Filter Summary Report: CG,TIA,simple,Z4,ZL

Generated by MacAnalog-Symbolix

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Contents

1 Examined $H(z)$ for CG TIA simple Z4 ZL: $\frac{Z_4Z_Lg_m}{Z_4g_m+2Z_Lg_m}$
2 HP 5
$\begin{array}{llllllllllllllllllllllllllllllllllll$
$3.11 \text{ BP-11 } Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{C_4 L_4 R_4 s^2 + L_4 s + R_4}{C_4 L_4 R_4 s^2 + L_4 s + R_4}, \ \infty, \ \frac{L_L s}{C_L L_L s^2 + 1} \right) $ $3.12 \text{ BP-12 } Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 R_4 s}{C_4 L_4 R_4 s^2 + L_4 s + R_4}, \ \infty, \ \frac{L_L R_L s}{C_L L_L R_L s^2 + L_L s + R_L} \right) $ $3.13 \text{ BP-13 } Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 R_4 s}{C_4 L_4 R_4 s^2 + L_4 s + R_4}, \ \infty, \ \frac{L_L R_L s}{C_L L_L R_L s^2 + L_L s + R_L} \right) $ 4 LP
5 BS 5.1 BS-1 $Z(s) = \left(\infty, \infty, \infty, R_4, \infty, L_L s + \frac{1}{C_L s}\right)$ 9 5.2 BS-2 $Z(s) = \left(\infty, \infty, \infty, R_4, \infty, \frac{R_L(C_L L_L s^2 + 1)}{C_L L_L s^2 + C_L R_L s + 1}\right)$ 9 5.3 BS-3 $Z(s) = \left(\infty, \infty, \infty, L_4 s + \frac{1}{C_4 s}, \infty, R_L\right)$ 9 5.4 BS-4 $Z(s) = \left(\infty, \infty, \infty, \frac{R_4(C_4 L_4 s^2 + 1)}{C_4 L_4 s^2 + C_4 R_4 s + 1}, \infty, R_L\right)$ 10
6 GE 1 $Z(s) = \left(\infty, \infty, \infty, R_4, \infty, L_L s + R_L + \frac{1}{C_L s}\right)$ 10 6.1 GE-1 $Z(s) = \left(\infty, \infty, \infty, R_4, \infty, \frac{C_L L_R R_s^2 + L_L s + R_L}{C_L L_s^2 + 1}\right)$ 10 6.2 GE-2 $Z(s) = \left(\infty, \infty, \infty, R_4, \infty, \frac{C_L L_R R_s^2 + L_L s + R_L}{C_L L_s^2 + 1}\right)$ 10 6.3 GE-3 $Z(s) = \left(\infty, \infty, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, R_L\right)$ 11 6.4 GE-4 $Z(s) = \left(\infty, \infty, \infty, \frac{C_4 L_4 R_4 s^2 + L_4 s + R_4}{C_4 L_4 s^2 + 1}, \infty, R_L\right)$ 11
7 AP 8 INVALID-NUMER 8.1 INVALID-NUMER-1 $Z(s) = \left(\infty, \infty, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, R_L + \frac{1}{C_L s}\right)$ 8.2 INVALID-NUMER-2 $Z(s) = \left(\infty, \infty, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1}\right)$ 12

