Introduction to Signal Processing – S. J. Orfanidis
Errata List for Solutions Manual – February 15, 2005

Prob–1.05: The last terms of $x(t)$ and $x_a(t)$ should be $\sin(2\pi t)$ instead of $-\sin(2\pi t)$.

Prob–1.09: The final expression for $y_a(t)$ should read: $1.0016\sin(10\pi t) + 0.9606\sin(20\pi t)$.

Prob–1.10: In the expression for $S(f)$ involving the sum over m and the integral, the $s(t)$ should be removed from the integrand.

Prob–1.24: Between the last two expressions for $H(f_m)$, read:

$$\frac{1}{T}H(f_m) = \frac{\sin(\pi f_m T)}{\pi f_m T}e^{-j\pi f_m T}$$

and because $\pi f_m T = \pi f_0 T + m\pi$, we have:

$$\frac{1}{T}H(f_m) = \frac{\sin(\pi f_0 T)}{\pi f_m T}e^{-j\pi f_0 T}$$

Prob–2.14: In the two conversion tables for $x = 1.2$, the final correct value of x_Q should be 1.0.

Prob–3.05: The last equation should read $y_n = 0.5y_{n-1} + 4x_n + x_{n-1}$.

Prob–5.11: In the last two displayed equations, the words "max" and "min" must be interchanged (the summation limits are correct.)

Prob–5.16: In Parts (c) and (d), there must always be seven zeros separating the non-zero entries of $x(n)$.

Prob–6.07: The figure of inadvertently shows the block diagram of Problem 6.6. It should depict $h(n)$ versus n.

Prob–6.22: The sample processing algorithm should read $w_0 = x + aw_{16}$, $y = w_0 - w_{16}$. Filled circles in the figure represent poles.

Prob–7.02: In the first 5 lines of the solution, the expression $\big(Y(z) - X(z)\big)$ should be replaced by $\big(X(z) - Y(z)\big)$.

Prob–7.03: The last line should read: $\mathbf{h} = [0, 1, 0, 5, 0, 6, 0, 1, 0, 5, 0, 6, \ldots]$.

Prob–7.09: In line 4, instead of $1 + z^{-4}$, read $1 + z^{-3}$.

Prob–7.11: In line 5, instead of $z = \pm 0.9m, \pm 0.9j$, read $z = \pm 0.9, \pm 0.9j$.

Prob–7.12: Instead of "Therefore, the zeros are be", read "The zeros are". Also, in the last equation for $h(n)$, the quantities $\pm c^{(n-4)/4}$ must be multiplied by the factor $1 - c^2$.

Prob–7.19: In the w_0-column of the last table, the last three 0's should be 1's.

Prob–7.20: In the first line, instead of "direct for denominator", read "direct form denominator".

Prob–8.09: The zero patterns and corresponding magnitude responses of the last two filters must be interchanged.

Prob–9.04: In line before last, instead of 18mod16, read 18mod8.

Prob–9.10: The last rounded value of k_A should be 30.

Prob–9.22: The term $\sin(10\pi t)$ of $x(t)$ should read $\sin(20\pi t)$. In the same problem, the answer for the DFT $\mathbf{X}$ has an extra 0 at its end, which should be deleted. Finally, the third term of the expression for $x(n)$ in terms of complex exponentials should be $je^{-j\pi n/2}$ instead of $je^{j\pi n/2}$.

Prob–9.26: In third line, $\omega_1 2$ should read ω_{12}. Moreover, the phase of $W(\omega)$ should be $e^{-j15\omega/2}$ instead of $e^{-j8\omega}$.

Prob–9.34: The term $1.5/\log_2 N$ in the last equation should read $2.5/\log_2 N$.

Prob–9.42: The vectors $\mathbf{x}, \mathbf{X}, \mathbf{b}$ must be divided by a factor of 4 to make them compatible with the given definition of $x(t)$. Moreover, the aliased signal should be: $x_{al}(t) = 2jb_1\sin(2\pi t) + 2jb_3\sin(6\pi t)$, where $2jb_1 = (2+\sqrt{2})/16$ and $2jb_3 = -(2-\sqrt{2})/16$.

Prob–11.11: The calculated value of f_0 should be 10.003, instead of 1.003.

Prob–12.02: The expression for $d(k)$ in the higpass case, should have as numerator $\sin(\pi k) - \sin(\omega_a k)$.

Prob–12.04: The tenth entry of the vector $\mathbf{d}$ should be 0.300, instead of 0.200.

Prob–12.08: The calculation of N_1 should read: $N_1 - 1 = \dfrac{DF_1}{F_0 - 1} = \dfrac{5.0174 \cdot 4}{2 - 1} = 20.07$.

Prob–12.09: The vertical label of Fig. P12.16 should be *dB* instead of *degrees*. In line 3, instead of $d(k) = \pm d(k)$, read $d(-k) = \pm d(k)$. In line 3 from the bottom, instead of $d'(k) = w(k)w(k)$, read $d'(k) = w(k)d(k)$.

Prob–12.10: In the third equation from the end, instead of 4.5, read 2.25.

Prob–12.24: And also in Prob–12.25, the extra right parenthesis should be removed from the denominator of $H_1(z)$ and $H_2(z)$, that is, it must read $1 - z^{-1}$.

Prob–12.25: The denominator of $H_x(\zeta)$ should be identical to that of $H_{NS}(\zeta)$.