P#51

Ch 21 - pg 682

$v = 3.0 \times 10^8 \text{ m/s}$

a) $f_1 = 540 \text{ kHz} = 540 \times 1000 \text{ Hz}$
$f_2 = 1600 \text{ kHz} = 1600 \times 1000 \text{ Hz}$

$v_1 = f_1 \cdot \lambda_1$
$(3.0 \times 10^8 \text{ m/s}) = (540 \times 1000 \text{ Hz}) \cdot \lambda_1$ $\boxed{\lambda_1 = 556 \text{ m}}$

$v_2 = f_2 \cdot \lambda_2$
$(3.0 \times 10^8 \text{ m/s}) = (1600 \times 1000 \text{ Hz}) \cdot \lambda_2$ $\boxed{\lambda_2 = 188 \text{ m}}$

b) $f_1 = 88 \text{ mHz} = 88 \times 10^6 \text{ Hz}$
$f_2 = 108 \text{ mHz} = 108 \times 10^6 \text{ Hz}$

$v_1 = f_1 \cdot \lambda_1$
$(3.0 \times 10^8 \text{ m/s}) = (88 \times 10^6 \text{ Hz}) \cdot \lambda_1$ $\boxed{\lambda_1 = 3.4 \text{ m}}$

$v_2 = f_2 \cdot \lambda_2$
$(3.0 \times 10^8 \text{ m/s}) = (108 \times 10^6 \text{ Hz}) \cdot \lambda_2$ $\boxed{\lambda_2 = 2.8 \text{ m}}$