9 INVALID-WZ

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ELS INVALID ORDER 14 $Z(s) = \left(\infty, \infty, \infty, R_1, \infty, R_2, \frac{R_{12}}{2} \right)$ 115 INVALID ORDER 4 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{12}}{2}, \infty, \frac{R_{12}}{2} \right)$ 116 INVALID ORDER 4 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{12}}{2}, \infty, \frac{R_{12}}{2} \right)$ 116 INVALID ORDER 5 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{12}}{2}, \infty, \frac{R_{12}}{2} \right)$ 116 INVALID ORDER 7 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{12}}{2}, \infty, \frac{R_{12}}{2} \right)$ 116 INVALID ORDER 17 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{12}}{2}, \infty, \frac{R_{12}}{2} \right)$ 116 INVALID ORDER 18 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{12}}{2}, \infty, \frac{R_{12}}{2} \right)$ 116 INVALID ORDER 18 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{12}}{2}, \infty, \frac{R_{12}}{2} \right)$ 116 INVALID ORDER 19 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{12}}{2}, \infty, \frac{R_{12}}{2} \right)$ 116 INVALID ORDER 19 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{12}}{2}, \infty, \frac{R_{12}}{2} \right)$ 116 INVALID ORDER 19 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{12}}{2}, \infty, \frac{R_{12}}{2} \right)$ 116 INVALID ORDER 19 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{12}}{2}, \infty, \frac{R_{12}}{2} \right)$ 117 INVALID ORDER 19 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{12}}{2}, \infty, \frac{R_{12}}{2} \right)$ 118 INVALID ORDER 19 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{12}}{2}, \infty, \frac{R_{12}}{2} \right)$ 119 INVALID ORDER 19 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{12}}{2}, \infty, \frac{R_{12}}{2} \right)$ 110 INVALID ORDER 19 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{12}}{2}, \infty, \frac{R_{12}}{2} \right)$ 110 INVALID ORDER 19 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{12}}{2}, \infty, \frac{R_{12}}{2} \right)$ 1110 INVALID ORDER 19 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{12}}{2}, \infty, \frac{R_{12}}{2} \right)$ 1110 INVALID ORDER 19 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{12}}{2}, \infty, \frac{R_{12}}{2} \right)$ 1111 INVALID ORDER 19 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{12}}{2}, \infty, \frac{R_{12}}{2} \right)$ 112 INVALID ORDER 19 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{12}}{2}, \infty, \frac{R_{12}}{2} \right)$ 112 INVALID ORDER 19 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{12}}{2}, \infty, \frac{R_{12}}{2} \right)$ 112 INVALID ORDER 19 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{12}}{2}, \infty, \frac{R_{12}}{2} \right)$ 112 INVALID ORDER 19 $Z(s) = \left(\infty, \infty, R_{12}, \frac{R_{12}}{2}, \infty, \frac{R_{12}}{2} \right)$ 113 INVALID ORDER 19 $Z(s) = \left(\infty, \infty, R_{12}, \frac{R_{12}}{2}, \infty, \frac{R_{12}}{2} \right)$ 114 INVALID ORDER 19 $Z(s) = \left(\infty, \infty, R_{12}, \frac{R_{12}}{2}, \infty, \frac{R_{12}}{2} \right)$ 115 INVALID ORDER 19 $Z(s) = \left(\infty, \infty, R_{12}, \frac{R_{12}}{2}, \infty, \frac{R_{12}}{2} \right)$ 116 I	10.1 INVALID-ORDER-1 $Z(s) = (\infty, \infty, \infty, R_4, \infty, R_L)$
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BAS INVALID ORDER 3 $Z_1(s) = \left(x_1, x_2, x_3, \frac{1}{12} \right)$, $x_2 \in \mathbb{R}^{2}$, $Y_1(s) = \mathbb{R}^{2}$, $Y_2(s) = \mathbb{R}^{2}$, $Y_3(s) = $	
$\begin{array}{lll} 6. & \text{INVALID ORDERS } S(s) = \left(\infty, \infty, \infty, \frac{C_{11}}{C_{11}}, \infty, \frac{C_{11}}{C_{11}} \right) & \infty, \frac{C_{11}}{C_{11}} \right) \\ 16. & \text{INVALID ORDERS } S(s) = \left(\infty, \infty, \infty, \frac{C_{11}}{C_{11}}, \infty, \frac{C_{11}}{C_{11}} \right) \\ 16. & \text{INVALID ORDERS } S(s) = \left(\infty, \infty, \infty, \frac{C_{11}}{C_{11}}, \infty, \frac{C_{11}}{C_{11}} \right) \\ 16. & \text{INVALID ORDERS } 12(s) = \left(\infty, \infty, \infty, \frac{C_{11}}{C_{11}}, \infty, \frac{C_{11}}{C_{11}} \right) \\ 16. & \text{INVALID ORDERS } 12(s) = \left(\infty, \infty, \infty, \frac{C_{11}}{C_{11}}, \infty, \frac{C_{11}}{C_{11}} \right) \\ 16. & \text{INVALID ORDERS } 12(s) = \left(\infty, \infty, \infty, \frac{C_{11}}{C_{11}}, \infty, \frac{C_{11}}{C_{11}} \right) \\ 16. & \text{INVALID ORDERS } 12(s) = \left(\infty, \infty, \infty, \frac{C_{11}}{C_{11}}, \infty, \frac{C_{11}}{C_{11}} \right) \\ 16. & \text{INVALID ORDERS } 12(s) = \left(\infty, \infty, \infty, \frac{C_{11}}{C_{11}}, \infty, \frac{C_{11}}{C_{11}} \right) \\ 16. & \text{INVALID ORDERS } 12(s) = \left(\infty, \infty, \infty, \frac{C_{11}}{C_{11}}, \infty, \frac{C_{11}}{C_{11}} \right) \\ 16. & \text{INVALID ORDERS } 12(s) = \left(\infty, \infty, \infty, \frac{C_{11}}{C_{11}}, \infty, \frac{C_{11}}{C_{11}} \right) \\ 16. & \text{INVALID ORDERS } 12(s) = \left(\infty, \infty, \infty, \frac{C_{11}}{C_{11}}, \infty, \frac{C_{11}}{C_{11}} \right) \\ 16. & \text{INVALID ORDERS } 12(s) = \left(\infty, \infty, \infty, \frac{C_{11}}{C_{11}}, \infty, \frac{C_{11}}{C_{11}} \right) \\ 16. & \text{INVALID ORDERS } 12(s) = \left(\infty, \infty, \infty, \frac{C_{11}}{C_{11}}, \infty, \frac{C_{11}}{C_{11}} \right) \\ 16. & \text{INVALID ORDERS } 12(s) = \left(\infty, \infty, \infty, \frac{C_{11}}{C_{11}}, \infty, \frac{C_{11}}{C_{11}} \right) \\ 16. & \text{INVALID ORDERS } 12(s) = \left(\infty, \infty, \infty, \frac{C_{11}}{C_{11}}, \infty, \frac{C_{11}}{C_{11}} \right) \\ 16. & \text{INVALID ORDERS } 12(s) = \left(\infty, \infty, \infty, \frac{C_{11}}{C_{11}}, \infty, \frac{C_{11}}{C_{11}} \right) \\ 16. & \text{INVALID ORDERS } 2(s) = \left(\infty, \infty, \infty, \frac{C_{11}}{C_{11}}, \infty, \frac{C_{11}}{C_{11}} \right) \\ 16. & \text{INVALID ORDERS } 2(s) = \left(\infty, \infty, \infty, \frac{C_{11}}{C_{11}}, \infty, \frac{C_{11}}{C_{11}} \right) \\ 16. & \text{INVALID ORDERS } 2(s) = \left(\infty, \infty, \infty, \frac{C_{11}}{C_{11}}, \infty, \frac{C_{11}}{C_{11}} \right) \\ 16. & \text{INVALID ORDERS } 2(s) = \left(\infty, \infty, \infty, \frac{C_{11}}{C_{11}}, \infty, \frac{C_{11}}{C_{11}} \right) \\ 16. & \text{INVALID ORDERS } 2(s) = \left(\infty, \infty, \infty, \frac{C_{11}}{C_{11}}, \infty, \frac{C_{11}}{C_{11}} \right) \\ 16. & \text{INVALID ORDERS } 2(s) = \left(\infty, \infty, \infty, \frac{C_{11}}{C_{11}}, \infty, \frac{C_{11}}{C_{11}} \right) \\ 16. & \text{INVALID ORDERS } 2(s) = \left(\infty, \infty, $	
NOS INVALID-GORDER 2 $Z(s) = \left(\infty, \infty, \infty, \frac{c_{1}}{c_{1}}, \infty, R_{1} + \frac{1}{c_{1}} \right)$ MOSINVALID-GORDER 3 $Z(s) = \left(\infty, \infty, \infty, \frac{c_{2}}{c_{1}}, \infty, L_{2} + \frac{1}{c_{2}} \right)$ MOSINVALID-GORDER 3 $Z(s) = \left(\infty, \infty, \infty, \frac{c_{2}}{c_{2}}, \infty, L_{2} + \frac{1}{c_{2}} \right)$ 10. INVALID-GORDER 12 $Z(s) = \left(\infty, \infty, \infty, \frac{c_{2}}{c_{2}}, \infty, \frac{L_{2}}{c_{2}}, \frac{L_{2}}{c_{2}} \right)$ 10. INVALID-GORDER 12 $Z(s) = \left(\infty, \infty, \infty, \frac{c_{2}}{c_{2}}, \infty, \frac{L_{2}}{c_{2}}, \frac{L_{2}}{c_{2}} \right)$ 10. INVALID-GORDER 12 $Z(s) = \left(\infty, \infty, \infty, \frac{c_{2}}{c_{2}}, \infty, \frac{L_{2}}{c_{2}}, \frac{L_{2}}{c_{2}} \right)$ 10. INVALID-GORDER 13 $Z(s) = \left(\infty, \infty, \infty, \frac{c_{2}}{c_{2}}, \infty, \frac{R_{2}}{c_{2}}, \frac{R_{2}}{c_{2}} \right)$ 10. INVALID-GORDER 13 $Z(s) = \left(\infty, \infty, \infty, \frac{c_{2}}{c_{2}}, \infty, \frac{R_{2}}{c_{2}} \right)$ 10. INVALID-GORDER 15 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{2}}{c_{2}}, \frac{R_{2}}{c_{2}} \right)$ 10. INVALID-GORDER 15 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{2}}{c_{2}}, \frac{R_{2}}{c_{2}} \right)$ 10. INVALID-GORDER 15 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{2}}{c_{2}}, \frac{R_{2}}{c_{2}} \right)$ 10. INVALID-GORDER 15 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{2}}{c_{2}}, \frac{R_{2}}{c_{2}} \right)$ 10. INVALID-GORDER 15 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{2}}{c_{2}}, \frac{R_{2}}{c_{2}} \right)$ 10. INVALID-GORDER 15 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{2}}{c_{2}}, \frac{R_{2}}{c_{2}} \right)$ 10. INVALID-GORDER 16 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{2}}{c_{2}}, \frac{R_{2}}{c_{2}} \right)$ 10. INVALID-GORDER 16 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{2}}{c_{2}}, \frac{R_{2}}{c_{2}} \right)$ 10. INVALID-GORDER 17 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{2}}{c_{2}}, \frac{R_{2}}{c_{2}} \right)$ 10. INVALID-GORDER 17 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{2}}{c_{2}}, \frac{R_{2}}{c_{2}} \right)$ 10. INVALID-GORDER 17 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{2}}{c_{2}}, \frac{R_{2}}{c_{2}} \right)$ 10. INVALID-GORDER 17 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{2}}{c_{2}}, \frac{R_{2}}{c_{2}} \right)$ 10. INVALID-GORDER 17 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{2}}{c_{2}}, \frac{R_{2}}{c_{2}} \right)$ 10. INVALID-GORDER 17 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{2}}{c_{2}}, \frac{R_{2}}{c_{2}} \right)$ 10. INVALID-GORDER 17 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{2}}{c_{2}}, \frac{R_{2}}{c_{2}} \right)$ 10. INVALID-GORDER 27 $Z(s) = \left(\infty, \infty, \infty, \frac{R_{2}}{c_{2}}, \frac{R_{2}}{c_{2}} \right)$ 10. INVALID-GORDER 27 $Z(s$	
$\begin{array}{ll} 0.9 \text{ Invalido orderato } 2(s) = \left(\infty, \infty, \infty, \frac{1}{c_{s_{s_{s_{s_{s_{s_{s_{s_{s_{s_{s_{s_{s_$	
$\begin{array}{ll} 10.10 \text{RVALID-ORDER-10 } Z(s) = \left(\infty & \infty & \infty & \frac{1}{C_{0,1}} \infty & \frac{1}{C_{0,2}} \sin \left(\frac{1}{C_{0,1}} \sin \left(\frac{1}{C_{0,2}} \sin$	
$\begin{array}{ll} 10.118 \text{WALID-ORDER-12} \ Z(s) & \left(\infty, \infty, \infty, \frac{1}{c_{s_{s_{s_{s_{s_{s_{s_{s_{s_{s_{s_{s_{s_$	
$\begin{array}{ll} 10.312 \text{NVAID ORDER 12 } Z(s) = \left(\infty, \infty, \infty, \frac{1}{C_{1,1}}, \infty, \frac{C_{1,1}}{C_{1,1}}, C_{1,2}, C_{1,2}, C_{1,1}, C_$	$10.10 \text{INVALID-ORDER-10 } Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{1}{C_4 s}, \ \infty, \ \frac{L_L s}{C_L L_L s^2 + 1} \right) \dots $
$\begin{array}{llllllllllllllllllllllllllllllllllll$	
$\begin{array}{llllllllllllllllllllllllllllllllllll$	$10.12 \text{INVALID-ORDER-12 } Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{1}{C_4 s}, \ \infty, \ \frac{C_L L_L R_L s^2 + L_L s + R_L}{C_L L_L s^2 + 1} \right) \dots $
$\begin{array}{ll} \text{ID.15InVALID-ORDER-15} \ Z(s) = \left(\infty, \infty, \infty, \frac{c_{R_{s}+1}}{c_{s}+1}, \infty, \frac{1}{c_{s}+1}\right) \\ \text{IO.16InVVATID ORDER II} \ Z(s) = \left(\infty, \infty, \infty, \frac{c_{R_{s}+1}}{c_{s}+1}, \infty, \frac{1}{c_{s}+1}\right) \\ \text{IO.15InVALID-ORDER-18} \ Z(s) = \left(\infty, \infty, \infty, \frac{c_{R_{s}+1}}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.15InVALID-ORDER-18} \ Z(s) = \left(\infty, \infty, \infty, \frac{c_{R_{s}+1}}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.15InVALID-ORDER-19} \ Z(s) = \left(\infty, \infty, \infty, \frac{c_{R_{s}+1}}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.210VALID-ORDER-19} \ Z(s) = \left(\infty, \infty, \infty, \frac{c_{R_{s}+1}}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.210VALID-ORDER-22} \ Z(s) = \left(\infty, \infty, \infty, \frac{c_{R_{s}+1}}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.210VALID-ORDER-22} \ Z(s) = \left(\infty, \infty, \infty, \frac{c_{R_{s}+1}}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.210VALID-ORDER-22} \ Z(s) = \left(\infty, \infty, \infty, R_{s} + \frac{1}{c_{s}+1}, \infty, R_{s} + \frac{1}{c_{s}+1}\right) \\ \text{IO.210VALID-ORDER-22} \ Z(s) = \left(\infty, \infty, \infty, R_{s} + \frac{1}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.210VALID-ORDER-22} \ Z(s) = \left(\infty, \infty, \infty, R_{s} + \frac{1}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.220VALID-ORDER-22} \ Z(s) = \left(\infty, \infty, \infty, R_{s} + \frac{1}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.220VALID-ORDER-22} \ Z(s) = \left(\infty, \infty, \infty, R_{s} + \frac{1}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.220VALID-ORDER-22} \ Z(s) = \left(\infty, \infty, \infty, R_{s} + \frac{1}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.220VALID-ORDER-22} \ Z(s) = \left(\infty, \infty, \infty, R_{s} + \frac{1}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.220VALID-ORDER-22} \ Z(s) = \left(\infty, \infty, \infty, R_{s} + \frac{1}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.220VALID-ORDER-22} \ Z(s) = \left(\infty, \infty, \infty, R_{s} + \frac{1}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.220VALID-ORDER-23} \ Z(s) = \left(\infty, \infty, \infty, R_{s} + \frac{1}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.220VALID-ORDER-23} \ Z(s) = \left(\infty, \infty, \infty, R_{s} + \frac{1}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.220VALID-ORDER-23} \ Z(s) = \left(\infty, \infty, \infty, L_{s} + \frac{1}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.220VALID-ORDER-23} \ Z(s) = \left(\infty, \infty, \infty, L_{s} + \frac{1}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.230VALID-ORDER-23} \ Z(s) = \left(\infty, \infty, \infty, L_{s} + \frac{1}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.230VALID-ORDER-23} \ Z(s) = \left(\infty, \infty, \infty, L_{s} + \frac{1}{c_{s}+1}, \infty, $	$10.13 \text{INVALID-ORDER-13 } Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{1}{C_4 s}, \ \infty, \ \frac{R_L(C_L L_L s^2 + 1)}{C_L L_L s^2 + C_L R_L s + 1}\right) \dots \dots$
$\begin{array}{ll} \text{ID.15InVALID-ORDER-15} \ Z(s) = \left(\infty, \infty, \infty, \frac{c_{R_{s}+1}}{c_{s}+1}, \infty, \frac{1}{c_{s}+1}\right) \\ \text{IO.16InVVATID ORDER II} \ Z(s) = \left(\infty, \infty, \infty, \frac{c_{R_{s}+1}}{c_{s}+1}, \infty, \frac{1}{c_{s}+1}\right) \\ \text{IO.15InVALID-ORDER-18} \ Z(s) = \left(\infty, \infty, \infty, \frac{c_{R_{s}+1}}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.15InVALID-ORDER-18} \ Z(s) = \left(\infty, \infty, \infty, \frac{c_{R_{s}+1}}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.15InVALID-ORDER-19} \ Z(s) = \left(\infty, \infty, \infty, \frac{c_{R_{s}+1}}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.210VALID-ORDER-19} \ Z(s) = \left(\infty, \infty, \infty, \frac{c_{R_{s}+1}}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.210VALID-ORDER-22} \ Z(s) = \left(\infty, \infty, \infty, \frac{c_{R_{s}+1}}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.210VALID-ORDER-22} \ Z(s) = \left(\infty, \infty, \infty, \frac{c_{R_{s}+1}}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.210VALID-ORDER-22} \ Z(s) = \left(\infty, \infty, \infty, R_{s} + \frac{1}{c_{s}+1}, \infty, R_{s} + \frac{1}{c_{s}+1}\right) \\ \text{IO.210VALID-ORDER-22} \ Z(s) = \left(\infty, \infty, \infty, R_{s} + \frac{1}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.210VALID-ORDER-22} \ Z(s) = \left(\infty, \infty, \infty, R_{s} + \frac{1}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.220VALID-ORDER-22} \ Z(s) = \left(\infty, \infty, \infty, R_{s} + \frac{1}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.220VALID-ORDER-22} \ Z(s) = \left(\infty, \infty, \infty, R_{s} + \frac{1}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.220VALID-ORDER-22} \ Z(s) = \left(\infty, \infty, \infty, R_{s} + \frac{1}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.220VALID-ORDER-22} \ Z(s) = \left(\infty, \infty, \infty, R_{s} + \frac{1}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.220VALID-ORDER-22} \ Z(s) = \left(\infty, \infty, \infty, R_{s} + \frac{1}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.220VALID-ORDER-22} \ Z(s) = \left(\infty, \infty, \infty, R_{s} + \frac{1}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.220VALID-ORDER-23} \ Z(s) = \left(\infty, \infty, \infty, R_{s} + \frac{1}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.220VALID-ORDER-23} \ Z(s) = \left(\infty, \infty, \infty, R_{s} + \frac{1}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.220VALID-ORDER-23} \ Z(s) = \left(\infty, \infty, \infty, L_{s} + \frac{1}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.220VALID-ORDER-23} \ Z(s) = \left(\infty, \infty, \infty, L_{s} + \frac{1}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.230VALID-ORDER-23} \ Z(s) = \left(\infty, \infty, \infty, L_{s} + \frac{1}{c_{s}+1}, \infty, \frac{1}{L_{s}+1}\right) \\ \text{IO.230VALID-ORDER-23} \ Z(s) = \left(\infty, \infty, \infty, L_{s} + \frac{1}{c_{s}+1}, \infty, $	10.14INVALID-ORDER-14 $Z(s) = \left(\infty, \infty, \infty, \frac{R_4}{C_4R_4s+1}, \infty, R_L\right)$
10.16INVALID-ORDER-16 $Z(s) = \left(\infty, \infty, \infty, \frac{n}{c_0}, \frac{n}{c_0, n+1}, \infty, \frac{n}{c_0, n+1}\right)$ 10.17INVALID-ORDER-18 $Z(s) = \left(\infty, \infty, \infty, \frac{n}{c_0, n+1}, \infty, \frac{n}{c_0, n+1}\right)$ 10.18INVALID-ORDER-18 $Z(s) = \left(\infty, \infty, \infty, \frac{n}{c_0, n+1}, \infty, \frac{n}{c_0, n+1}, \infty, \frac{n}{c_0, n+1}\right)$ 10.19INVALID-ORDER-20 $Z(s) = \left(\infty, \infty, \infty, \frac{n}{c_0, n+1}, \infty, \frac{n}{c_0, n+1}, \infty, \frac{n}{c_0, n+1}\right)$ 10.20INVALID-ORDER-21 $Z(s) = \left(\infty, \infty, \infty, \frac{n}{c_0, n+1}, \infty, \frac{n}{c_0, n+1}, \infty, \frac{n}{c_0, n+1}\right)$ 10.21INVALID-ORDER-21 $Z(s) = \left(\infty, \infty, \infty, \frac{n}{c_0, n+1}, \infty, \frac{n}{c_0, n+1}, \infty, \frac{n}{c_0, n+1}\right)$ 10.22INVALID-ORDER-22 $Z(s) = \left(\infty, \infty, \infty, n, \frac{n}{c_0, n+1}, \infty, \frac{n}{c_0, n+1}, \infty, \frac{n}{c_0, n+1}\right)$ 10.22INVALID-ORDER-23 $Z(s) = \left(\infty, \infty, \infty, n, \frac{n}{c_0, n+1}, \frac{1}{c_0, n}, \frac{n}{c_0, n+1}\right)$ 10.22INVALID-ORDER-23 $Z(s) = \left(\infty, \infty, \infty, n, \frac{n}{c_0, n+1}, \frac{1}{c_0, n}, \frac{n}{c_0, n+1}\right)$ 10.22INVALID-ORDER-23 $Z(s) = \left(\infty, \infty, \infty, n, \frac{n}{c_0, n+1}, \frac{1}{c_0, n}, \frac{n}{c_0, n+1}\right)$ 10.22INVALID-ORDER-25 $Z(s) = \left(\infty, \infty, \infty, \frac{n}{c_0, n+1}, \frac{1}{c_0, n}, \frac{n}{c_0, n+1}\right)$ 10.22INVALID-ORDER-25 $Z(s) = \left(\infty, \infty, \infty, \frac{n}{c_0, n+1}, \frac{1}{c_0, n}, \frac{n}{c_0, n+1}\right)$ 10.22INVALID-ORDER-25 $Z(s) = \left(\infty, \infty, \infty, \frac{n}{c_0, n}, \frac{1}{c_0, n}, \frac{n}{c_0, n+1}\right)$ 10.22INVALID-ORDER-25 $Z(s) = \left(\infty, \infty, \infty, \frac{n}{c_0, n}, \frac{1}{c_0, n}, \frac{n}{c_0, n+1}\right)$ 10.23INVALID-ORDER-25 $Z(s) = \left(\infty, \infty, \infty, \frac{n}{c_0, n}, \frac{1}{c_0, n}, \frac{n}{c_0, n+1}\right)$ 10.23INVALID-ORDER-25 $Z(s) = \left(\infty, \infty, \infty, \frac{n}{c_0, n}, \frac{1}{c_0, n}, \frac{n}{c_0, n+1}\right)$ 10.23INVALID-ORDER-25 $Z(s) = \left(\infty, \infty, \infty, \frac{n}{c_0, n}, \frac{1}{c_0, n}, \frac{n}{c_0, n+1}\right)$ 10.33INVALID-ORDER-37 $Z(s) = \left(\infty, \infty, \infty, \frac{n}{c_0, n}, \frac{1}{c_0, n}, \frac{n}{c_0, n+1}\right)$ 10.33INVALID-ORDER-37 $Z(s) = \left(\infty, \infty, \infty, \frac{n}{c_0, n}, \frac{1}{c_0, n}, \frac{n}{c_0, n+1}\right)$ 10.33INVALID-ORDER-37 $Z(s) = \left(\infty, \infty, \infty, \frac{n}{c_0, n}, \frac{1}{c_0, n}, \frac{1}{c_0, n}\right)$ 10.33INVALID-ORDER-37 $Z(s) = \left(\infty, \infty, \infty, \frac{n}{c_0, n}, \frac{1}{c_0, n}, \frac{1}{c_0, n}\right)$ 10.33INVALID-ORDER-37 $Z(s) = \left(\infty, \infty, \infty, \frac{n}{c_0, n}, \frac{1}{c_0, n}, \frac{1}{c_0, n}\right)$ 10.33INVALID-ORDER-37 $Z(s) = \left(\infty, \infty, \infty, \frac{n}{c_0, n}, \frac{1}{c_0, n}\right)$ 1	
$\begin{aligned} & 10.17 \text{INVALID-ORDER-17} \ Z(s) = \left(\infty, \infty, \infty, \frac{R}{C_{\text{chipt}}}, \infty, L_{x}s + \frac{1}{C_{x}s} \right) \\ & 10.18 \text{INVALID-ORDER-19} \ Z(s) = \left(\infty, \infty, \infty, \frac{R}{C_{\text{chipt}}}, \infty, L_{x}s + R_{x} + \frac{1}{C_{x}s} \right) \\ & 10.18 \text{INVALID-ORDER-19} \ Z(s) = \left(\infty, \infty, \infty, \frac{R}{C_{\text{chipt}}}, \infty, \frac{C_{x}s}{C_{\text{chipt}}}, \infty, \frac{C_{x}s}{C_{x}c_{x}s^{2} + C_{x}s + R_{x}} \right) \\ & 10.29 \text{INVALID-ORDER-29} \ Z(s) = \left(\infty, \infty, \infty, \frac{R}{C_{x}}, \frac{R}{C_{x}s^{2}}, \frac{C_{x}s^{2} + C_{x}s + R_{x}}{C_{x}c_{x}s^{2} + C_{x}s^{2} + C_{x}s + R_{x}} \right) \\ & 10.21 \text{INVALID-ORDER-29} \ Z(s) = \left(\infty, \infty, \infty, R + \frac{1}{C_{x}s}, \infty, \frac{1}{C_{x}s}, \frac{R}{C_{x}s^{2}} \right) \\ & 10.22 \text{INVALID-ORDER-29} \ Z(s) = \left(\infty, \infty, \infty, R + \frac{1}{C_{x}s}, \infty, \frac{1}{C_{x}s^{2}} \right) \\ & 10.23 \text{INVALID-ORDER-29} \ Z(s) = \left(\infty, \infty, \infty, R + \frac{1}{C_{x}s}, \infty, \frac{1}{C_{x}s^{2}} \right) \\ & 10.24 \text{INVALID-ORDER-29} \ Z(s) = \left(\infty, \infty, \infty, R_{4} + \frac{1}{C_{x}s}, \infty, \frac{1}{C_{x}s^{2} + C_{x}} \right) \\ & 10.25 \text{INVALID-ORDER-29} \ Z(s) = \left(\infty, \infty, \infty, R_{4} + \frac{1}{C_{x}s}, \infty, \frac{1}{C_{x}s^{2} + C_{x}} \right) \\ & 10.25 \text{INVALID-ORDER-29} \ Z(s) = \left(\infty, \infty, \infty, R_{4} + \frac{1}{C_{x}s}, \infty, \frac{1}{C_{x}s^{2} + C_{x}} \right) \\ & 10.26 \text{INVALID-ORDER-27} \ Z(s) = \left(\infty, \infty, \infty, R_{4} + \frac{1}{C_{x}s}, \infty, \frac{1}{C_{x}s^{2} + C_{x}} \right) \\ & 10.26 \text{INVALID-ORDER-29} \ Z(s) = \left(\infty, \infty, \infty, R_{4} + \frac{1}{C_{x}s}, \infty, \frac{1}{C_{x}s^{2} + C_{x}} \right) \\ & 10.26 \text{INVALID-ORDER-29} \ Z(s) = \left(\infty, \infty, \infty, R_{4} + \frac{1}{C_{x}s}, \infty, \frac{1}{C_{x}s^{2} + C_{x}} \right) \\ & 10.26 \text{INVALID-ORDER-29} \ Z(s) = \left(\infty, \infty, \infty, R_{4} + \frac{1}{C_{x}s}, \infty, \frac{1}{C_{x}s^{2} + C_{x}} \right) \\ & 10.36 \text{INVALID-ORDER-30} \ Z(s) = \left(\infty, \infty, \infty, L_{28} + \frac{1}{C_{x}s}, \infty, \frac{1}{C_{x}s^{2} + C_{x}} \right) \\ & 10.36 \text{INVALID-ORDER-30} \ Z(s) = \left(\infty, \infty, \infty, L_{28} + \frac{1}{C_{x}s}, \infty, \frac{1}{C_{x}s^{2} + C_{x}} \right) \\ & 10.36 \text{INVALID-ORDER-30} \ Z(s) = \left(\infty, \infty, \infty, L_{28} + \frac{1}{C_{x}s}, \infty, \frac{1}{C_{x}s^{2} + C_{x}} \right) \\ & 10.36 \text{INVALID-ORDER-30} \ Z(s) = \left(\infty, \infty, \infty, L_{28} + \frac{1}{C_{x}s}, \infty, \frac{1}{C_{x}s^{2} + C_{x}} \right) \\ & 10.36 \text{INVALID-ORDER-30} \ Z(s) = \left(\infty, \infty, \infty, L_{28} + \frac{1}{C_{x}s}, \infty, \frac{1}{C_{x}s$	10.16INVALID-ORDER-16 $Z(s) = \left(\infty, \infty, \infty, \frac{R_4}{C_4R_4s+1}, \infty, \frac{R_L}{C_LR_Ls+1}\right)$
$\begin{aligned} &10.19 \text{INVALID-ORDER-19} \ Z(s) = \left(\infty, \infty, \infty, \frac{c_{R(k)+1}}{c_{R(k)+1}}, \infty, \frac{(c_{k}, b_{k}, b_{k}+1) + b_{k}}{c_{k} c_{k} c_{k} c_{k} c_{k} c_{k}}\right) \\ &10.20 \text{INVALID-ORDER-20} \ Z(s) = \left(\infty, \infty, \infty, \frac{B_{k}}{c_{k} c_{k} c_{k} c_{k}}, \infty, \frac{B_{k}}{c_{k} c_{k} c_{k} c_{k} c_{k}}\right) \\ &10.21 \text{INVALID-ORDER-21} \ Z(s) = \left(\infty, \infty, \infty, R_{k} + \frac{1}{c_{k} c_{k}}, \infty, R_{k}\right). \\ &10.22 \text{INVALID-ORDER-22} \ Z(s) = \left(\infty, \infty, \infty, R_{k} + \frac{1}{c_{k} c_{k}}, \infty, R_{k}\right). \\ &10.23 \text{INVALID-ORDER-22} \ Z(s) = \left(\infty, \infty, \infty, R_{k} + \frac{1}{c_{k} c_{k}}, \infty, R_{k} + \frac{1}{c_{k} c_{k}}\right) \\ &10.23 \text{INVALID-ORDER-22} \ Z(s) = \left(\infty, \infty, \infty, R_{k} + \frac{1}{c_{k} c_{k}}, \infty, L_{k} + \frac{1}{c_{k} c_{k}}\right) \\ &10.24 \text{INVALID-ORDER-22} \ Z(s) = \left(\infty, \infty, \infty, R_{k} + \frac{1}{c_{k} c_{k}}, \infty, L_{k} + \frac{1}{c_{k} c_{k}}\right) \\ &10.25 \text{INVALID-ORDER-25} \ Z(s) = \left(\infty, \infty, \infty, R_{k} + \frac{1}{c_{k} c_{k}}, \infty, L_{k} + R_{k} + \frac{1}{c_{k} c_{k}}\right) \\ &10.26 \text{INVALID-ORDER-27} \ Z(s) = \left(\infty, \infty, \infty, R_{k} + \frac{1}{c_{k} c_{k}}, \infty, L_{k} + R_{k} + \frac{1}{c_{k} c_{k}}\right) \\ &10.25 \text{INVALID-ORDER-27} \ Z(s) = \left(\infty, \infty, \infty, R_{k} + \frac{1}{c_{k} c_{k}}, \infty, \frac{1}{c_{k} c_{k} c_{$	
