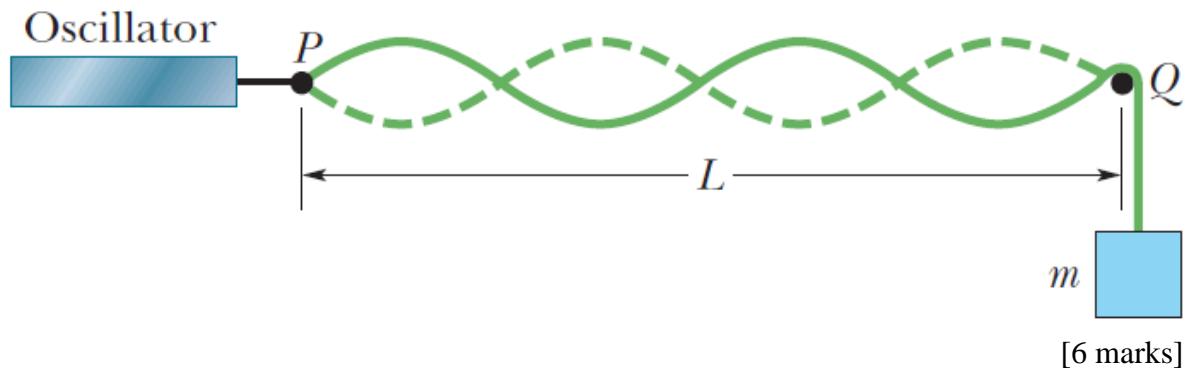


5. In the figure shown, a string, tied to a sinusoidal oscillator at P and running over a support at Q , is stretched by a block of mass m . The separation L between P and Q is 1.20 m, and the frequency f of the oscillator is fixed at 120 Hz. The amplitude of the motion at P is small enough for that point to be considered a node. A node also exists at Q . A standing wave appears when the mass of the hanging block is 286.1 g or 447.0 g, but not for any intermediate mass. What is the linear density of the string?



[6 marks]