

- 10** The displacement x of a molecule undergoing simple harmonic motion in a sound wave is given by

$$x = x_0 \sin 2\pi ft$$

where $x_0 = 0.32$ mm and $f = 10\,000$ Hz.

What is the magnitude of the maximum acceleration experienced by the molecule?

- A** 20.1 m s^{-2}
- B** $2.01 \times 10^4 \text{ m s}^{-2}$
- C** $1.26 \times 10^6 \text{ m s}^{-2}$
- D** $1.26 \times 10^9 \text{ m s}^{-2}$