$\begin{aligned} &10.20 \text{INVALID-ORDER-20} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{R_{1}}{C_{1}C_{1}C_{1}S^{2}-4} \right) \\ &10.21 \text{INVALID-ORDER-21} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_{1} + \frac{1}{c_{1}s}, \ \infty, \ R_{1} \right) \\ &10.22 \text{INVALID-ORDER-22} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_{1} + \frac{1}{c_{1}s}, \ \infty, \ R_{1} \right) \\ &10.23 \text{INVALID-ORDER-23} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_{1} + \frac{1}{c_{1}s}, \ \infty, \ \frac{1}{C_{1}s} \right) \\ &10.23 \text{INVALID-ORDER-24} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_{1} + \frac{1}{c_{1}s}, \ \infty, \ \frac{1}{C_{1}s} \right) \\ &10.24 \text{INVALID-ORDER-24} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_{1} + \frac{1}{c_{1}s}, \ \infty, \ \frac{1}{C_{1}s}, \ \infty, \ \frac{1}{C_{1}s} \right) \\ &10.25 \text{INVALID-ORDER-25} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_{1} + \frac{1}{c_{1}s}, \ \infty, \ \frac{1}{C_{1}s^{2}}, \ \infty, \ \frac{1}{C_{1}s^{2}}, \ \frac{1}{C_{1}s^{2}}, \ \infty, \ \frac{1}{C_{1}s^{2}}, \ \frac{1}{$	10.18INVALID-ORDER-18 $Z(s) = \left(\infty, \infty, \infty, \frac{R_4}{C_A R_A s + 1}, \infty, L_L s + R_L + \frac{1}{C_L s}\right)$
$\begin{aligned} &10.21 \text{INVALID-ORDER-21} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{C_{13}}, \ \infty, \ R_L \right) \\ &10.22 \text{INVALID-ORDER-22} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{C_{13}}, \ \infty, \frac{1}{C_{15}} \right) \\ &10.23 \text{INVALID-ORDER-23} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{C_{13}}, \ \infty, \ L_8 + \frac{1}{C_{15}} \right) \\ &10.24 \text{INVALID-ORDER-24} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{C_{13}}, \ \infty, \ L_8 + \frac{1}{C_{15}} \right) \\ &10.25 \text{INVALID-ORDER-25} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{C_{13}}, \ \infty, \ L_8 + R_4 + \frac{1}{C_{15}} \right) \\ &10.25 \text{INVALID-ORDER-25} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{C_{13}}, \ \infty, \ \frac{I_{12}}{C_{12}C_{12}C_{13}} \right) \\ &10.27 \text{INVALID-ORDER-27} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{C_{13}}, \ \infty, \ \frac{I_{12}}{C_{12}C_{12}C_{13}} \right) \\ &10.27 \text{INVALID-ORDER-22} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{C_{13}}, \ \infty, \ \frac{I_{12}}{C_{12}C_{12}C_{12}C_{13}} \right) \\ &10.28 \text{INVALID-ORDER-22} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{C_{13}}, \ \infty, \ \frac{I_{12}}{C_{12}C_{12}C_{12}C_{13}C_{13}} \right) \\ &10.29 \text{INVALID-ORDER-22} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{C_{13}}, \ \infty, \ \frac{I_{12}}{C_{12}C_{12}C_{12}C_{13}C_{13}} \right) \\ &10.30 \text{INVALID-ORDER-32} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_{48} + \frac{1}{C_{13}}, \ \infty, \ \frac{I_{12}C_{12}C_{12}C_{12}C_{13}C_{13}C_{13}} \right) \\ &10.33 \text{INVALID-ORDER-32} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_{48} + \frac{1}{C_{13}}, \ \infty, \ \frac{I_{12}C$	$10.19 \text{INVALID-ORDER-19 } Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{R_4}{C_4 R_4 s+1}, \ \infty, \ \frac{C_L L_L R_L s^2 + L_L s + R_L}{C_L L_L s^2 + 1} \right) \dots $
$\begin{aligned} &10.22\text{INVALID-ORDER-22 } Z(s) = \left(\infty, \infty, \infty, R_1 + \frac{C_{1,2}}{C_{1,2}}, \infty, \frac{C_{1,2}}{C_{1,2}} \right) \\ &10.23\text{INVALID-ORDER-23 } Z(s) = \left(\infty, \infty, \infty, R_1 + \frac{1}{C_{1,2}}, \infty, R_L + \frac{1}{C_{1,2}} \right) \\ &10.23\text{INVALID-ORDER-24 } Z(s) = \left(\infty, \infty, \infty, R_4 + \frac{1}{C_{4,2}}, \infty, \frac{1_{LS} + \frac{1}{C_{LS}}}{C_{LD}^{2} + 1} \right) \\ &10.25\text{INVALID-ORDER-25 } Z(s) = \left(\infty, \infty, \infty, R_4 + \frac{1}{C_{4,2}}, \infty, \frac{1_{LS} + \frac{1}{C_{LS}}}{C_{LD}^{2} + 1} \right) \\ &10.26\text{INVALID-ORDER-26 } Z(s) = \left(\infty, \infty, \infty, R_4 + \frac{1}{C_{1,2}}, \infty, \frac{1_{LS} + R_L + \frac{1}{C_{1,2}}}{C_{1,LS}^{2} + 1} \right) \\ &10.27\text{INVALID-ORDER-27 } Z(s) = \left(\infty, \infty, \infty, R_4 + \frac{1}{C_{1,2}}, \infty, \frac{C_{LS} R_{LS}^{2} + R_{LS}^{2} + R_{LS}^{2}}{C_{LD}^{2} + 1_{LS}^{2} + R_{LS}^{2}} \right) \\ &10.28\text{INVALID-ORDER-28 } Z(s) = \left(\infty, \infty, \infty, R_4 + \frac{1}{C_{1,2}}, \infty, \frac{C_{LS} R_{LS}^{2} + R_{LS}^{2} + R_{LS}^{2}}{C_{LD}^{2} + 1_{LS}^{2} + R_{LS}^{2}} \right) \\ &10.29\text{INVALID-ORDER-29 } Z(s) = \left(\infty, \infty, \infty, R_4 + \frac{1}{C_{1,2}}, \infty, \frac{C_{LS}^{2} R_{LS}^{2} + R_{LS}^{2}}{C_{LD}^{2} + 1_{LS}^{2} + C_{LS}^{2} + R_{LS}^{2}} \right) \\ &10.30\text{INVALID-ORDER-31 } Z(s) = \left(\infty, \infty, \infty, L_4 s + \frac{1}{C_{LS}}, \infty, \frac{C_{LS}^{2} R_{LS}^{2} + R_{LS}^{2}}{C_{LD}^{2} + 1_{LS}^{2} + C_{LS}^{2}} \right) \\ &10.33\text{INVALID-ORDER-32 } Z(s) = \left(\infty, \infty, \infty, L_4 s + \frac{1}{C_{LS}}, \infty, \frac{L_{LS}^{2} R_{LS}^{2} + R_{LS}^{2}}{C_{LD}^{2} + 1_{LS}^{2} + C_{LS}^{2} + C_{LS}^{2}} \right) \\ &10.33\text{INVALID-ORDER-33 } Z(s) = \left(\infty, \infty, \infty, L_4 s + \frac{1}{C_{LS}}, \infty, \frac{L_{LS}^{2} R_{LS}^{2} + R_{LS}^{2}}{C_{LD}^{2} + 1_{LS}^{2} + C_{LS}^{2}} \right) \\ &10.33\text{INVALID-ORDER-35 } Z(s) = \left(\infty, \infty, \infty, L_4 s + \frac{1}{C_{LS}}, \infty, \frac{L_{LS}^{2} R_{LS}^{2} + R_{LS}^{2}}{C_{LD}^{2} + 1_{LS}^{2} + C_{LS}^{2} + C_{LS}^{2}} \right) \\ &10.33\text{INVALID-ORDER-35 } Z(s) = \left(\infty, \infty, \infty, L_4 s + \frac{1}{C_{LS}}, \infty, \frac{L_{LS}^{2} R_{LS}^{2} + R_{LS}^{2} + C_{LS}^{2}}{C_{LD}^{2} + C_{LS}^{2} + C_{LS}^{2} + C_{LS}^{2}} \right) \\ &10.33\text{INVALID-ORDER-35 } Z(s) = \left(\infty, \infty, \infty, L_4 s + \frac{1}{C_{LS}}, \infty, \frac{L_5 R_{LS}^{2} + L_{LS}^{2} + C_{LS}^{2} +$	$10.20 \text{INVALID-ORDER-20 } Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{R_4}{C_4 R_4 s + 1}, \ \infty, \ \frac{R_L \left(C_L L_L s^2 + 1 \right)}{C_L L_L s^2 + C_L R_L s + 1} \right)' $
$\begin{aligned} &10.23\text{INVALID-ORDER-23} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{c_{L_2}}{c_{L_2}}, \ \infty, \ R_1 + \frac{c_{L_2}}{c_{L_2}}, \right) \\ &10.24\text{INVALID-ORDER-25} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{c_{L_2}}, \ \infty, \ L_L s + \frac{c_{L_2}}{c_{L_2}}, \right) \\ &10.25\text{INVALID-ORDER-25} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{c_{L_2}}, \ \infty, \ \frac{c_{L_2}}{c_{L_2}}, \right) \\ &10.26\text{INVALID-ORDER-26} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{c_{L_2}}, \ \infty, \ L_L s + R_L + \frac{c_{L_2}}{c_{L_2}}, \right) \\ &10.27\text{INVALID-ORDER-27} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{c_{L_2}}, \ \infty, \ \frac{c_{L_2}}{c_{L_2}}, c_{L_2$	10.21INVALID-ORDER-21 $Z(s) = (\infty, \infty, \infty, R_4 + \frac{1}{C_4 s}, \infty, R_L)$
$\begin{array}{l} 10.24 \text{INVALID-ORDER-} 24 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{C_{4^+}}, \ \infty, \ L_{LS} + \frac{1}{C_{LS}}\right) \\ 10.25 \text{INVALID-ORDER-} 25 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{C_{4^+}}, \ \infty, \ \frac{L_{LS} + R_L}{L_{LS} + r}\right) \\ 10.26 \text{INVALID-ORDER-} 26 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{C_{4^+}}, \ \infty, \ L_{LS} + R_L + \frac{1}{C_{LS}}\right) \\ 10.27 \text{INVALID-ORDER-} 27 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{C_{4^+}}, \ \infty, \ \frac{L_{LS} + R_L}{C_{LLR} + L_{LS} + R_L}\right) \\ 10.28 \text{INVALID-ORDER-} 28 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{C_{4^+}}, \ \infty, \ \frac{C_{LLR} + L_{LS} + R_L}{C_{LS} + L_{LS} + L_{LS} + R_L}\right) \\ 10.29 \text{INVALID-ORDER-} 20 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{C_{4^+}}, \ \infty, \ \frac{C_{LLR} + L_{LS} + L_{LS} + R_L}{C_{LS} + L_{LS} +$	10.22INVALID-ORDER-22 $Z(s) = \left(\infty, \infty, \infty, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s}\right)$
$\begin{array}{l} 10.25 \text{INVALID-ORDER-} 25 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{C_{ts}}, \ \infty, \ \frac{L_1 C_{ts}}{C_t L_t c^2 + 1}\right) \\ 10.26 \text{INVALID-ORDER-} 26 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{C_{ts}}, \ \infty, \ \frac{L_1 R_{ts}}{C_t L_t c^2 + 1}\right) \\ 10.27 \text{INVALID-ORDER-} 27 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{C_{ts}}, \ \infty, \ \frac{L_1 R_{ts}}{C_t L_t R_t c^2 + L_t R_t L_t}\right) \\ 10.28 \text{INVALID-ORDER-} 28 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{C_{ts}}, \ \infty, \ \frac{C_t L_t R_t R_t^2 + L_t R_t R_t}{C_t L_t R_t R_t^2 + L_t R_t R_t}\right) \\ 10.29 \text{INVALID-ORDER-} 29 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{C_{ts}}, \ \infty, \ \frac{R_t (C_t L_t S^2 + 1)}{C_t L_t S^2 + C_t R_t R_t^2}\right) \\ 10.30 \text{INVALID-ORDER-} 30 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_{ts}}, \ \infty, \ \frac{R_t (C_t L_t S^2 + 1)}{C_t L_t S^2 + C_t R_t R_t + 1}\right) \\ 10.32 \text{INVALID-ORDER-} 32 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_{ts}}, \ \infty, \ L_4 s + \frac{1}{C_{ts}}, \ \infty \right) \\ 10.33 \text{INVALID-ORDER-} 32 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_{ts}}, \ \infty, \ L_4 s + \frac{1}{C_{ts}}, \ \infty \right) \\ 10.34 \text{INVALID-ORDER-} 32 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_{ts}}, \ \infty, \ L_4 s + \frac{1}{C_{ts}}, \ \infty \right) \\ 10.35 \text{INVALID-ORDER-} 37 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_{ts}}, \ \infty \right) \\ 10.36 \text{INVALID-ORDER-} 37 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_{ts}}, \ \infty \right) \\ 10.37 \text{INVALID-ORDER-} 37 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_{ts}}, \ \infty \right) \\ 10.37 \text{INVALID-ORDER-} 37 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_{ts}}, \ $	$10.23 \text{INVALID-ORDER-} 23 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{C_4 s}, \ \infty, \ R_L + \frac{1}{C_L s} \right) \ \dots $
$\begin{aligned} &10.26\text{INVALID-ORDER-26} \ Z(s) = \left(\infty, \infty, \infty, R_4 + \frac{1}{C_{ts}}, \infty, L_L s + R_L + \frac{1}{C_{L^2}} \right) \\ &10.27\text{INVALID-ORDER-27} \ Z(s) = \left(\infty, \infty, \infty, R_1 + \frac{1}{C_{ts}}, \infty, \frac{L_L R_1 R_2}{C_L L_L R_L R_1 L_L R_2 R_1} \right) \\ &10.28\text{INVALID-ORDER-28} \ Z(s) = \left(\infty, \infty, \infty, R_1 + \frac{1}{C_{ts}}, \infty, \frac{C_L L_R R_2 R_2 + L_L L_R R_2}{C_L L_L R_2^2} \right) \\ &10.29\text{INVALID-ORDER-29} \ Z(s) = \left(\infty, \infty, \infty, R_4 + \frac{1}{C_{ts}}, \infty, \frac{R_L (C_L L_L R_2^2 + L_L L_R R_2)}{C_L L_L R_2^2 + L_L R_2} \right) \\ &10.30\text{INVALID-ORDER-30} \ Z(s) = \left(\infty, \infty, \infty, L_4 s + \frac{1}{C_{ts}}, \infty, R_L (C_L L_L R_2^2 + L_L L_R R_2 + L_L R_2 R_2 + L_L R_2 R_2 R_2 + L_L R_2 R_2 R_2 R_2 R_2 R_2 R_2 R_2 R_2 R_2$	10.24INVALID-ORDER-24 $Z(s) = \left(\infty, \infty, \infty, \infty, R_4 + \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s}\right)$
$\begin{array}{l} 10.27 \text{INVALID-ORDER-27 } Z(s) = \left(\infty, \infty, \infty, R_4 + \frac{L_4 s}{C_4 s}, \infty, \frac{L_1 R_4 s^2}{C_4 L_4 L_8 L_8^2 + L_4 L_8 + R_L}\right) \\ 10.28 \text{INVALID-ORDER-28 } Z(s) = \left(\infty, \infty, \infty, R_4 + \frac{1}{c_4 s}, \infty, \frac{C_4 L_4 R_4 L_8^2 + L_4 L_8 L_8^2}{C_4 L_4 s^2 + 1}\right) \\ 10.29 \text{INVALID-ORDER-29 } Z(s) = \left(\infty, \infty, \infty, R_4 + \frac{1}{c_4 s}, \infty, \frac{R_4 (C_4 L_8 s^2 + 1)}{C_4 L_4 s^2 + 1}\right) \\ 10.30 \text{INVALID-ORDER-30 } Z(s) = \left(\infty, \infty, \infty, L_4 s + \frac{1}{c_4 s}, \infty, \frac{R_4 (C_4 L_8 s^2 + 1)}{C_4 L_4 s^2 + 1}\right) \\ 10.31 \text{INVALID-ORDER-31 } Z(s) = \left(\infty, \infty, \infty, L_4 s + \frac{1}{c_4 s}, \infty, \frac{R_4 - 1}{C_4 s}\right) \\ 10.32 \text{INVALID-ORDER-32 } Z(s) = \left(\infty, \infty, \infty, L_4 s + \frac{1}{c_4 s}, \infty, R_4 + \frac{1}{c_4 s}\right) \\ 10.33 \text{INVALID-ORDER-33 } Z(s) = \left(\infty, \infty, \infty, L_4 s + \frac{1}{c_4 s}, \infty, L_4 s + \frac{1}{c_4 s}\right) \\ 10.34 \text{INVALID-ORDER-34 } Z(s) = \left(\infty, \infty, \infty, L_4 s + \frac{1}{c_4 s}, \infty, L_4 s + \frac{1}{c_4 s}\right) \\ 10.35 \text{INVALID-ORDER-35 } Z(s) = \left(\infty, \infty, \infty, L_4 s + \frac{1}{c_4 s}, \infty, \frac{L_4 L_4 s}{L_4 s^2 s}\right) \\ 10.36 \text{INVALID-ORDER-36 } Z(s) = \left(\infty, \infty, \infty, L_4 s + \frac{1}{c_4 s}, \infty, L_4 s + \frac{1}{c_4 s}\right) \\ 10.36 \text{INVALID-ORDER-37 } Z(s) = \left(\infty, \infty, \infty, L_4 s + \frac{1}{c_4 s}, \infty, \frac{L_4 R_4 s^2}{L_4 L_4 R_4 s^2 + L_4 s + R_L}\right) \\ 10.37 \text{INVALID-ORDER-37 } Z(s) = \left(\infty, \infty, \infty, L_4 s + \frac{1}{c_4 s}, \infty, \frac{L_4 R_4 s^2}{L_4 L_4 R_4 s^2 + L_4 s + R_L}\right) \\ 10.37 \text{INVALID-ORDER-37 } Z(s) = \left(\infty, \infty, \infty, L_4 s + \frac{1}{c_4 s}, \infty, \frac{L_4 R_4 s^2}{L_4 L_4 R_4 s^2 + L_4 s + R_L}\right) \\ 10.37 \text{INVALID-ORDER-37 } Z(s) = \left(\infty, \infty, \infty, L_4 s + \frac{1}{c_4 s}, \infty, \frac{L_4 R_4 s^2}{L_4 L_4 R_4 s^2 + L_4 s + R_L}\right) \\ 10.37 \text{INVALID-ORDER-37 } Z(s) = \left(\infty, \infty, L_4 s + \frac{1}{c_4 s}, \infty, \frac{L_4 R_4 s^2}{L_4 L_4 R_4 s^2 + L_4 s + R_L}\right) \\ 10.37 \text{INVALID-ORDER-37 } Z(s) = \left(\infty, \infty, L_4 s + \frac{1}{c_4 s}, \infty, \frac{L_4 R_4 s^2}{L_4 L_4 R_4 s^2 + L_4 s + R_L}\right) \\ 10.37 \text{INVALID-ORDER-37 } Z(s) = \left(\infty, \infty, L_4 s + \frac{1}{c_4 s}, \infty, \frac{L_4 R_4 s^2}{L_4 L_4 R_4 s^2 + L_4 s + R_L}\right) \\ 10.37 \text{INVALID-ORDER-37 } Z(s) = \left(\infty, \infty, L_4 s + \frac{1}{c_4 s}, \infty, \frac{L_4 R_4 s^2}{L_4 L_4 R_4 s^2 + L_4 s + R_L}\right) \\ 10.37 \text{INVALID-ORDER-37 } Z(s) = \left(\infty, \infty, L_4 s + \frac{1}{c_4 s}, $	$10.25 \text{INVALID-ORDER-} 25 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{C_4 s}, \ \infty, \ \frac{L_L s}{C_L L_L s^2 + 1} \right)' \dots \dots \dots \dots \dots \dots \dots \dots \dots $
$\begin{aligned} &10.28 \text{INVALID-ORDER-28} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{C_{4s}}, \ \infty, \ \frac{C_L L_R R_2^{s^2} + L_L t_s + R_L}{C_L L_R s^2 + 1} \right) \\ &10.29 \text{INVALID-ORDER-29} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{C_{4s}}, \ \infty, \ \frac{R_L (C_L L_R^2 + 1)}{C_L L_L s^2 + 1} \right) \\ &10.30 \text{INVALID-ORDER-30} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_{4s}}, \ \infty, \ \frac{1}{C_L s} \right) \\ &10.31 \text{INVALID-ORDER-31} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_{4s}}, \ \infty, \ \frac{R_L}{C_L R_s + 1} \right) \\ &10.32 \text{INVALID-ORDER-32} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_{4s}}, \ \infty, \ R_L + \frac{1}{C_{4s}} \right) \\ &10.33 \text{INVALID-ORDER-33} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_{4s}}, \ \infty, \ L_L R_L R_L R_L R_L R_L R_L R_L R_L R_L $	10.26INVALID-ORDER-26 $Z(s) = \left(\infty, \infty, \infty, \infty, R_4 + \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s}\right)$
$\begin{aligned} &10.28 \text{INVALID-ORDER-28} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{C_{4s}}, \ \infty, \ \frac{C_L L_R R_2^{s^2} + L_L t_s + R_L}{C_L L_R s^2 + 1} \right) \\ &10.29 \text{INVALID-ORDER-29} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{C_{4s}}, \ \infty, \ \frac{R_L (C_L L_R^2 + 1)}{C_L L_L s^2 + 1} \right) \\ &10.30 \text{INVALID-ORDER-30} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_{4s}}, \ \infty, \ \frac{1}{C_L s} \right) \\ &10.31 \text{INVALID-ORDER-31} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_{4s}}, \ \infty, \ \frac{R_L}{C_L R_s + 1} \right) \\ &10.32 \text{INVALID-ORDER-32} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_{4s}}, \ \infty, \ R_L + \frac{1}{C_{4s}} \right) \\ &10.33 \text{INVALID-ORDER-33} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_{4s}}, \ \infty, \ L_L R_L R_L R_L R_L R_L R_L R_L R_L R_L $	$10.27 \text{INVALID-ORDER-27 } Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{C_4 s}, \ \infty, \ \frac{L_L R_L s}{C_L L_L R_L s^2 + L_L s + R_L} \right) \dots $
$10.30 \text{INVALID-ORDER-30} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4s + \frac{1}{C_{4s}}, \ \infty, \frac{1}{C_{Ls}} \right)$ $10.31 \text{INVALID-ORDER-31} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4s + \frac{1}{C_{4s}}, \ \infty, \frac{R_l}{C_L R_L s + 1} \right)$ $10.32 \text{INVALID-ORDER-32} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4s + \frac{1}{C_{4s}}, \ \infty, \ R_L + \frac{1}{C_{Ls}} \right)$ $10.33 \text{INVALID-ORDER-33} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4s + \frac{1}{C_{4s}}, \ \infty, \ L_L s + \frac{1}{C_L s} \right)$ $10.34 \text{INVALID-ORDER-34} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4s + \frac{1}{C_{4s}}, \ \infty, \ \frac{L_L s}{C_L L_L s^2 + 1} \right)$ $10.35 \text{INVALID-ORDER-35} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4s + \frac{1}{C_{4s}}, \ \infty, \ L_L R_{Ls} \right)$ $10.36 \text{INVALID-ORDER-36} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4s + \frac{1}{C_{4s}}, \ \infty, \ \frac{L_L R_{Ls}}{C_L L_L R_L s^2 + L_L s + R_L} \right)$ $10.37 \text{INVALID-ORDER-37} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4s + \frac{1}{C_{4s}}, \ \infty, \ \frac{L_L R_{Ls}}{C_L L_L R_L s^2 + L_L s + R_L} \right)$ $10.37 \text{INVALID-ORDER-37} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4s + \frac{1}{C_{4s}}, \ \infty, \ \frac{L_L R_{Ls}}{C_L L_L R_L s^2 + L_L s + R_L} \right)$	
$10.31 \text{INVALID-ORDER-31 } Z(s) = \left(\infty, \infty, \infty, L_{4}s + \frac{1}{C_{4}s}, \infty, \frac{\hat{R}_{L}}{C_{L}R_{L}s+1} \right)$ $10.32 \text{INVALID-ORDER-32 } Z(s) = \left(\infty, \infty, \infty, L_{4}s + \frac{1}{C_{4}s}, \infty, R_{L} + \frac{1}{C_{L}s} \right)$ $10.33 \text{INVALID-ORDER-33 } Z(s) = \left(\infty, \infty, \infty, L_{4}s + \frac{1}{C_{4}s}, \infty, L_{L}s + \frac{1}{C_{L}s} \right)$ $10.34 \text{INVALID-ORDER-34 } Z(s) = \left(\infty, \infty, \infty, L_{4}s + \frac{1}{C_{4}s}, \infty, \frac{L_{L}s}{C_{L}L_{s}^{2}+1} \right)$ $10.35 \text{INVALID-ORDER-35 } Z(s) = \left(\infty, \infty, \infty, L_{4}s + \frac{1}{C_{4}s}, \infty, L_{L}s + R_{L} + \frac{1}{C_{L}s} \right)$ $10.36 \text{INVALID-ORDER-36 } Z(s) = \left(\infty, \infty, \infty, L_{4}s + \frac{1}{C_{4}s}, \infty, \frac{L_{L}R_{Ls}}{C_{L}L_{L}R_{L}s^{2}+L_{L}s+R_{L}} \right)$ $10.37 \text{INVALID-ORDER-37 } Z(s) = \left(\infty, \infty, \infty, L_{4}s + \frac{1}{C_{4}s}, \infty, \frac{C_{L}L_{L}R_{L}s^{2}+L_{L}s+R_{L}}{C_{L}L_{s}^{2}+1} \right)$	$10.29 \text{INVALID-ORDER-29 } Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{C_4 s}, \ \infty, \ \frac{R_L \left(C_L L_L s^2 + 1\right)}{C_L L_L s^2 + C_L R_L s + 1}\right)'$
$10.31 \text{INVALID-ORDER-31 } Z(s) = \left(\infty, \infty, \infty, L_{4}s + \frac{1}{C_{4}s}, \infty, \frac{\hat{R}_{L}}{C_{L}R_{L}s+1} \right)$ $10.32 \text{INVALID-ORDER-32 } Z(s) = \left(\infty, \infty, \infty, L_{4}s + \frac{1}{C_{4}s}, \infty, R_{L} + \frac{1}{C_{L}s} \right)$ $10.33 \text{INVALID-ORDER-33 } Z(s) = \left(\infty, \infty, \infty, L_{4}s + \frac{1}{C_{4}s}, \infty, L_{L}s + \frac{1}{C_{L}s} \right)$ $10.34 \text{INVALID-ORDER-34 } Z(s) = \left(\infty, \infty, \infty, L_{4}s + \frac{1}{C_{4}s}, \infty, \frac{L_{L}s}{C_{L}L_{s}^{2}+1} \right)$ $10.35 \text{INVALID-ORDER-35 } Z(s) = \left(\infty, \infty, \infty, L_{4}s + \frac{1}{C_{4}s}, \infty, L_{L}s + R_{L} + \frac{1}{C_{L}s} \right)$ $10.36 \text{INVALID-ORDER-36 } Z(s) = \left(\infty, \infty, \infty, L_{4}s + \frac{1}{C_{4}s}, \infty, \frac{L_{L}R_{Ls}}{C_{L}L_{L}R_{L}s^{2}+L_{L}s+R_{L}} \right)$ $10.37 \text{INVALID-ORDER-37 } Z(s) = \left(\infty, \infty, \infty, L_{4}s + \frac{1}{C_{4}s}, \infty, \frac{C_{L}L_{L}R_{L}s^{2}+L_{L}s+R_{L}}{C_{L}L_{s}^{2}+1} \right)$	10.30INVALID-ORDER-30 $Z(s) = (\infty, \infty, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s})$
$10.33 \text{INVALID-ORDER-33} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_4 s}, \ \infty, \ L_L s + \frac{1}{C_L s} \right)$ $10.34 \text{INVALID-ORDER-34} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_4 s}, \ \infty, \ \frac{L_L s}{C_L L_L s^2 + 1} \right)$ $10.35 \text{INVALID-ORDER-35} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_4 s}, \ \infty, \ L_L s + R_L + \frac{1}{C_L s} \right)$ $10.36 \text{INVALID-ORDER-36} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_4 s}, \ \infty, \ \frac{L_L R_L s}{C_L L_L R_L s^2 + L_L s + R_L} \right)$ $10.37 \text{INVALID-ORDER-37} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_4 s}, \ \infty, \ \frac{C_L L_L R_L s^2 + L_L s + R_L}{C_L L_L s^2 + 1} \right)$	
$10.34 \text{INVALID-ORDER-34 } Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_4 s}, \ \infty, \ \frac{L_L s}{C_L L_L s^2 + 1} \right)'$ $10.35 \text{INVALID-ORDER-35 } Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_4 s}, \ \infty, \ L_L s + R_L + \frac{1}{C_L s} \right)$ $10.36 \text{INVALID-ORDER-36 } Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_4 s}, \ \infty, \ \frac{L_L R_L s}{C_L L_L R_L s^2 + L_L s + R_L} \right)$ $10.37 \text{INVALID-ORDER-37 } Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_4 s}, \ \infty, \ \frac{C_L L_L R_L s^2 + L_L s + R_L}{C_L L_L s^2 + 1} \right)$	$10.32 \text{INVALID-ORDER-32 } Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_4 s}, \ \infty, \ R_L + \frac{1}{C_L s} \right) $
$10.34 \text{INVALID-ORDER-34 } Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_4 s}, \ \infty, \ \frac{L_L s}{C_L L_L s^2 + 1} \right)'$ $10.35 \text{INVALID-ORDER-35 } Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_4 s}, \ \infty, \ L_L s + R_L + \frac{1}{C_L s} \right)$ $10.36 \text{INVALID-ORDER-36 } Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_4 s}, \ \infty, \ \frac{L_L R_L s}{C_L L_L R_L s^2 + L_L s + R_L} \right)$ $10.37 \text{INVALID-ORDER-37 } Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_4 s}, \ \infty, \ \frac{C_L L_L R_L s^2 + L_L s + R_L}{C_L L_L s^2 + 1} \right)$	10.33INVALID-ORDER-33 $Z(s) = (\infty, \infty, \infty, L_4s + \frac{1}{C_4s}, \infty, L_Ls + \frac{1}{C_Ls})$
10.35INVALID-ORDER-35 $Z(s) = \left(\infty, \infty, \infty, L_4s + \frac{1}{C_4s}, \infty, L_Ls + R_L + \frac{1}{C_Ls}\right)$ 10.36INVALID-ORDER-36 $Z(s) = \left(\infty, \infty, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{L_LR_Ls}{C_LL_LR_Ls^2 + L_Ls + R_L}\right)$ 10.37INVALID-ORDER-37 $Z(s) = \left(\infty, \infty, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{C_LL_LR_Ls^2 + L_Ls + R_L}{C_LL_Ls^2 + 1}\right)$	
$10.36 \text{INVALID-ORDER-36 } Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_4 s}, \ \infty, \ \frac{L_L R_L s}{C_L L_L R_L s^2 + L_L s + R_L}\right) $ $10.37 \text{INVALID-ORDER-37 } Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_4 s}, \ \infty, \ \frac{C_L L_L R_L s^2 + L_L s + R_L}{C_L L_L s^2 + 1}\right) $ $11.37 \text{INVALID-ORDER-37 } Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_4 s}, \ \infty, \ \frac{C_L L_L R_L s^2 + L_L s + R_L}{C_L L_L s^2 + 1}\right) $	
$10.37 \text{INVALID-ORDER-37 } Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_4 s}, \ \infty, \ \frac{C_L L_L R_L s^2 + L_L s + R_L}{C_L L_L s^2 + 1}\right) \dots $	· · · · · · · · · · · · · · · · · · ·
$10.38 \text{INVALID-ORDER-38 } Z(s) = \left(\infty, \infty, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{R_L \left(C_L L_L s^2 + 1 \right)}{C_L L_L s^2 + C_L R_L s + 1} \right)^{\prime} \dots \dots$	
	$10.38 \text{INVALID-ORDER-38 } Z(s) = \left(\infty, \infty, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{R_L \left(C_L L_L s^2 + 1 \right)}{C_L L_L s^2 + C_L R_L s + 1} \right) $

