

(14) Dispersivt system $\Rightarrow v$ varierer med f

(4)

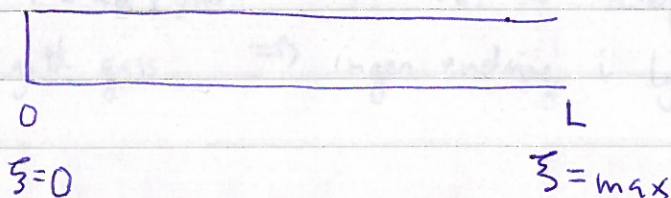
(B)

(15) $T_s = \frac{1}{f_s} = \frac{1}{|f_2 - f_1|}$; $f_1 = 440 \text{ s}^{-1}$, $T_s = 1 \text{ s}$

$\Rightarrow |f_2 - 440| \text{ s}^{-1} = 1 \text{ s}^{-1} \Rightarrow f_2 = 439 \text{ eller } 441 \text{ Hz}$

(D)

(16)



$\Rightarrow \frac{\lambda_1}{4} = L, \frac{\lambda_2 \cdot 3}{4} = L, \frac{\lambda_3 \cdot 5}{4} = L, \dots, \frac{\lambda_n \cdot (2n-1)}{4} = L$

$\Rightarrow \frac{v}{4f_1} = L, \frac{3v}{4f_2} = L, \frac{5v}{4f_3} = L, \dots, \frac{(2n-1)v}{4f_n} = L$

$\Rightarrow f_{n+1} - f_n = \frac{v}{4L} \{ [2(n+1)-1] - [2n-1] \} = \frac{v}{4L} \cdot 2 = \frac{v}{2L}$

$\Rightarrow L = \frac{v}{2(f_{n+1} - f_n)} = \frac{340 \text{ m/s}}{2 \cdot 68 \text{ 1/s}} = 2,5 \text{ m}$

(C)

(17) $I = P/A$, men A (f.eks. din trommehinne) endres ikke, så $P \rightarrow 8P$ betyr $I \rightarrow 8I$. Dermed:

$\beta_1 = 10 \log \frac{I}{I_0}, \beta_2 = 10 \log \frac{8I}{I_0}$

$\Rightarrow \beta_2 - \beta_1 = 10 \log 8 = \underline{9 \text{ dB}}$

(B)