# Generated by MacAnalog-Symbolix December 5, 2024

## $\textbf{1} \quad \textbf{Examined} \quad H(z) \text{ for TIA full parasitic Z5 ZL:} \quad \frac{Z_L(C_{gds} - g_m)(Z_5 g_m r_o + Z_5 - r_o)}{C_{qd}^2 C_{gs} Z_5 Z_L r_o^2 s^3 + C_{qd}^2 Z_5 Z_L r_o s^2 + C_{gd}^2 Z_5 Z_L r_o s^2 + C_{gd}^2$ 8 INVALID-NUMER 9 INVALID-WZ 33333 $\left(\infty,\,\infty,\,\infty,\,\infty,\,rac{1}{C_{r}s},\,R_L ight)$ 34 4 $10.25 \text{INVALID-ORDER-} 25 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ \infty, \ \frac{R_5}{C_2 R_2 c_2 + 1}, \ L_L s + \frac{1}{C_2 c_2}\right) \ \dots$ $10.27 \text{INVALID-ORDER-} 27 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ \infty, \ \frac{R_5}{C_5 R_5 s + 1}, \ L_L s + R_L + \frac{1}{C_L s}\right) \qquad \dots \qquad 4$ 4 $10.34 \text{INVALID-ORDER-} 34 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ \infty, \ R_5 + \frac{1}{C_{5}s}, \ R_L + \frac{1}{C_{L}s}\right) \ \dots$ 5 $10.42 \text{INVALID-ORDER-} 42 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ \infty, \ L_5 s + \frac{1}{C_{r,s}}, \ \frac{1}{C_{r,s}}\right) \ \dots$ 5 $10.45 \text{INVALID-ORDER-} 45 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ \infty, \ L_5 s + \frac{1}{C_{r,s}}, \ L_L s + \frac{1}{C_{r,s}}\right) \ \dots$ $10.46 \text{INVALID-ORDER-} 46 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ \infty, \ \sum_{L_5 s}, \ \frac{L_L s}{C_L L_L s^2 + 1}\right)$ $ar{b}$ $10.55 \text{INVALID-ORDER-} 55 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ \infty, \ \frac{L_5 s}{C_r L_c s^2 + 1}, \ L_L s + \frac{1}{C_r s}\right)$ $10.56 \text{INVALID-ORDER-} 56 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ \infty, \ \frac{L_5 s}{C_5 L_5 s^2 + 1}, \ \frac{L_L s}{C_L L_L s^2 + 1}\right) \ \dots$

 $10.57 \text{INVALID-ORDER-57 } Z(s) = \left(\infty, \ \infty, \ \infty, \ \infty, \ \frac{L_5 s}{C_{\kappa} L_{\kappa} s^2 + 1}, \ L_L s + R_L + \frac{1}{C_T s}\right)$ 

 $10.58 \text{INVALID-ORDER-} 58 \ Z(s) = \left(\infty, \ \infty, \ \infty, \ \infty, \ \frac{L_5 s}{C_5 L_5 s^2 + 1}, \ \frac{1}{C_L s + \frac{1}{R_r} + \frac{1}{L_r s}}\right) \ \dots$ 