$10.39 \text{INVALID-ORDER-39 } Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 s}{C_4 L_4 s^2 + 1}, \ \infty, \ \frac{1}{C_L s}\right) \dots $	6
$10.40 \text{INVALID-ORDER-40 } Z(s) = \left(\infty, \infty, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, R_L + \frac{1}{C_L s}\right) $	6
$10.41\text{INVALID-ORDER-41 } Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4s}{C_4L_4s^2+1}, \ \infty, \ L_Ls + \frac{1}{C_Ls}\right) $	6
$10.42 \text{INVALID-ORDER-} 42 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 s}{C_4 L_4 s^2 + 1}, \ \infty, \ \frac{L_L s}{C_L L_L s^2 + 1}\right) \dots $	6
$10.43 \text{INVALID-ORDER-43 } Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4s}{C_4L_4s^2+1}, \ \infty, \ L_Ls + R_L + \frac{1}{C_Ls}\right) $	7
$10.44 \text{INVALID-ORDER-} 44 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 s}{C_4 L_4 s^2 + 1}, \ \infty, \ \frac{C_L L_R R_L s^2 + L_L s + R_L}{C_L L_L s^2 + 1}\right) \dots $	7
$10.45 \text{INVALID-ORDER-} 45 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 s}{C_4 L_4 s^2 + 1}, \ \infty, \ \frac{R_L \left(C_L L_L s^2 + 1\right)}{C_L L_L s^2 + C_L R_L s + 1}\right) $	7
$10.46 \text{INVALID-ORDER-} 46 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + R_4 + \frac{1}{C_4 s}, \ \infty, \ \frac{1}{C_L s} \right) $	7
$10.47 \text{INVALID-ORDER-47 } Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + R_4 + \frac{1}{C_4 s}, \ \infty, \ \frac{R_L}{C_L R_L s + 1}\right) $	7
$10.48 \text{INVALID-ORDER-} 48 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + R_4 + \frac{1}{C_4 s}, \ \infty, \ R_L + \frac{1}{C_L s}\right) $	7
$10.49 \text{INVALID-ORDER-49 } Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + R_4 + \frac{1}{C_4 s}, \ \infty, \ L_L s + \frac{1}{C_L s}\right) \dots \dots$	7
$10.50 \text{INVALID-ORDER-50 } Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + R_4 + \frac{1}{C_4 s}, \ \infty, \ \frac{L_L s}{C_L L_L s^2 + 1}\right) $	7
$10.51\text{INVALID-ORDER-51 } Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4s + R_4 + \frac{1}{C_4s}, \ \infty, \ L_Ls + R_L + \frac{1}{C_Ls}\right) $	7
$10.52 \text{INVALID-ORDER-52 } Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + R_4 + \frac{1}{C_4 s}, \ \infty, \ \frac{L_L R_L s}{C_L L_L R_L s^2 + L_L s + R_L}\right) $	8
$10.53 \text{INVALID-ORDER-53 } Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + R_4 + \frac{1}{C_4 s}, \ \infty, \ \frac{C_L L_L R_L s^2 + L_L s + R_L}{C_L L_L s^2 + 1}\right) $	8
$10.54 \text{INVALID-ORDER-} 54 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + R_4 + \frac{1}{C_4 s}, \ \infty, \ \frac{R_L \left(C_L L_L s^2 + 1\right)}{C_L L_L s^2 + C_L R_L s + 1}\right) $	8
$10.55 \text{INVALID-ORDER-} 55 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 R_4 s}{C_4 L_4 R_4 s^2 + L_4 s + R_4}, \ \infty, \ R_L + \frac{1}{C_L s}\right) $	8
$10.56 \text{INVALID-ORDER-} 56 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 R_4 s}{C_4 L_4 R_4 s^2 + L_4 s + R_4}, \ \infty, \ L_L s + \frac{1}{C_L s}\right) \dots $	8
$10.57 \text{INVALID-ORDER-57 } Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 R_4 s}{C_4 L_4 R_4 s^2 + L_4 s + R_4}, \ \infty, \ L_L s + R_L + \frac{1}{C_L s}\right) \dots \dots$	8
$10.58 \text{INVALID-ORDER-58 } Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 R_4 s}{C_4 L_4 R_4 s^2 + L_4 s + R_4}, \ \infty, \ \frac{C_L L_L R_L s^2 + L_L s + R_L}{C_L L_L s^2 + 1}\right) $	8
$10.59 \text{INVALID-ORDER-} 59 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 R_4 s}{C_4 L_4 R_4 s^2 + L_4 s + R_4}, \ \infty, \ \frac{R_L \left(C_L L_L s^2 + 1\right)}{C_L L_L s^2 + C_L R_L s + 1}\right) \ \dots $	8
10.60INVALID-ORDER-60 $Z(s) = \left(\infty, \infty, \infty, \frac{C_4L_4R_4s^2 + L_4s + R_4}{C_4L_4s^2 + 1}, \infty, \frac{1}{C_Ls}\right)$	8
$10.61 \text{INVALID-ORDER-61 } Z(s) = \left(\infty, \infty, \infty, \frac{C_4 L_4 R_4 s^2 + L_4 s + R_4}{C_4 L_4 s^2 + 1}, \infty, \frac{R_L}{C_L R_L s + 1}\right) \dots \dots$	9
10.62INVALID-ORDER-62 $Z(s) = \left(\infty, \infty, \infty, \frac{C_4 L_4 R_4 s^2 + L_4 s + R_4}{C_4 L_4 s^2 + 1}, \infty, R_L + \frac{1}{C_L s}\right)$	9
$10.63 \text{INVALID-ORDER-} 63 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{C_4 L_4 R_4 s^2 + L_4 s + R_4}{C_4 L_4 s^2 + 1}, \ \infty, \ L_L s + \frac{1}{C_L s}\right) $	
$10.64 \text{INVALID-ORDER-} 64 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{C_4 L_4 R_4 s^2 + L_4 s + R_4}{C_4 L_4 s^2 + 1}, \ \infty, \ \frac{L_L s}{C_L L_L s^2 + 1}\right)' $	9
10.65INVALID-ORDER-65 $Z(s) = \left(\infty, \infty, \infty, \frac{C_4 L_4 R_4 s^2 + L_4 s + R_4}{C_4 L_4 s^2 + 1}, \infty, L_L s + R_L + \frac{1}{C_L s}\right)$	
$10.66 \text{INVALID-ORDER-} 66 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{C_4 L_4 R_4 s^2 + L_4 s + R_4}{C_4 L_4 s^2 + 1}, \ \infty, \ \frac{L_L R_L s}{C_L L_L R_L s^2 + L_L s + R_L} \right) $	9
$10.67 \text{INVALID-ORDER-} 67 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{C_4 L_4 R_4 s^2 + L_4 s + R_4}{C_4 L_4 s^2 + 1}, \ \infty, \ \frac{C_L L_L R_L s^2 + L_L s + R_L}{C_L L_L s^2 + 1}\right) $	9
$10.68 \text{INVALID-ORDER-} 68 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{C_4 L_4 R_4 s^2 + L_4 s + R_4}{C_4 L_4 s^2 + 1}, \ \infty, \ \frac{R_L \left(C_L L_L s^2 + 1\right)}{C_L L_L s^2 + C_L R_L s + 1}\right) \ \dots $	9
10.69INVALID-ORDER-69 $Z(s) = \left(\infty, \infty, \infty, \frac{R_4(C_4L_4s^2+1)}{C_4L_4s^2+C_4R_4s+1}, \infty, \frac{1}{C_Ls}\right)$	9
$10.70 \text{INVALID-ORDER-70 } Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{R_4\left(C_4L_4s^2+1\right)}{C_4L_4s^2+C_4R_4s+1}, \ \infty, \ \frac{R_L}{C_LR_Ls+1} \right) $	0
10.71INVALID-ORDER-71 $Z(s) = \left(\infty, \infty, \infty, \frac{R_4(C_4L_4s^2+1)}{C_4L_4s^2+C_4R_4s+1}, \infty, R_L + \frac{1}{C_Ls}\right)$	0
$10.72 \text{INVALID-ORDER-72 } Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{R_4\left(C_4L_4s^2+1\right)}{C_4L_4s^2+C_4R_4s+1}, \ \infty, \ L_Ls + \frac{1}{C_Ls} \right) $	0
$10.73 \text{INVALID-ORDER-} 73 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{R_4\left(C_4L_4s^2+1\right)}{C_4L_4s^2+C_4R_4s+1}, \ \infty, \ \frac{L_Ls}{C_LL_Ls^2+1}\right) \dots $	
$10.74 \text{INVALID-ORDER-} 74 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{R_4\left(C_4L_4s^2+1\right)}{C_4L_4s^2+C_4R_4s+1}, \ \infty, \ L_Ls + R_L + \frac{1}{C_Ls}\right) \ \dots $	
$10.75 \text{INVALID-ORDER-} 75 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{R_4\left(C_4L_4s^2+1\right)}{C_4L_4s^2+C_4R_4s+1}, \ \infty, \ \frac{L_LR_Ls}{C_LL_LR_Ls^2+L_Ls+R_L}\right) $	

