Wave/Sandley

HOCKEY ALBERTA

Challenge the Future

1) B 2) A 3) B 4) All true 5) False 6) True

7) A) Fire left B) Fire right

8) $F_d = \frac{F_s(V - V_d)}{V - V_s}$ $F_d = \frac{800(340.6 + 15)}{340.6}$

$F_d = 835\ Hz$

9) $\frac{800(340.6 - 15)}{340} = 765\ Hz$

10) $F_d = \frac{F_s(V - V_d)}{V - V_s}$ $\times (V - V_s)$ $\frac{F_d(V - V_s)}{F_d} = \frac{F_s(V - V_d)}{F_d}$

$V - V_s = \frac{F_s(V - V_d)}{F_d} - V$ $V_s = -\left(\frac{F_s(V - V_d)}{F_d}\right) + V$

$V_s = -\left(\frac{450(343 - 0)}{470}\right) + 343 = 15\ m/s$

11) A) 440 Hz

B) $F_d = \frac{F_s(V + V_d)}{V - V_s}$ $\frac{440(346 + 20)}{346} = 465\ Hz$

C) $\frac{440(346 - 20)}{346} = 414\ Hz$

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12) $v = 331 + (0.6\ m/s^{\circ}C) \cdot T$

$331 + (0.6 \times 45)$

$v = 358\ m/s$

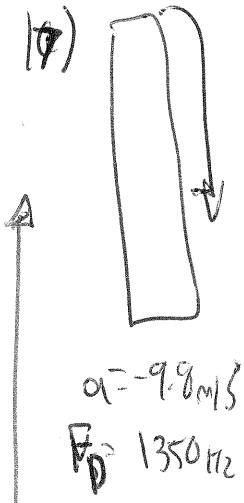
13) $v_{sound} = 331 + (0.6 \times 35) = 352\ m/s$

$f_d = \frac{f_s(v - v_d)}{(v - v_s)}$ $\quad \frac{1200(352 + 40)}{352} = 1336\ Hz$

14) $f_d = \frac{1200(352 - 60)}{352} = 1166\ Hz$

15) $f_d = \frac{700(343 + 15)}{343 + 15}$ $\quad \frac{700(343)}{343 + 15} = 732\ Hz$

16)



$v_f^2 = v_i^2 + 2ad$ $\quad v_p^2 = 2(9.8)(22) = 431.2\ m/s$

$f_d = \frac{1350(343)}{343 - 22}$ $\quad$ as per ↑ $v_p = 22\ m/s$

f_s? $\quad f_d = \frac{f_s(v - v_d)}{(v - v_s)}$ $\quad \times (v - v_s)$

$\frac{f_d(v - v_s)}{v - v_d} = f_s$ $\quad \frac{1350(343)}{343 + 22} = 1268$

16) $f_d = \frac{f_s(v - v_d)}{v - v_s}$ $\quad f_d = \frac{700(343)}{343 + 25} = 652\ Hz.$

18) $F_s = 512$ Hz

$F_d = 600$ Hz

$V_s = 26.8$ m/s

Air = 345 m/s

$$F_d = F_s\frac{(V - V_d)}{V - V_s} \qquad \frac{F_d(V - V_s)}{F_s} = \frac{F_s(V - V_d)}{F_s}$$

$$V_d = -\left(\frac{F_d(V - V_s)}{F_s}\right) + V = \left(\frac{600(345 - 26.8)}{512}\right) - 345$$

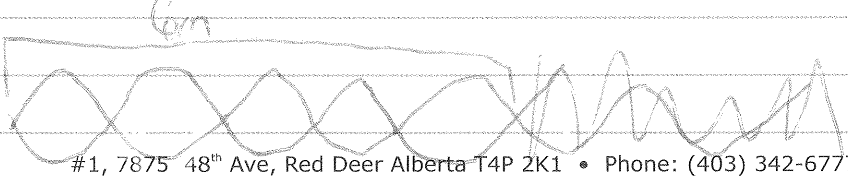
$V_d = 27.9$ m/s

19) $3.2 - 2.6 = 0.6$ m

20) $v = \lambda f$ $\qquad f = \frac{1}{5} = 0.2$ Hz

$v = 15(0.2) = 3$ m/s

21) A) 6 m



A) $\frac{6}{2.5} = 2.4$ m.

B) $f = \frac{16}{4} = 4$ Hz

C) $v = \lambda f$

$2.4 \times 4 = 9.6$ m/s

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