

16 - 1, 8, 15, 22 class 7

D [using $v = 344 \text{ m/s}$]

a) $\lambda = \frac{v}{f} = \frac{344}{1000} = .344 \text{ m}$ ← displacement max

b) $p = -B \frac{\partial y}{\partial x}$ $(p)_{\text{max}} = B(A)_m k \leftarrow \frac{2\pi}{\lambda}$ ← 1.4
 use $1.42 \times 10^5 = \gamma$ (air pressure)

$1.16 \times 10^{-5} \text{ m} = A_m$

approx size cell: microscopic

(c) $1.5 \times 10^{-3} = 1.42 \times 10^5 \cdot 1.2 \times 10^{-8} \frac{2\pi}{\lambda}$

$\lambda = 7.14 \text{ m}$

$f = \frac{v}{\lambda} = 48 \text{ Hz}$

8) $v = \sqrt{\frac{\gamma R T}{M}}$ or $\sqrt{\frac{\gamma k T}{m}}$
 $273 + 27 = 300$

$R = 8.31 \frac{\text{J}}{\text{mol K}}$

$\gamma = 1.41 \text{ H}_2$	2.02×10^{-3}
1.67 He	$4 \times 10^{-3} \text{ kg}$
1.67 Ar	39.9×10^{-3}

1320 m/s

1020 m/s

323 m/s

ϕ 344 or $N_2 = 28 \approx 29 \rightarrow 347$
 $O_2 = 32$

15 40 dB increase $\Rightarrow 10^{40/10} = 10^4 \times I \rightarrow 10^2 \times \text{closer} \left(\frac{1}{r^2}\right)$
 \downarrow
 .15 m

22 25 dB decrease $\Rightarrow 10^{-2.5} = 3.16 \times 10^{-3}$