10.76INVALID-ORDER-76 $Z(s) = \left(\infty, \infty, \infty, \frac{R_4(C_4L_4s^2+1)}{C_4L_4s^2+C_4R_4s+1}, \infty, \frac{C_LL_LR_Ls^2+L_Ls+R_L}{C_LL_Ls^2+1}\right)$)	:
10.77INVALID-ORDER-77 $Z(s) = \left(\infty, \infty, \infty, \frac{R_4(C_4L_4s^2+1)}{C_4L_4s^2+C_4R_4s+1}, \infty, \frac{R_L(C_LL_Ls^2+1)}{C_LL_Ls^2+C_LR_Ls+1}\right)$		

1 Examined H(z) for CG TIA simple Z4 ZL: $\frac{Z_4Z_Lg_m}{Z_4g_m+2Z_Lg_m}$

$$H(z) = \frac{Z_4 Z_L g_m}{Z_4 g_m + 2 Z_L g_m}$$

- 2 HP
- 3 BP
- 3.1 BP-1 $Z(s) = \left(\infty, \infty, \infty, R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1}\right)$

Parameters:

Q:
$$\frac{C_L R_4 \sqrt{\frac{1}{C_L L_L}}}{2}$$
wo:
$$\sqrt{\frac{1}{C_L L_L}}$$
bandwidth:
$$\frac{2}{C_L R_4}$$
K-LP: 0
K-HP: 0
K-BP:
$$\frac{R_4}{2}$$
Qz: None

3.2 BP-2 $Z(s) = \left(\infty, \infty, \infty, R_4, \infty, \frac{L_L R_L s}{C_L L_L R_L s^2 + L_L s + R_L}\right)$

Parameters:

Q:
$$\frac{C_L R_4 R_L \sqrt{\frac{1}{C_L L_L}}}{R_4 + 2R_L}$$
 wo:
$$\sqrt{\frac{1}{C_L L_L}}$$
 bandwidth:
$$\frac{R_4 + 2R_L}{C_L R_4 R_L}$$
 K-LP: 0 K-HP: 0 K-BP:
$$\frac{R_4 R_L}{R_4 + 2R_L}$$
 Qz: None Wz: None

3.3 BP-3 $Z(s) = \left(\infty, \infty, \infty, \frac{1}{C_4 s}, \infty, \frac{L_L R_L s}{C_L L_L R_L s^2 + L_L s + R_L}\right)$

$$\begin{array}{l} \text{Q: } 2C_{4}R_{L}\sqrt{\frac{1}{2C_{4}L_{L}+C_{L}L_{L}}} + C_{L}R_{L}\sqrt{\frac{1}{2C_{4}L_{L}+C_{L}L_{L}}}\\ \text{wo: } \sqrt{\frac{1}{2C_{4}L_{L}+C_{L}L_{L}}}\\ \text{bandwidth: } \frac{\sqrt{\frac{1}{2C_{4}L_{L}+C_{L}L_{L}}}}{2C_{4}R_{L}\sqrt{\frac{1}{2C_{4}L_{L}+C_{L}L_{L}}} + C_{L}R_{L}\sqrt{\frac{1}{2C_{4}L_{L}+C_{L}L_{L}}}}\\ \text{K-LP: 0}\\ \text{K-HP: 0}\\ \text{K-BP: } R_{L} \end{array}$$

$$H(s) = \frac{L_L R_4 s}{C_L L_L R_4 s^2 + 2L_L s + R_4}$$

$$H(s) = \frac{L_L R_4 R_L s}{C_L L_L R_4 R_L s^2 + R_4 R_L + s \left(L_L R_4 + 2L_L R_L\right)}$$

$$H(s) = \frac{L_L R_L s}{L_L s + R_L + s^2 (2C_4 L_L R_L + C_L L_L R_L)}$$

3.4 BP-4 $Z(s) = \left(\infty, \infty, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1}\right)$

Parameters:

$$\begin{array}{l} \text{Q: } C_{4}R_{4}\sqrt{\frac{1}{2C_{4}L_{L}+C_{L}L_{L}}} + \frac{C_{L}R_{4}\sqrt{\frac{1}{2C_{4}L_{L}+C_{L}L_{L}}}}{2} \\ \text{wo: } \sqrt{\frac{1}{2C_{4}L_{L}+C_{L}L_{L}}} \\ \text{bandwidth: } \frac{\sqrt{\frac{1}{2C_{4}L_{L}+C_{L}L_{L}}}}{C_{4}R_{4}\sqrt{\frac{1}{2C_{4}L_{L}+C_{L}L_{L}}}} + \frac{C_{L}R_{4}\sqrt{\frac{1}{2C_{4}L_{L}+C_{L}L_{L}}}}{2} \\ \text{K-LP: 0} \\ \text{K-HP: 0} \\ \text{K-BP: } \frac{R_{4}}{2} \\ \text{Qz: None} \\ \text{Wz: None} \end{array}$$

3.5 BP-5 $Z(s) = \left(\infty, \infty, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{L_L R_L s}{C_L L_L R_L s^2 + L_L s + R_L}\right)$

Parameters:

3.6 BP-6
$$Z(s) = \left(\infty, \infty, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, R_L\right)$$

Q:
$$2C_4R_L\sqrt{\frac{1}{C_4L_4}}$$

wo: $\sqrt{\frac{1}{C_4L_4}}$
bandwidth: $\frac{1}{2C_4R_L}$
K-LP: 0
K-HP: 0
K-BP: R_L
Qz: None
Wz: None

$$H(s) = \frac{L_L R_4 s}{2L_L s + R_4 + s^2 \left(2C_4 L_L R_4 + C_L L_L R_4\right)}$$

$$H(s) = \frac{L_L R_4 R_L s}{R_4 R_L + s^2 \left(2 C_4 L_L R_4 R_L + C_L L_L R_4 R_L\right) + s \left(L_L R_4 + 2 L_L R_L\right)}$$

$$H(s) = \frac{L_4 R_L s}{2C_4 L_4 R_L s^2 + L_4 s + 2R_L}$$

3.7 BP-7
$$Z(s) = \left(\infty, \infty, \infty, \frac{L_{4s}}{C_4 L_4 s^2 + 1}, \infty, \frac{R_L}{C_L R_L s + 1}\right)$$

$$H(s) = \frac{L_4 R_L s}{L_4 s + 2R_L + s^2 \left(2C_4 L_4 R_L + C_L L_4 R_L\right)}$$

Q:
$$2\sqrt{2}C_4R_L\sqrt{\frac{1}{2C_4L_4+C_LL_4}} + \sqrt{2}C_LR_L\sqrt{\frac{1}{2C_4L_4+C_LL_4}}$$
 wo: $\sqrt{2}\sqrt{\frac{1}{2C_4L_4+C_LL_4}}$ bandwidth:
$$\frac{\sqrt{2}\sqrt{\frac{1}{2C_4L_4+C_LL_4}}}{2\sqrt{2}C_4R_L\sqrt{\frac{1}{2C_4L_4+C_LL_4}} + \sqrt{2}C_LR_L\sqrt{\frac{1}{2C_4L_4+C_LL_4}}}$$
 K-LP: 0 K-HP: 0 K-BP: R_L Qz: None Wz: None

3.8 BP-8
$$Z(s) = \left(\infty, \infty, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{L_L R_L s}{C_L L_L R_L s^2 + L_L s + R_L}\right)$$

$$H(s) = \frac{L_4 L_L R_L s}{L_4 L_L s + L_4 R_L + 2L_L R_L + s^2 (2C_4 L_4 L_L R_L + C_L L_4 L_L R_L)}$$

Parameters:

Q:
$$2C_4R_L\sqrt{\frac{L_4}{2C_4L_4L_L+C_LL_4L_L}} + \frac{2L_L}{2C_4L_4L_L+C_LL_4L_L} + C_LR_L\sqrt{\frac{L_4}{2C_4L_4L_L+C_LL_4L_L}} + \frac{2L_L}{2C_4L_4L_L+C_LL_4L_L}$$
 wo: $\sqrt{\frac{L_4+2L_L}{2C_4L_4L_L+C_LL_4L_L}}$ bandwidth:
$$\frac{\sqrt{\frac{L_4+2L_L}{2C_4L_4L_L+C_LL_4L_L}}}{\sqrt{\frac{L_4}{2C_4L_4L_L+C_LL_4L_L}}} + \frac{2L_L}{2C_4L_4L_L+C_LL_4L_L}$$
 K-LP: 0 K-HP: 0 K-BP:
$$\frac{R_L\sqrt{\frac{L_4}{2C_4L_4L_L+C_LL_4L_L}} + \frac{2L_L}{2C_4L_4L_L+C_LL_4L_L}}{\sqrt{\frac{L_4}{2C_4L_4L_L+C_LL_4L_L}} + \frac{2L_L}{2C_4L_4L_L+C_LL_4L_L}}$$
 Qz: None Wz: None

3.9 BP-9
$$Z(s) = \left(\infty, \infty, \infty, \frac{L_4 R_4 s}{C_4 L_4 R_4 s^2 + L_4 s + R_4}, \infty, R_L\right)$$

$$H(s) = \frac{L_4 R_4 R_L s}{2C_4 L_4 R_4 R_L s^2 + 2R_4 R_L + s\left(L_4 R_4 + 2L_4 R_L\right)}$$

Parameters:

Q:
$$\frac{2C_4R_4R_L\sqrt{\frac{1}{C_4L_4}}}{R_4+2R_L}$$
 wo: $\sqrt{\frac{1}{C_4L_4}}$ bandwidth: $\frac{R_4+2R_L}{2C_4R_4R_L}$ K-LP: 0 K-HP: 0 K-BP: $\frac{R_4R_L}{R_4+2R_L}$ Qz: None Wz: None

3.10 BP-10
$$Z(s) = \left(\infty, \infty, \infty, \frac{L_4 R_4 s}{C_4 L_4 R_4 s^2 + L_4 s + R_4}, \infty, \frac{1}{C_L s}\right)$$

$$H(s) = \frac{L_4 R_4 s}{2L_4 s + 2R_4 + s^2 \left(2C_4 L_4 R_4 + C_L L_4 R_4\right)}$$

$$\begin{array}{l} \text{Q: } \sqrt{2}C_4R_4\sqrt{\frac{1}{2C_4L_4+C_LL_4}} + \frac{\sqrt{2}C_LR_4\sqrt{\frac{1}{2C_4L_4+C_LL_4}}}{2} \\ \text{wo: } \sqrt{2}\sqrt{\frac{1}{2C_4L_4+C_LL_4}} \\ \text{bandwidth: } \frac{\sqrt{2}\sqrt{\frac{1}{2C_4L_4+C_LL_4}}}{\sqrt{2}C_4R_4\sqrt{\frac{1}{2C_4L_4+C_LL_4}} + \frac{\sqrt{2}C_LR_4\sqrt{\frac{1}{2C_4L_4+C_LL_4}}}{2}}{K\text{-LP: 0}} \\ \text{K-HP: 0} \\ \text{K-BP: } \frac{R_4}{2} \\ \text{Qz: None} \\ \text{Wz: None} \end{array}$$

3.11 BP-11
$$Z(s) = \left(\infty, \infty, \infty, \frac{L_4 R_4 s}{C_4 L_4 R_4 s^2 + L_4 s + R_4}, \infty, \frac{R_L}{C_L R_L s + 1}\right)$$

$$H(s) = \frac{L_4 R_4 R_L s}{2 R_4 R_L + s^2 \left(2 C_4 L_4 R_4 R_L + C_L L_4 R_4 R_L\right) + s \left(L_4 R_4 + 2 L_4 R_L\right)}$$

3.12 BP-12
$$Z(s) = \left(\infty, \infty, \infty, \frac{L_4 R_4 s}{C_4 L_4 R_4 s^2 + L_4 s + R_4}, \infty, \frac{L_L s}{C_L L_L s^2 + 1}\right)$$

$$H(s) = \frac{L_4 L_L R_4 s}{2 L_4 L_L s + L_4 R_4 + 2 L_L R_4 + s^2 \left(2 C_4 L_4 L_L R_4 + C_L L_4 L_L R_4\right)}$$

Parameters:

$$\begin{array}{l} \text{Q: } C_{4}R_{4}\sqrt{\frac{L_{4}}{2C_{4}L_{4}L_{L}+C_{L}L_{4}L_{L}}} + \frac{2L_{L}}{2C_{4}L_{4}L_{L}+C_{L}L_{4}L_{L}}} + \frac{C_{L}R_{4}\sqrt{\frac{L_{4}}{2C_{4}L_{4}L_{L}+C_{L}L_{4}L_{L}}} + \frac{2L_{L}}{2C_{4}L_{4}L_{L}+C_{L}L_{4}L_{L}}} \\ \text{wo: } \sqrt{\frac{L_{4}+2L_{L}}{2C_{4}L_{4}L_{L}+C_{L}L_{4}L_{L}}} \\ \text{bandwidth: } \frac{\sqrt{\frac{L_{4}+2L_{L}}{2C_{4}L_{4}L_{L}+C_{L}L_{4}L_{L}}}} \\ \frac{C_{4}R_{4}\sqrt{\frac{L_{4}}{2C_{4}L_{4}L_{L}+C_{L}L_{4}L_{L}}} + \frac{2L_{L}}{2C_{4}L_{4}L_{L}+C_{L}L_{4}L_{L}}} + \frac{C_{L}R_{4}\sqrt{\frac{L_{4}}{2C_{4}L_{4}L_{L}+C_{L}L_{4}L_{L}}} + \frac{2L_{L}}{2C_{4}L_{4}L_{L}+C_{L}L_{4}L_{L}}} \\ \text{K-LP: 0} \\ \text{K-HP: 0} \\ \text{K-BP: } \frac{R_{4}\sqrt{\frac{L_{4}}{2C_{4}L_{4}L_{L}+C_{L}L_{4}L_{L}}} + \frac{2L_{L}}{2C_{4}L_{4}L_{L}+C_{L}L_{4}L_{L}}}{2C_{4}L_{4}L_{L}+C_{L}L_{4}L_{L}}} \\ \text{Qz: None} \\ \text{Wz: None} \end{array}$$

