

P#51

Ch 21 - pg 682

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

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

$$\begin{aligned} v_1 &= f_1 \cdot \lambda_1 \\ (3.0 \times 10^8 \text{ m/s}) &= (540 \times 1000 \text{ Hz}) \cdot \lambda_1 \end{aligned}$$

$$\lambda_1 = 556 \text{ m}$$

$$\begin{aligned} v_2 &= f_2 \cdot \lambda_2 \\ (3.0 \times 10^8 \text{ m/s}) &= (1600 \times 1000 \text{ Hz}) \cdot \lambda_2 \end{aligned}$$

$$\lambda_2 = 188 \text{ m}$$

$$\begin{aligned} \text{b) } f_1 &= 88 \text{ MHz} = 88 \times 10^6 \text{ Hz} \\ f_2 &= 108 \text{ MHz} = 108 \times 10^6 \text{ Hz} \end{aligned}$$

$$\begin{aligned} v_1 &= f_1 \cdot \lambda_1 \\ (3.0 \times 10^8 \text{ m/s}) &= (88 \times 10^6 \text{ Hz}) \cdot \lambda_1 \end{aligned}$$

$$\lambda_1 = 3.4 \text{ m}$$

$$\begin{aligned} v_2 &= f_2 \cdot \lambda_2 \\ (3.0 \times 10^8 \text{ m/s}) &= (108 \times 10^6 \text{ Hz}) \cdot \lambda_2 \end{aligned}$$

$$\lambda_2 = 2.8 \text{ m}$$