3.13 BP-13
$$Z(s) = \left(\infty, \infty, \infty, \frac{L_4 R_4 s}{C_4 L_4 R_4 s^2 + L_4 s + R_4}, \infty, \frac{L_L R_L s}{C_L L_L R_L s^2 + L_L s + R_L}\right)$$

$$H(s) = \frac{L_4 L_L R_4 R_L s}{L_4 R_4 R_L + 2 L_L R_4 R_L + s^2 \left(2 C_4 L_4 L_L R_4 R_L + C_L L_4 L_L R_4 R_L\right) + s \left(L_4 L_L R_4 + 2 L_4 L_L R_L\right)}$$

$$Q: \frac{2C_4R_4R_L\sqrt{\frac{L_4}{2C_4L_4L_L} + \frac{2L_L}{2C_4L_4L_L} + \frac{2L_L}{2C_4L_4L_L} + C_LR_4R_L\sqrt{\frac{L_4}{2C_4L_4L_L} + C_LL_4L_L}}{R_4 + 2R_L} \\ \text{Wo: } \sqrt{\frac{L_4 + 2L_L}{2C_4L_4L_L + C_LL_4L_L}}$$

$$\begin{array}{c} \text{bandwidth: } \frac{\sqrt{\frac{L_4+2L_L}{2C_4L_4L_L}}(R_4+2R_L)}{2C_4R_4R_L\sqrt{\frac{L_4}{2C_4L_4L_L}+C_LL_4L_L}} + \frac{2L_L}{2C_4L_4L_L+C_LL_4L_L} + C_LR_4R_L\sqrt{\frac{L_4}{2C_4L_4L_L+C_LL_4L_L}} + \frac{2L_L}{2C_4L_4L_L+C_LL_4L_L} \\ \text{K-LP: 0} \\ \text{K-HP: 0} \\ \text{K-BP: } \frac{R_4R_L\sqrt{\frac{1}{2C_4L_4L_L}+\frac{2}{2C_4L_4L_L}+\frac{2}{2C_4L_4L_L}}}{R_4\sqrt{\frac{1}{2C_4L_4L_L}+\frac{2}{2C_4L_4L_L}+\frac{2}{2C_4L_4L_L}+\frac{2}{2C_4L_4L_L}}} \\ \text{Oz: None} \\ \text{Oz: None} \end{array}$$

Qz: None Wz: None

4 LP

5 BS

5.1 BS-1
$$Z(s) = \left(\infty, \infty, \infty, R_4, \infty, L_L s + \frac{1}{C_L s}\right)$$

 $H(s) = \frac{C_L L_L R_4 s^2 + R_4}{2C_L L_L s^2 + C_L R_4 s + 2}$

Parameters:

$$\begin{aligned} &\text{Q:} \ \frac{^{2L_L}\sqrt{\frac{1}{C_LL_L}}}{R_4}\\ &\text{wo:} \ \sqrt{\frac{1}{C_LL_L}}\\ &\text{bandwidth:} \ \frac{R_4}{^{2}L_L}\\ &\text{K-LP:} \ \frac{R_4}{^{2}}\\ &\text{K-HP:} \ \frac{R_4}{^{2}}\\ &\text{K-BP:} \ 0\\ &\text{Qz:} \ \text{None}\\ &\text{Wz:} \ \sqrt{\frac{1}{C_LL_L}} \end{aligned}$$

5.2 BS-2
$$Z(s) = \left(\infty, \infty, \infty, R_4, \infty, \frac{R_L(C_L L_L s^2 + 1)}{C_L L_L s^2 + C_L R_L s + 1}\right)$$

 $H(s) = \frac{C_L L_L R_4 R_L s^2 + R_4 R_L}{C_L R_4 R_L s + R_4 + 2 R_L + s^2 \left(C_L L_L R_4 + 2 C_L L_L R_L \right)}$

Parameters:

$$\begin{aligned} & \text{Q:} \ \frac{L_L R_4 \sqrt{\frac{1}{C_L L_L}} + 2L_L R_L \sqrt{\frac{1}{C_L L_L}}}{R_4 R_L} \\ & \text{wo:} \ \sqrt{\frac{1}{C_L L_L}} \\ & \text{bandwidth:} \ \frac{R_4 R_L \sqrt{\frac{1}{C_L L_L}}}{L_L R_4 \sqrt{\frac{1}{C_L L_L}} + 2L_L R_L \sqrt{\frac{1}{C_L L_L}}} \\ & \text{K-LP:} \ \frac{R_4 R_L}{R_4 + 2R_L} \\ & \text{K-HP:} \ \frac{R_4 R_L}{R_4 + 2R_L} \\ & \text{K-BP:} \ 0 \\ & \text{Qz:} \ \text{None} \\ & \text{Wz:} \ \sqrt{\frac{1}{C_L L_L}} \end{aligned}$$

5.3 BS-3
$$Z(s) = \left(\infty, \infty, \infty, L_4 s + \frac{1}{C_4 s}, \infty, R_L\right)$$

 $H(s) = \frac{C_4 L_4 R_L s^2 + R_L}{C_4 L_4 s^2 + 2C_4 R_L s + 1}$

$$\begin{array}{l} \text{Q:} \ \frac{L_{4}\sqrt{\frac{1}{C_{4}L_{4}}}}{2R_{L}} \\ \text{wo:} \ \sqrt{\frac{1}{C_{4}L_{4}}} \\ \text{bandwidth:} \ \frac{2R_{L}}{L_{4}} \\ \text{K-LP:} \ R_{L} \\ \text{K-HP:} \ R_{L} \\ \text{K-BP:} \ 0 \\ \text{Qz:} \ \text{None} \\ \text{Wz:} \ \sqrt{\frac{1}{C_{4}L_{4}}} \end{array}$$

5.4 BS-4
$$Z(s) = \left(\infty, \infty, \infty, \frac{R_4(C_4L_4s^2+1)}{C_4L_4s^2+C_4R_4s+1}, \infty, R_L\right)$$

$$\begin{array}{l} \text{Q:} \ \frac{L_4R_4\sqrt{\frac{1}{C_4L_4}}+2L_4R_L\sqrt{\frac{1}{C_4L_4}}}{2R_4R_L} \\ \text{wo:} \ \sqrt{\frac{1}{C_4L_4}} \\ \text{bandwidth:} \ \frac{2R_4R_L\sqrt{\frac{1}{C_4L_4}}}{L_4R_4\sqrt{\frac{1}{C_4L_4}}+2L_4R_L\sqrt{\frac{1}{C_4L_4}}} \\ \text{K-LP:} \ \frac{R_4R_L}{R_4+2R_L} \\ \text{K-HP:} \ \frac{R_4R_L}{R_4+2R_L} \\ \text{K-BP:} \ 0 \\ \text{Qz:} \ \text{None} \\ \text{Wz:} \ \sqrt{\frac{1}{C_4L_4}} \end{array}$$

6 **GE**

6.1 GE-1
$$Z(s) = \left(\infty, \infty, \infty, R_4, \infty, L_L s + R_L + \frac{1}{C_L s}\right)$$

Parameters:

$$\begin{aligned} &\text{Q: } \frac{2L_{L}\sqrt{\frac{1}{C_{L}L_{L}}}}{R_{4}+2R_{L}} \\ &\text{wo: } \sqrt{\frac{1}{C_{L}L_{L}}} \\ &\text{bandwidth: } \frac{R_{4}+2R_{L}}{2L_{L}} \\ &\text{K-LP: } \frac{R_{4}}{2} \\ &\text{K-HP: } \frac{R_{4}}{2} \\ &\text{K-BP: } \frac{R_{4}R_{L}}{R_{4}+2R_{L}} \\ &\text{Qz: } \frac{L_{L}\sqrt{\frac{1}{C_{L}L_{L}}}}{R_{L}} \\ &\text{Wz: } \sqrt{\frac{1}{C_{L}L_{L}}} \end{aligned}$$

6.2 GE-2
$$Z(s) = \left(\infty, \infty, \infty, R_4, \infty, \frac{C_L L_L R_L s^2 + L_L s + R_L}{C_L L_L s^2 + 1}\right)$$

Q:
$$\frac{C_L R_4 \sqrt{\frac{1}{C_L L_L}}}{2} + C_L R_L \sqrt{\frac{1}{C_L L_L}}$$

$$H(s) = \frac{C_4 L_4 R_4 R_L s^2 + R_4 R_L}{2C_4 R_4 R_L s + R_4 + 2R_L + s^2 \left(C_4 L_4 R_4 + 2C_4 L_4 R_L\right)}$$

$$H(s) = \frac{C_L L_L R_4 s^2 + C_L R_4 R_L s + R_4}{2C_L L_L s^2 + s \left(C_L R_4 + 2C_L R_L\right) + 2}$$

$$H(s) = \frac{C_L L_L R_4 R_L s^2 + L_L R_4 s + R_4 R_L}{2L_L s + R_4 + 2R_L + s^2 \left(C_L L_L R_4 + 2C_L L_L R_L\right)}$$

wo:
$$\sqrt{\frac{1}{C_L L_L}}$$
 bandwidth: $\frac{\sqrt{\frac{1}{C_L L_L}}}{\frac{C_L R_4 \sqrt{\frac{1}{C_L L_L}}}{2} + C_L R_L \sqrt{\frac{1}{C_L L_L}}}$ K-LP: $\frac{R_4 R_L}{R_4 + 2R_L}$ K-HP: $\frac{R_4 R_L}{R_4 + 2R_L}$ K-BP: $\frac{R_4}{2}$ Qz: $C_L R_L \sqrt{\frac{1}{C_L L_L}}$ Wz: $\sqrt{\frac{1}{C_L L_L}}$

6.3 GE-3
$$Z(s) = \left(\infty, \infty, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, R_L\right)$$

Q:
$$\frac{L_4\sqrt{\frac{1}{C_4L_4}}}{R_4+2R_L}$$

wo: $\sqrt{\frac{1}{C_4L_4}}$
bandwidth: $\frac{R_4+2R_L}{L_4}$
K-LP: R_L
K-HP: R_L
K-BP: $\frac{R_4R_L}{R_4+2R_L}$
Qz: $\frac{L_4\sqrt{\frac{1}{C_4L_4}}}{R_4}$
Wz: $\sqrt{\frac{1}{C_4L_4}}$

6.4 GE-4
$$Z(s) = \left(\infty, \infty, \infty, \frac{C_4L_4R_4s^2 + L_4s + R_4}{C_4L_4s^2 + 1}, \infty, R_L\right)$$

Parameters:

Q:
$$C_4 R_4 \sqrt{\frac{1}{C_4 L_4}} + 2 C_4 R_L \sqrt{\frac{1}{C_4 L_4}}$$

wo: $\sqrt{\frac{1}{C_4 L_4}}$
bandwidth: $\frac{\sqrt{\frac{1}{C_4 L_4}}}{C_4 R_4 \sqrt{\frac{1}{C_4 L_4}} + 2 C_4 R_L \sqrt{\frac{1}{C_4 L_4}}}$
K-LP: $\frac{R_4 R_L}{R_4 + 2 R_L}$
K-HP: $\frac{R_4 R_L}{R_4 + 2 R_L}$
K-BP: R_L
Qz: $C_4 R_4 \sqrt{\frac{1}{C_4 L_4}}$
Wz: $\sqrt{\frac{1}{C_4 L_4}}$

7 AP

8 INVALID-NUMER

$$H(s) = \frac{C_4 L_4 R_L s^2 + C_4 R_4 R_L s + R_L}{C_4 L_4 s^2 + s \left(C_4 R_4 + 2 C_4 R_L\right) + 1}$$

$$H(s) = \frac{C_4 L_4 R_4 R_L s^2 + L_4 R_L s + R_4 R_L}{L_4 s + R_4 + 2R_L + s^2 \left(C_4 L_4 R_4 + 2C_4 L_4 R_L\right)}$$

8.1 INVALID-NUMER-1 $Z(s) = \left(\infty, \infty, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, R_L + \frac{1}{C_L s}\right)$

 $H(s) = \frac{C_L R_4 R_L s + R_4}{2C_4 C_L R_4 R_L s^2 + s \left(2C_4 R_4 + C_L R_4 + 2C_L R_L\right) + 2}$

Parameters:

$$\begin{array}{l} \text{Q:} \ \frac{2C_{4}C_{L}R_{4}R_{L}\sqrt{\frac{1}{C_{4}C_{L}R_{4}R_{L}}}}{2C_{4}R_{4}+C_{L}R_{4}+2C_{L}R_{L}} \\ \text{wo:} \ \sqrt{\frac{1}{C_{4}C_{L}R_{4}R_{L}}} \\ \text{bandwidth:} \ \frac{2C_{4}R_{4}+C_{L}R_{4}+2C_{L}R_{L}}{2C_{4}C_{L}R_{4}R_{L}} \\ \text{K-LP:} \ \frac{R_{4}}{2} \\ \text{K-HP:} \ 0 \\ \text{K-BP:} \ \frac{C_{L}R_{4}R_{L}}{2C_{4}R_{4}+C_{L}R_{4}+2C_{L}R_{L}} \\ \text{Qz:} \ \text{None} \\ \text{Wz:} \ \text{None} \end{array}$$

8.2 INVALID-NUMER-2 $Z(s) = \left(\infty, \infty, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1}\right)$

$$H(s) = \frac{C_4 R_4 R_L s + R_L}{C_4 C_L R_4 R_L s^2 + s \left(C_4 R_4 + 2 C_4 R_L + C_L R_L\right) + 1}$$

Parameters:

$$\begin{array}{l} \text{Q:} \ \frac{C_4C_LR_4R_L\sqrt{\frac{1}{C_4C_LR_4R_L}}}{C_4R_4+2C_4R_L+C_LR_L} \\ \text{wo:} \ \sqrt{\frac{1}{C_4C_LR_4R_L}} \\ \text{bandwidth:} \ \frac{C_4R_4+2C_4R_L+C_LR_L}{C_4C_LR_4R_L} \\ \text{K-LP:} \ R_L \\ \text{K-HP:} \ 0 \\ \text{K-BP:} \ \frac{C_4R_4R_L}{C_4R_4+2C_4R_L+C_LR_L} \\ \text{Qz:} \ \text{None} \\ \text{Wz:} \ \text{None} \end{array}$$

9 INVALID-WZ

10 INVALID-ORDER

10.1 INVALID-ORDER-1 $Z(s) = (\infty, \infty, \infty, R_4, \infty, R_L)$

$$H(s) = \frac{R_4 R_L}{R_4 + 2R_L}$$

10.2 INVALID-ORDER-2 $Z(s) = \left(\infty, \infty, \infty, R_4, \infty, \frac{1}{C_L s}\right)$

$$H(s) = \frac{R_4}{C_L R_4 s + 2}$$

10.3 INVALID-ORDER-3 $Z(s) = \left(\infty, \infty, \infty, R_4, \infty, \frac{R_L}{C_L R_L s + 1}\right)$

$$H(s) = \frac{R_4 R_L}{C_L R_4 R_L s + R_4 + 2R_L}$$

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10.4 INVALID-ORDER-4
$$Z(s) = \left(\infty, \infty, \infty, R_4, \infty, R_L + \frac{1}{C_L s}\right)$$

$$H(s) = \frac{C_L R_4 R_L s + R_4}{s (C_L R_4 + 2C_L R_L) + 2}$$

10.5 INVALID-ORDER-5
$$Z(s) = \left(\infty, \infty, \infty, \frac{1}{C_4 s}, \infty, R_L\right)$$

$$H(s) = \frac{R_L}{2C_4R_Ls + 1}$$

10.6 INVALID-ORDER-6
$$Z(s) = \left(\infty, \infty, \infty, \frac{1}{C_4 s}, \infty, \frac{1}{C_L s}\right)$$

$$H(s) = \frac{1}{s\left(2C_4 + C_L\right)}$$

10.7 INVALID-ORDER-7
$$Z(s) = \left(\infty, \infty, \infty, \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1}\right)$$

$$H(s) = \frac{R_L}{s(2C_4R_L + C_LR_L) + 1}$$

10.8 INVALID-ORDER-8
$$Z(s) = \left(\infty, \infty, \infty, \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s}\right)$$

$$H(s) = \frac{C_L R_L s + 1}{2C_4 C_L R_L s^2 + s (2C_4 + C_L)}$$

10.9 INVALID-ORDER-9
$$Z(s) = \left(\infty, \infty, \infty, \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s}\right)$$

$$H(s) = \frac{C_L L_L s^2 + 1}{2C_4 C_L L_L s^3 + s (2C_4 + C_L)}$$

10.10 INVALID-ORDER-10
$$Z(s) = \left(\infty, \infty, \infty, \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1}\right)$$

$$H(s) = \frac{L_L s}{s^2 (2C_4 L_L + C_L L_L) + 1}$$

10.11 INVALID-ORDER-11
$$Z(s) = \left(\infty, \infty, \infty, \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s}\right)$$

$$H(s) = \frac{C_L L_L s^2 + C_L R_L s + 1}{2C_4 C_L L_L s^3 + 2C_4 C_L R_L s^2 + s (2C_4 + C_L)}$$

10.12 INVALID-ORDER-12
$$Z(s) = \left(\infty, \infty, \infty, \frac{1}{C_4 s}, \infty, \frac{C_L L_L R_L s^2 + L_L s + R_L}{C_L L_L s^2 + 1}\right)$$

$$H(s) = \frac{C_L L_L R_L s^2 + L_L s + R_L}{2C_4 C_L L_L R_L s^3 + 2C_4 R_L s + s^2 \left(2C_4 L_L + C_L L_L\right) + 1}$$

10.13 INVALID-ORDER-13
$$Z(s) = \left(\infty, \infty, \infty, \frac{1}{C_4 s}, \infty, \frac{R_L \left(C_L L_L s^2 + 1\right)}{C_L L_L s^2 + C_L R_L s + 1}\right)$$

$$H(s) = \frac{C_L L_L R_L s^2 + R_L}{2C_4 C_L L_L R_L s^3 + C_L L_L s^2 + s \left(2C_4 R_L + C_L R_L\right) + 1}$$

10.14 INVALID-ORDER-14
$$Z(s) = \left(\infty, \infty, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, R_L\right)$$

$$H(s) = \frac{R_4 R_L}{2C_4 R_4 R_L s + R_4 + 2R_L}$$

10.15 INVALID-ORDER-15
$$Z(s) = \left(\infty, \infty, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{1}{C_L s}\right)$$

$$H(s) = \frac{R_4}{s(2C_4R_4 + C_LR_4) + 2}$$

10.16 INVALID-ORDER-16
$$Z(s) = \left(\infty, \infty, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{R_L}{C_L R_L s + 1}\right)$$

$$H(s) = \frac{R_4 R_L}{R_4 + 2R_L + s \left(2C_4 R_4 R_L + C_L R_4 R_L \right)}$$

10.17 INVALID-ORDER-17
$$Z(s) = \left(\infty, \infty, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, L_L s + \frac{1}{C_L s}\right)$$

$$H(s) = \frac{C_L L_L R_4 s^2 + R_4}{2C_4 C_L L_L R_4 s^3 + 2C_L L_L s^2 + s (2C_4 R_4 + C_L R_4) + 2}$$

10.18 INVALID-ORDER-18
$$Z(s) = \left(\infty, \infty, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, L_L s + R_L + \frac{1}{C_L s}\right)$$

$$H(s) = \frac{C_L L_L R_4 s^2 + C_L R_4 R_L s + R_4}{2C_4 C_L L_L R_4 s^3 + s^2 \left(2C_4 C_L R_4 R_L + 2C_L L_L\right) + s \left(2C_4 R_4 + C_L R_4 + 2C_L R_L\right) + 2}$$

10.19 INVALID-ORDER-19
$$Z(s) = \left(\infty, \infty, \infty, \frac{R_4}{C_4R_4s+1}, \infty, \frac{C_LL_LR_Ls^2+L_Ls+R_L}{C_LL_Ls^2+1}\right)$$

$$H(s) = \frac{C_L L_L R_4 R_L s^2 + L_L R_4 s + R_4 R_L}{2C_4 C_L L_L R_4 R_L s^3 + R_4 + 2R_L + s^2 \left(2C_4 L_L R_4 + C_L L_L R_4 + 2C_L L_L R_L\right) + s \left(2C_4 R_4 R_L + 2L_L\right)}$$

10.20 INVALID-ORDER-20
$$Z(s) = \left(\infty, \infty, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{R_L \left(C_L L_L s^2 + 1\right)}{C_L L_L s^2 + C_L R_L s + 1}\right)$$

$$H(s) = \frac{C_L L_L R_4 R_L s^2 + R_4 R_L}{2C_4 C_L L_L R_4 R_L s^3 + R_4 + 2R_L + s^2 \left(C_L L_L R_4 + 2C_L L_L R_L\right) + s \left(2C_4 R_4 R_L + C_L R_4 R_L\right)}$$

10.21 INVALID-ORDER-21 $Z(s) = \left(\infty, \infty, \infty, R_4 + \frac{1}{C_4 s}, \infty, R_L\right)$

$$H(s) = \frac{C_4 R_4 R_L s + R_L}{s (C_4 R_4 + 2C_4 R_L) + 1}$$

10.22 INVALID-ORDER-22 $Z(s) = \left(\infty, \infty, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s}\right)$

$$H(s) = \frac{C_4 R_4 s + 1}{C_4 C_L R_4 s^2 + s (2C_4 + C_L)}$$

10.23 INVALID-ORDER-23 $Z(s) = \left(\infty, \infty, \infty, R_4 + \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s}\right)$

$$H(s) = \frac{C_4 C_L R_4 R_L s^2 + s \left(C_4 R_4 + C_L R_L \right) + 1}{s^2 \left(C_4 C_L R_4 + 2 C_4 C_L R_L \right) + s \left(2 C_4 + C_L \right)}$$

10.24 INVALID-ORDER-24
$$Z(s) = \left(\infty, \infty, \infty, R_4 + \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s}\right)$$

$$H(s) = \frac{C_4 C_L L_L R_4 s^3 + C_4 R_4 s + C_L L_L s^2 + 1}{2C_4 C_L L_L s^3 + C_4 C_L R_4 s^2 + s \left(2C_4 + C_L\right)}$$

10.25 INVALID-ORDER-25
$$Z(s) = \left(\infty, \infty, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1}\right)$$

$$H(s) = \frac{C_4 L_L R_4 s^2 + L_L s}{C_4 C_L L_L R_4 s^3 + C_4 R_4 s + s^2 (2C_4 L_L + C_L L_L) + 1}$$

10.26 INVALID-ORDER-26
$$Z(s) = \left(\infty, \infty, \infty, R_4 + \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s}\right)$$

$$H(s) = \frac{C_4 C_L L_L R_4 s^3 + s^2 \left(C_4 C_L R_4 R_L + C_L L_L \right) + s \left(C_4 R_4 + C_L R_L \right) + 1}{2 C_4 C_L L_L s^3 + s^2 \left(C_4 C_L R_4 + 2 C_4 C_L R_L \right) + s \left(2 C_4 + C_L \right)}$$

10.27 INVALID-ORDER-27
$$Z(s) = \left(\infty, \infty, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L R_L s}{C_L L_L R_L s^2 + L_L s + R_L}\right)$$

$$H(s) = \frac{C_4 L_L R_4 R_L s^2 + L_L R_L s}{C_4 C_L L_L R_4 R_L s^3 + R_L + s^2 \left(C_4 L_L R_4 + 2 C_4 L_L R_L + C_L L_L R_L \right) + s \left(C_4 R_4 R_L + L_L \right)}$$

10.28 INVALID-ORDER-28
$$Z(s) = \left(\infty, \infty, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{C_L L_L R_L s^2 + L_L s + R_L}{C_L L_L s^2 + 1}\right)$$

$$H(s) = \frac{C_4 C_L L_L R_4 R_L s^3 + R_L + s^2 \left(C_4 L_L R_4 + C_L L_L R_L \right) + s \left(C_4 R_4 R_L + L_L \right)}{s^3 \left(C_4 C_L L_L R_4 + 2 C_4 C_L L_L R_L \right) + s^2 \left(2 C_4 L_L + C_L L_L \right) + s \left(C_4 R_4 + 2 C_4 R_L \right) + 1}$$

10.29 INVALID-ORDER-29
$$Z(s) = \left(\infty, \infty, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L \left(C_L L_L s^2 + 1\right)}{C_L L_L s^2 + C_L R_L s + 1}\right)$$

$$H(s) = \frac{C_4 C_L L_L R_4 R_L s^3 + C_4 R_4 R_L s + C_L L_L R_L s^2 + R_L}{s^3 \left(C_4 C_L L_L R_4 + 2 C_4 C_L L_L R_L \right) + s^2 \left(C_4 C_L R_4 R_L + C_L L_L \right) + s \left(C_4 R_4 + 2 C_4 R_L + C_L R_L \right) + 1}$$

10.30 INVALID-ORDER-30 $Z(s) = \left(\infty, \infty, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s}\right)$

$$H(s) = \frac{C_4 L_4 s^2 + 1}{C_4 C_L L_4 s^3 + s (2C_4 + C_L)}$$

10.31 INVALID-ORDER-31 $Z(s) = \left(\infty, \infty, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1}\right)$

$$H(s) = \frac{C_4 L_4 R_L s^2 + R_L}{C_4 C_L L_4 R_L s^3 + C_4 L_4 s^2 + s \left(2 C_4 R_L + C_L R_L\right) + 1}$$

10.32 INVALID-ORDER-32
$$Z(s) = \left(\infty, \infty, \infty, L_4 s + \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s}\right)$$

$$H(s) = \frac{C_4 C_L L_4 R_L s^3 + C_4 L_4 s^2 + C_L R_L s + 1}{C_4 C_L L_4 s^3 + 2C_4 C_L R_L s^2 + s (2C_4 + C_L)}$$

10.33 INVALID-ORDER-33
$$Z(s) = \left(\infty, \infty, \infty, L_4 s + \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s}\right)$$

$$H(s) = \frac{C_4 C_L L_4 L_L s^4 + s^2 (C_4 L_4 + C_L L_L) + 1}{s^3 (C_4 C_L L_4 + 2C_4 C_L L_L) + s (2C_4 + C_L)}$$

10.34 INVALID-ORDER-34
$$Z(s) = \left(\infty, \infty, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1}\right)$$

$$H(s) = \frac{C_4 L_4 L_L s^3 + L_L s}{C_4 C_L L_4 L_L s^4 + s^2 (C_4 L_4 + 2C_4 L_L + C_L L_L) + 1}$$

10.35 INVALID-ORDER-35
$$Z(s) = \left(\infty, \infty, \infty, L_4 s + \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s}\right)$$

$$H(s) = \frac{C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_L s^3 + C_L R_L s + s^2 (C_4 L_4 + C_L L_L) + 1}{2 C_4 C_L R_L s^2 + s^3 (C_4 C_L L_4 + 2 C_4 C_L L_L) + s (2 C_4 + C_L)}$$

10.36 INVALID-ORDER-36
$$Z(s) = \left(\infty, \infty, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{L_L R_L s}{C_L L_L R_L s^2 + L_L s + R_L}\right)$$

$$H(s) = \frac{C_4 L_4 L_L R_L s^3 + L_L R_L s}{C_4 C_L L_4 L_L R_L s^4 + C_4 L_4 L_L s^3 + L_L s + R_L + s^2 \left(C_4 L_4 R_L + 2 C_4 L_L R_L + C_L L_L R_L \right)}$$

10.37 INVALID-ORDER-37
$$Z(s) = \left(\infty, \infty, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{C_L L_L R_L s^2 + L_L s + R_L}{C_L L_L s^2 + 1}\right)$$

$$H(s) = \frac{C_4 C_L L_4 L_L R_L s^4 + C_4 L_4 L_L s^3 + L_L s + R_L + s^2 \left(C_4 L_4 R_L + C_L L_L R_L \right)}{C_4 C_L L_4 L_L s^4 + 2 C_4 C_L L_L R_L s^3 + 2 C_4 R_L s + s^2 \left(C_4 L_4 + 2 C_4 L_L + C_L L_L \right) + 1}$$

10.38 INVALID-ORDER-38
$$Z(s) = \left(\infty, \infty, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{R_L \left(C_L L_L s^2 + 1\right)}{C_L L_L s^2 + C_L R_L s + 1}\right)$$

$$H(s) = \frac{C_4 C_L L_4 L_L R_L s^4 + R_L + s^2 \left(C_4 L_4 R_L + C_L L_L R_L \right)}{C_4 C_L L_4 L_L s^4 + s^3 \left(C_4 C_L L_4 R_L + 2 C_4 C_L L_L R_L \right) + s^2 \left(C_4 L_4 + C_L L_L \right) + s \left(2 C_4 R_L + C_L R_L \right) + 1}$$

10.39 INVALID-ORDER-39 $Z(s) = \left(\infty, \infty, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, \frac{1}{C_Ls}\right)$

$$H(s) = \frac{L_4 s}{s^2 (2C_4 L_4 + C_L L_4) + 2}$$

10.40 INVALID-ORDER-40 $Z(s) = \left(\infty, \infty, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, R_L + \frac{1}{C_Ls}\right)$

$$H(s) = \frac{C_L L_4 R_L s^2 + L_4 s}{2C_4 C_L L_4 R_L s^3 + 2C_L R_L s + s^2 (2C_4 L_4 + C_L L_4) + 2}$$

10.41 INVALID-ORDER-41 $Z(s) = \left(\infty, \infty, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, L_Ls + \frac{1}{C_Ls}\right)$

$$H(s) = \frac{C_L L_4 L_L s^3 + L_4 s}{2C_4 C_L L_4 L_L s^4 + s^2 \left(2C_4 L_4 + C_L L_4 + 2C_L L_L\right) + 2}$$

10.42 INVALID-ORDER-42 $Z(s) = \left(\infty, \infty, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, \frac{L_Ls}{C_LL_Ls^2+1}\right)$

$$H(s) = \frac{L_4 L_L s}{L_4 + 2L_L + s^2 \left(2C_4 L_4 L_L + C_L L_4 L_L\right)}$$

10.43 INVALID-ORDER-43
$$Z(s) = \left(\infty, \infty, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, L_L s + R_L + \frac{1}{C_L s}\right)$$

$$H(s) = \frac{C_L L_4 L_L s^3 + C_L L_4 R_L s^2 + L_4 s}{2C_4 C_L L_4 L_L s^4 + 2C_4 C_L L_4 R_L s^3 + 2C_L R_L s + s^2 \left(2C_4 L_4 + C_L L_4 + 2C_L L_L\right) + 2}$$

10.44 INVALID-ORDER-44
$$Z(s) = \left(\infty, \infty, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, \frac{C_LL_LR_Ls^2+L_Ls+R_L}{C_LL_Ls^2+1}\right)$$

$$H(s) = \frac{C_L L_4 L_L R_L s^3 + L_4 L_L s^2 + L_4 R_L s}{2C_4 C_L L_4 L_L R_L s^4 + 2R_L + s^3 \left(2C_4 L_4 L_L + C_L L_4 L_L\right) + s^2 \left(2C_4 L_4 R_L + 2C_L L_L R_L\right) + s \left(L_4 + 2L_L\right)}$$

10.45 INVALID-ORDER-45
$$Z(s) = \left(\infty, \infty, \infty, \frac{L_{4s}}{C_4 L_4 s^2 + 1}, \infty, \frac{R_L \left(C_L L_L s^2 + 1\right)}{C_L L_L s^2 + C_L R_L s + 1}\right)$$

$$H(s) = \frac{C_L L_4 L_L R_L s^3 + L_4 R_L s}{2C_4 C_L L_4 L_L R_L s^4 + C_L L_4 L_L s^3 + L_4 s + 2R_L + s^2 (2C_4 L_4 R_L + C_L L_4 R_L + 2C_L L_L R_L)}$$

10.46 INVALID-ORDER-46
$$Z(s) = \left(\infty, \infty, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s}\right)$$

$$H(s) = \frac{C_4 L_4 s^2 + C_4 R_4 s + 1}{C_4 C_L L_4 s^3 + C_4 C_L R_4 s^2 + s (2C_4 + C_L)}$$

10.47 INVALID-ORDER-47
$$Z(s) = \left(\infty, \infty, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1}\right)$$

$$H(s) = \frac{C_4 L_4 R_L s^2 + C_4 R_4 R_L s + R_L}{C_4 C_L L_4 R_L s^3 + s^2 \left(C_4 C_L R_4 R_L + C_4 L_4 \right) + s \left(C_4 R_4 + 2 C_4 R_L + C_L R_L \right) + 1}$$

10.48 INVALID-ORDER-48
$$Z(s) = \left(\infty, \infty, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s}\right)$$

$$H(s) = \frac{C_4 C_L L_4 R_L s^3 + s^2 \left(C_4 C_L R_4 R_L + C_4 L_4 \right) + s \left(C_4 R_4 + C_L R_L \right) + 1}{C_4 C_L L_4 s^3 + s^2 \left(C_4 C_L R_4 + 2 C_4 C_L R_L \right) + s \left(2 C_4 + C_L \right)}$$

10.49 INVALID-ORDER-49
$$Z(s) = \left(\infty, \infty, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s}\right)$$

$$H(s) = \frac{C_4 C_L L_4 L_L s^4 + C_4 C_L L_L R_4 s^3 + C_4 R_4 s + s^2 (C_4 L_4 + C_L L_L) + 1}{C_4 C_L R_4 s^2 + s^3 (C_4 C_L L_4 + 2C_4 C_L L_L) + s (2C_4 + C_L)}$$

10.50 INVALID-ORDER-50 $Z(s) = \left(\infty, \infty, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1}\right)$

$$H(s) = \frac{C_4 L_4 L_L s^3 + C_4 L_L R_4 s^2 + L_L s}{C_4 C_L L_4 L_L s^4 + C_4 C_L L_L R_4 s^3 + C_4 R_4 s + s^2 \left(C_4 L_4 + 2 C_4 L_L + C_L L_L \right) + 1}$$

10.51 INVALID-ORDER-51
$$Z(s) = \left(\infty, \infty, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s}\right)$$

$$H(s) = \frac{C_4 C_L L_4 L_L s^4 + s^3 \left(C_4 C_L L_4 R_L + C_4 C_L L_L R_4\right) + s^2 \left(C_4 C_L R_4 R_L + C_4 L_4 + C_L L_L\right) + s \left(C_4 R_4 + C_L R_L\right) + 1}{s^3 \left(C_4 C_L L_4 + 2 C_4 C_L L_L\right) + s^2 \left(C_4 C_L R_4 + 2 C_4 C_L R_L\right) + s \left(2 C_4 + C_L\right)}$$

10.52 INVALID-ORDER-52
$$Z(s) = \left(\infty, \infty, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L R_L s}{C_L L_L R_L s^2 + L_L s + R_L}\right)$$

$$H(s) = \frac{C_4 L_4 L_L R_L s^3 + C_4 L_L R_4 R_L s^2 + L_L R_L s}{C_4 C_L L_4 L_L R_4 s + R_L + s^3 \left(C_4 C_L L_L R_4 R_L + C_4 L_4 L_L \right) + s^2 \left(C_4 L_4 R_L + C_4 L_L R_4 + 2 C_4 L_L R_L + C_L L_L R_L \right) + s \left(C_4 R_4 R_L + L_L \right)}{c_4 C_L L_4 L_L R_4 R_L + c_4 L_4 L_L + c_4 L_4 R_L + c_4 L$$

10.53 INVALID-ORDER-53
$$Z(s) = \left(\infty, \infty, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{C_L L_L R_L s^2 + L_L s + R_L}{C_L L_L s^2 + 1}\right)$$

$$H(s) = \frac{C_4 C_L L_4 L_L R_L s^4 + R_L + s^3 \left(C_4 C_L L_L R_4 R_L + C_4 L_4 L_L \right) + s^2 \left(C_4 L_4 R_L + C_4 L_L R_4 + C_L L_L R_L \right) + s \left(C_4 R_4 R_L + L_L \right)}{C_4 C_L L_4 L_L s^4 + s^3 \left(C_4 C_L L_L R_4 + 2 C_4 C_L L_L R_L \right) + s^2 \left(C_4 L_4 + 2 C_4 L_L + C_L L_L \right) + s \left(C_4 R_4 + 2 C_4 R_L \right) + 1}$$

10.54 INVALID-ORDER-54
$$Z(s) = \left(\infty, \infty, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L \left(C_L L_L s^2 + 1\right)}{C_L L_L s^2 + C_L R_L s + 1}\right)$$

$$H(s) = \frac{C_4C_LL_4L_LR_Ls^4 + C_4C_LL_LR_4R_Ls^3 + C_4R_4R_Ls + R_L + s^2\left(C_4L_4R_L + C_LL_LR_L\right)}{C_4C_LL_4L_Ls^4 + s^3\left(C_4C_LL_4R_L + C_4C_LL_LR_4 + 2C_4C_LL_LR_L\right) + s^2\left(C_4C_LR_4R_L + C_4L_4 + C_LL_L\right) + s\left(C_4R_4 + 2C_4R_L + C_LR_L\right) + 1}$$

10.55 INVALID-ORDER-55
$$Z(s) = \left(\infty, \infty, \infty, \frac{L_4 R_4 s}{C_4 L_4 R_4 s^2 + L_4 s + R_4}, \infty, R_L + \frac{1}{C_L s}\right)$$

$$H(s) = \frac{C_L L_4 R_4 R_L s^2 + L_4 R_4 s}{2C_4 C_L L_4 R_4 R_L s^3 + 2R_4 + s^2 \left(2C_4 L_4 R_4 + C_L L_4 R_4 + 2C_L L_4 R_L\right) + s \left(2C_L R_4 R_L + 2L_4\right)}$$

10.56 INVALID-ORDER-56
$$Z(s) = \left(\infty, \infty, \infty, \frac{L_4 R_4 s}{C_4 L_4 R_4 s^2 + L_4 s + R_4}, \infty, L_L s + \frac{1}{C_L s}\right)$$

$$H(s) = \frac{C_L L_4 L_L R_4 s^3 + L_4 R_4 s}{2C_4 C_L L_4 L_L R_4 s^4 + 2C_L L_4 L_L s^3 + 2L_4 s + 2R_4 + s^2 \left(2C_4 L_4 R_4 + C_L L_4 R_4 + 2C_L L_L R_4\right)}$$

10.57 INVALID-ORDER-57
$$Z(s) = \left(\infty, \infty, \infty, \frac{L_4 R_4 s}{C_4 L_4 R_4 s^2 + L_4 s + R_4}, \infty, L_L s + R_L + \frac{1}{C_L s}\right)$$

$$H(s) = \frac{C_L L_4 L_L R_4 s^3 + C_L L_4 R_4 R_L s^2 + L_4 R_4 s}{2C_4 C_L L_4 R_4 s^4 + 2R_4 + s^3 \left(2C_4 C_L L_4 R_4 R_L + 2C_L L_4 L_L\right) + s^2 \left(2C_4 L_4 R_4 + C_L L_4 R_4 + 2C_L L_4 R_L + 2C_L L_4 R_4\right) + s \left(2C_L R_4 R_L + 2L_4\right)}$$

10.58 INVALID-ORDER-58
$$Z(s) = \left(\infty, \infty, \infty, \frac{L_4 R_4 s}{C_4 L_4 R_4 s^2 + L_4 s + R_4}, \infty, \frac{C_L L_L R_L s^2 + L_L s + R_L}{C_L L_L s^2 + 1}\right)$$

$$H(s) = \frac{C_L L_4 L_L R_4 R_L s^3 + L_4 L_L R_4 s^2 + L_4 R_4 R_L s}{2C_4 C_L L_4 L_L R_4 R_L s^4 + 2R_4 R_L + s^3 \left(2C_4 L_4 L_L R_4 + C_L L_4 L_L R_4 + 2C_L L_4 L_L R_L\right) + s^2 \left(2C_4 L_4 R_4 R_L + 2C_L L_4 R_4 R_L + 2L_4 L_L\right) + s \left(L_4 R_4 + 2L_4 R_L + 2L_4 R_L\right) + s \left(L_4 R_4 R_L\right) +$$

10.59 INVALID-ORDER-59
$$Z(s) = \left(\infty, \infty, \infty, \frac{L_4 R_4 s}{C_4 L_4 R_4 s^2 + L_4 s + R_4}, \infty, \frac{R_L \left(C_L L_L s^2 + 1\right)}{C_L L_L s^2 + C_L R_L s + 1}\right)$$

$$H(s) = \frac{C_L L_4 L_L R_4 R_L s^3 + L_4 R_4 R_L s}{2C_4 C_L L_4 L_L R_4 R_L s^4 + 2R_4 R_L + s^3 \left(C_L L_4 L_L R_4 + 2C_L L_4 L_L R_L\right) + s^2 \left(2C_4 L_4 R_4 R_L + C_L L_4 R_4 R_L + 2C_L L_4 R_4 R_L\right) + s \left(L_4 R_4 + 2L_4 R_L\right)}{2C_4 C_4 L_4 R_4 R_L + 2C_4 R_4 R_L + s^3 \left(C_4 L_4 R_4 R_L + 2C_4 R_4 R_L\right) + s \left(L_4 R_4 R_L + 2C_4 R_4 R_L\right)}$$

10.60 INVALID-ORDER-60
$$Z(s) = \left(\infty, \infty, \infty, \frac{C_4 L_4 R_4 s^2 + L_4 s + R_4}{C_4 L_4 s^2 + 1}, \infty, \frac{1}{C_{Ls}}\right)$$

$$H(s) = \frac{C_4 L_4 R_4 s^2 + L_4 s + R_4}{C_4 C_L L_4 R_4 s^3 + C_L R_4 s + s^2 \left(2C_4 L_4 + C_L L_4\right) + 2}$$

10.61 INVALID-ORDER-61
$$Z(s) = \left(\infty, \infty, \infty, \frac{C_4 L_4 R_4 s^2 + L_4 s + R_4}{C_4 L_4 s^2 + 1}, \infty, \frac{R_L}{C_L R_L s + 1}\right)$$

$$H(s) = \frac{C_4 L_4 R_4 R_L s^2 + L_4 R_L s + R_4 R_L}{C_4 C_L L_4 R_4 R_L s^3 + R_4 + 2R_L + s^2 \left(C_4 L_4 R_4 + 2C_4 L_4 R_L + C_L L_4 R_L \right) + s \left(C_L R_4 R_L + L_4 \right)}$$

10.62 INVALID-ORDER-62
$$Z(s) = \left(\infty, \infty, \infty, \frac{C_4L_4R_4s^2 + L_4s + R_4}{C_4L_4s^2 + 1}, \infty, R_L + \frac{1}{C_Ls}\right)$$

$$H(s) = \frac{C_4 C_L L_4 R_4 R_L s^3 + R_4 + s^2 \left(C_4 L_4 R_4 + C_L L_4 R_L \right) + s \left(C_L R_4 R_L + L_4 \right)}{s^3 \left(C_4 C_L L_4 R_4 + 2 C_4 C_L L_4 R_L \right) + s^2 \left(2 C_4 L_4 + C_L L_4 \right) + s \left(C_L R_4 + 2 C_L R_L \right) + 2}$$

10.63 INVALID-ORDER-63
$$Z(s) = \left(\infty, \infty, \infty, \frac{C_4L_4R_4s^2 + L_4s + R_4}{C_4L_4s^2 + 1}, \infty, L_Ls + \frac{1}{C_{Ls}}\right)$$

$$H(s) = \frac{C_4 C_L L_4 L_L R_4 s^4 + C_L L_4 L_L s^3 + L_4 s + R_4 + s^2 \left(C_4 L_4 R_4 + C_L L_L R_4 \right)}{2 C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_4 s^3 + C_L R_4 s + s^2 \left(2 C_4 L_4 + C_L L_4 + 2 C_L L_L \right) + 2}$$

10.64 INVALID-ORDER-64
$$Z(s) = \left(\infty, \infty, \infty, \frac{C_4L_4R_4s^2 + L_4s + R_4}{C_4L_4s^2 + 1}, \infty, \frac{L_Ls}{C_LL_Ls^2 + 1}\right)$$

$$H(s) = \frac{C_4 L_4 L_L R_4 s^3 + L_4 L_L s^2 + L_L R_4 s}{C_4 C_L L_4 L_L R_4 s^4 + R_4 + s^3 \left(2 C_4 L_4 L_L + C_L L_4 L_L\right) + s^2 \left(C_4 L_4 R_4 + C_L L_L R_4\right) + s \left(L_4 + 2 L_L\right)}$$

10.65 INVALID-ORDER-65
$$Z(s) = \left(\infty, \infty, \infty, \frac{C_4L_4R_4s^2 + L_4s + R_4}{C_4L_4s^2 + 1}, \infty, L_Ls + R_L + \frac{1}{C_Ls}\right)$$

$$H(s) = \frac{C_4 C_L L_4 L_L R_4 s^4 + R_4 + s^3 \left(C_4 C_L L_4 R_4 R_L + C_L L_4 L_L\right) + s^2 \left(C_4 L_4 R_4 + C_L L_4 R_L + C_L L_L R_4\right) + s \left(C_L R_4 R_L + L_4\right)}{2 C_4 C_L L_4 L_L s^4 + s^3 \left(C_4 C_L L_4 R_4 + 2 C_4 C_L L_4 R_L\right) + s^2 \left(2 C_4 L_4 + C_L L_4 + 2 C_L L_L\right) + s \left(C_L R_4 + 2 C_L R_L\right) + 2 C_L R_4 + C_$$

10.66 INVALID-ORDER-66
$$Z(s) = \left(\infty, \infty, \infty, \frac{C_4L_4R_4s^2 + L_4s + R_4}{C_4L_4s^2 + 1}, \infty, \frac{L_LR_Ls}{C_LL_LR_Ls^2 + L_Ls + R_L}\right)$$

$$H(s) = \frac{C_4 L_4 L_L R_4 R_L s^3 + L_4 L_L R_2 s^2 + L_L R_4 R_L s}{C_4 C_L L_4 L_L R_4 R_L s^4 + R_4 R_L + s^3 \left(C_4 L_4 L_L R_4 + 2 C_4 L_4 L_L R_L + C_L L_4 L_L R_L \right) + s^2 \left(C_4 L_4 R_4 R_L + C_L L_L R_4 R_L + L_4 L_L \right) + s \left(L_4 R_L + L_L R_4 + 2 L_L R_L \right)}$$

10.67 INVALID-ORDER-67
$$Z(s) = \left(\infty, \infty, \infty, \frac{C_4L_4R_4s^2 + L_4s + R_4}{C_4L_4s^2 + 1}, \infty, \frac{C_LL_LR_Ls^2 + L_Ls + R_L}{C_LL_Ls^2 + 1}\right)$$

$$H(s) = \frac{C_4 C_L L_4 L_L R_4 R_L s^4 + R_4 R_L + s^3 \left(C_4 L_4 L_L R_4 + C_L L_4 L_L R_L\right) + s^2 \left(C_4 L_4 R_4 R_L + C_L L_L R_4 R_L + L_4 L_L\right) + s \left(L_4 R_L + L_L R_4\right)}{R_4 + 2 R_L + s^4 \left(C_4 C_L L_4 L_L R_4 + 2 C_4 L_4 L_L R_L\right) + s^3 \left(2 C_4 L_4 L_L + C_L L_4 L_L\right) + s^2 \left(C_4 L_4 R_4 + 2 C_4 L_4 R_L + C_L L_L R_4 + 2 C_L L_L R_L\right) + s \left(L_4 R_L + L_L R_4\right)}$$

10.68 INVALID-ORDER-68
$$Z(s) = \left(\infty, \infty, \infty, \frac{C_4L_4R_4s^2 + L_4s + R_4}{C_4L_4s^2 + 1}, \infty, \frac{R_L(C_LL_Ls^2 + 1)}{C_LL_Ls^2 + C_LR_Ls + 1}\right)$$

$$H(s) = \frac{C_4C_LL_4L_LR_4R_Ls^4 + C_LL_4L_LR_2s^3 + L_4R_Ls + R_4R_L + s^2\left(C_4L_4R_4R_L + C_LL_LR_4R_L\right)}{R_4 + 2R_L + s^4\left(C_4C_LL_4L_LR_4 + 2C_4C_LL_4L_LR_L\right) + s^3\left(C_4C_LL_4R_4R_L + C_LL_4L_L\right) + s^2\left(C_4L_4R_4 + 2C_4L_4R_L + C_LL_4R_L + C_LL_4R_L\right) + s\left(C_LR_4R_L + L_4R_L\right)}$$

10.69 INVALID-ORDER-69
$$Z(s) = \left(\infty, \infty, \infty, \frac{R_4(C_4L_4s^2+1)}{C_4L_4s^2+C_4R_4s+1}, \infty, \frac{1}{C_Ls}\right)$$

$$H(s) = \frac{C_4 L_4 R_4 s^2 + R_4}{C_4 C_L L_4 R_4 s^3 + 2C_4 L_4 s^2 + s (2C_4 R_4 + C_L R_4) + 2}$$

10.70 INVALID-ORDER-70
$$Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{R_4\left(C_4L_4s^2+1\right)}{C_4L_4s^2+C_4R_4s+1}, \ \infty, \ \frac{R_L}{C_LR_Ls+1}\right)$$

$$H(s) = \frac{C_4L_4R_4R_Ls^2 + R_4R_L}{C_4C_LL_4R_4R_Ls^3 + R_4 + 2R_L + s^2\left(C_4L_4R_4 + 2C_4L_4R_L\right) + s\left(2C_4R_4R_L + C_LR_4R_L\right)}$$

10.71 INVALID-ORDER-71
$$Z(s) = \left(\infty, \infty, \infty, \frac{R_4(C_4L_4s^2+1)}{C_4L_4s^2+C_4R_4s+1}, \infty, R_L + \frac{1}{C_Ls}\right)$$

$$H(s) = \frac{C_4 C_L L_4 R_4 R_L s^3 + C_4 L_4 R_4 s^2 + C_L R_4 R_L s + R_4}{s^3 \left(C_4 C_L L_4 R_4 + 2 C_4 C_L L_4 R_L \right) + s^2 \left(2 C_4 C_L R_4 R_L + 2 C_4 L_4 \right) + s \left(2 C_4 R_4 + C_L R_4 + 2 C_L R_L \right) + 2}$$

10.72 INVALID-ORDER-72
$$Z(s) = \left(\infty, \infty, \infty, \frac{R_4(C_4L_4s^2+1)}{C_4L_4s^2+C_4R_4s+1}, \infty, L_Ls + \frac{1}{C_Ls}\right)$$

$$H(s) = \frac{C_4 C_L L_4 L_L R_4 s^4 + R_4 + s^2 \left(C_4 L_4 R_4 + C_L L_L R_4 \right)}{2 C_4 C_L L_4 L_L s^4 + s^3 \left(C_4 C_L L_4 R_4 + 2 C_4 C_L L_L R_4 \right) + s^2 \left(2 C_4 L_4 + 2 C_L L_L \right) + s \left(2 C_4 R_4 + C_L R_4 \right) + 2}$$

10.73 INVALID-ORDER-73
$$Z(s) = \left(\infty, \infty, \infty, \frac{R_4(C_4L_4s^2+1)}{C_4L_4s^2+C_4R_4s+1}, \infty, \frac{L_Ls}{C_LL_Ls^2+1}\right)$$

$$H(s) = \frac{C_4 L_4 L_L R_4 s^3 + L_L R_4 s}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 L_4 L_L s^3 + 2L_L s + R_4 + s^2 \left(C_4 L_4 R_4 + 2C_4 L_L R_4 + C_L L_L R_4\right)}$$

10.74 INVALID-ORDER-74
$$Z(s) = \left(\infty, \infty, \infty, \frac{R_4(C_4L_4s^2+1)}{C_4L_4s^2+C_4R_4s+1}, \infty, L_Ls + R_L + \frac{1}{C_Ls}\right)$$

$$H(s) = \frac{C_4C_LL_4L_LR_4s^4 + C_4C_LL_4R_4R_Ls^3 + C_LR_4R_Ls + R_4 + s^2\left(C_4L_4R_4 + C_LL_LR_4\right)}{2C_4C_LL_4L_Ls^4 + s^3\left(C_4C_LL_4R_4 + 2C_4C_LL_4R_L + 2C_4C_LL_LR_4\right) + s^2\left(2C_4C_LR_4R_L + 2C_4L_4 + 2C_LL_L\right) + s\left(2C_4R_4 + C_LR_4 + 2C_LR_L\right) + 2C_4C_LR_4R_4 + C_4C_LR_4 + C_4C_LR_4\right)}$$

10.75 INVALID-ORDER-75
$$Z(s) = \left(\infty, \infty, \infty, \frac{R_4(C_4L_4s^2+1)}{C_4L_4s^2+C_4R_4s+1}, \infty, \frac{L_LR_Ls}{C_LL_LR_Ls^2+L_Ls+R_L}\right)$$

$$H(s) = \frac{C_4 L_4 L_L R_4 R_L s^3 + L_L R_4 R_L s}{C_4 C_L L_4 L_L R_4 R_L s^4 + R_4 R_L + s^3 \left(C_4 L_4 L_L R_4 + 2 C_4 L_4 L_L R_L \right) + s^2 \left(C_4 L_4 R_4 R_L + 2 C_4 L_L R_4 R_L + C_L L_L R_4 R_L \right) + s \left(L_L R_4 + 2 L_L R_L \right)}$$

10.76 INVALID-ORDER-76
$$Z(s) = \left(\infty, \infty, \infty, \frac{R_4(C_4L_4s^2+1)}{C_4L_4s^2+C_4R_4s+1}, \infty, \frac{C_LL_LR_Ls^2+L_Ls+R_L}{C_LL_Ls^2+1}\right)$$

$$H(s) = \frac{C_4C_LL_4L_LR_4R_Ls^4 + C_4L_4L_LR_4s^3 + L_LR_4s + R_4R_L + s^2\left(C_4L_4R_4R_L + C_LL_LR_4R_L\right)}{R_4 + 2R_L + s^4\left(C_4C_LL_4L_LR_4 + 2C_4L_4L_LR_4\right) + s^3\left(2C_4C_LL_LR_4R_L + 2C_4L_4L_L\right) + s^2\left(C_4L_4R_4 + 2C_4L_4R_4 + 2C_4L_LR_4 + 2C_LL_LR_4\right) + s\left(2C_4R_4R_L + 2L_LR_4\right) + s\left(2C_4R_4R_L + 2C_4L_4R_4 + 2C_4L_4R_4 + 2C_4L_4R_4 + 2C_4L_4R_4\right) + s\left(2C_4R_4R_4 + 2C_4L_4R_4 + 2C_4L_4R_4 + 2C_4L_4R_4 + 2C_4L_4R_4\right) + s\left(2C_4R_4R_4 + 2C_4L_4R_4 + 2C_4L_4R_4 + 2C_4L_4R_4\right) + s\left(2C_4R_4R_4 + 2C_4L_4R_4 + 2C_4L_4R_4\right) + s\left(2C_4R_4R_4 + 2C_4L_4R_4 + 2C_4L_4R_4\right) + s\left(2C_4R_4R_4 + 2C_4R_4R_4\right) + s\left(2C_4R_4R_4 + 2$$

10.77 INVALID-ORDER-77
$$Z(s) = \left(\infty, \infty, \infty, \frac{R_4\left(C_4L_4s^2+1\right)}{C_4L_4s^2+C_4R_4s+1}, \infty, \frac{R_L\left(C_LL_Ls^2+1\right)}{C_LL_Ls^2+C_LR_Ls+1}\right)$$

$$H(s) = \frac{C_4 C_L L_4 L_L R_4 R_L s^4 + R_4 R_L + s^2 \left(C_4 L_4 R_4 R_L + C_L L_L R_4 R_L\right)}{R_4 + 2 R_L + s^4 \left(C_4 C_L L_4 L_L R_4 + 2 C_4 C_L L_4 L_L R_L\right) + s^3 \left(C_4 C_L L_4 R_4 R_L + 2 C_4 C_L L_L R_4 R_L\right) + s^2 \left(C_4 L_4 R_4 + 2 C_4 L_4 R_L + C_L L_L R_4 + 2 C_L L_L R_L\right) + s \left(2 C_4 R_4 R_L + C_L R_4 R_L\right)}$$

11 PolynomialError