0.59INVALID-ORDER-59 $Z(s) = \left( \frac{1}{2} \right)$	, $\infty$ , $\infty$ , $\frac{L_5s}{C_5L_5211}$ , $\frac{L_Ls}{C_5L_5211}$ + $R_L$ )
0.601NVALID ORDER 60.7(c) = 0.0000000000000000000000000000000000	$L_{5S}$ $R_L \left(L_L s + rac{1}{C_L s} ight)$
$0.00111 \text{VALID-ORDER-00 } Z(s) = \begin{pmatrix} 0.01111 & 0.01111 & 0.0111 &$	$C_{0}, \infty, \infty, \infty, \frac{C_{0}L_{5}s^{2}+1}{L_{L}s+R_{L}+\frac{1}{C_{L}s}} \bigg)$
$0.611\text{NVALID-ORDER-}61 \ Z(s) = \left( \begin{array}{c} \\ \\ \end{array} \right)$	$1, \infty, \infty, L_5s + R_5 + \frac{1}{C_5s}, R_L$
0.62INVALID-ORDER-62 $Z(s) = \left( 0.63INVALID-ORDER-63 \ Z(s) = \left( 0.63INVALID-ORDER-63 \ Z(s) \right) \right)$	$1, \infty, \infty, L_5s + R_5 + \frac{1}{\bar{C_5}s}, \frac{1}{\bar{C_L}s} $
0.64INVALID-ORDER-64 $Z(s) = (0.64INVALID-ORDER-64   Z(s) = ($	$egin{array}{cccccccccccccccccccccccccccccccccccc$
0.65INVALID-ORDER-65 $Z(s) = \left(\frac{1}{2}\right)^{1/2}$	$egin{array}{cccccccccccccccccccccccccccccccccccc$
0.66INVALID-ORDER-66 $Z(s) = \left( \begin{array}{c} 0.66INVALID-ORDER-66 & Z(s) \end{array} \right)$	$1, \infty, \infty, L_5s + R_5 + \frac{1}{C_5s}, L_Ls + \frac{1}{C_Ls}$ $\dots$
0.67INVALID-ORDER-67 $Z(s) = ($	$\mathcal{L}_{5}^{s}$ , $\mathcal{L}_{5}^{s}$ , $\mathcal{L}_{L}^{s}$
0.68INVALID-ORDER-68 $Z(s) = \left( \begin{array}{c} \\ \\ \end{array} \right)$	$C_5s,  C_5s,  C_5s$
0.69INVALID-ORDER-69 $Z(s) = \left(\frac{1}{2}\right)^{n}$	$C_{5}s \cdot C_{L}s + \frac{1}{R_{L}} + \frac{1}{L_{L}s} \int$
( )	$1 - R_L \left(L_L s + \frac{1}{C_L s}, \frac{R_L \left(L_L s + \frac{1}{C_L s}\right)}{R_L \left(L_L s + \frac{1}{C_L s}\right)}\right)$
0.70INVALID-ORDER-70 $Z(s) = \left( \frac{1}{2} \right)$	$(0, \infty, \infty, L_5s + R_5 + \frac{1}{C_5s}, \frac{-L_5s + R_5 + \frac{1}{C_Ls}}{L_s + R_L + \frac{1}{C_Ls}})$
0.71INVALID-ORDER-71 $Z(s) = \left( \right.$	$c_{0}, \; \infty, \; \infty, \; rac{1}{C_{5}s+rac{1}{R_{5}}+rac{1}{L_{5}s}}, \; R_{L} igg) \;\; \ldots \; \ldots \;$
0.72INVALID-ORDER-72 $Z(s) = \left( \right.$	$c_{c,s} \propto \infty, \; \frac{1}{C_5 s + \frac{1}{R_5} + \frac{1}{L_5 s}}, \; \frac{1}{C_L s} $
0.73INVALID-ORDER-73 $Z(s) = \left(\begin{array}{c} \\ \end{array}\right)$	$(x, \infty, \infty, \frac{1}{C_1 \otimes 1 + 1 + 1}, \frac{R_L}{C_R R_1 \otimes 1})$
0.74INVALID-ORDER- $74.Z(s) = 0.74$	$\sim \sim \frac{1}{R_s + \frac{1}{L_s}}$
STANISH ORDER TO SEC.	$c_{0}, \infty, \infty, \frac{1}{C_{5}s+\frac{1}{R_{5}}+\frac{1}{L_{5}s}}, \kappa_{L}+\frac{1}{C_{L}s}$
0.75INVALID-ORDER-75 $Z(s) = \left\langle \right\rangle$	$C_{0}, \infty, \infty, \frac{1}{C_{0}s+\frac{1}{R_{0}}+\frac{1}{L_{0}s}}, L_{L}s+\frac{1}{C_{L}s}$
0.76INVALID-ORDER-76 $Z(s) = \left( \right.$	$c_{c,s} \propto 1$ $c_{c,s} \sim 1$
0.77INVALID-ORDER-77 $Z(s) = \left( \right.$	$C_{0},\;\infty,\;\infty,\;rac{1}{C_{5}s+rac{1}{L_{5}s}},\;L_{L}s+R_{L}+rac{1}{C_{L}s} $
0.78INVALID-ORDER-78 $Z(s) = $	$0, \infty, \infty, \frac{1}{C_r s + \frac{1}{r} + \frac{1}{r}}, \frac{1}{C_r s + \frac{1}{r} + \frac{1}{r}} $
0.79INVALID-ORDER- $79 Z(s) = 0$	$(x), \infty, \infty, \frac{1}{C - 1}, \frac{L_L s}{1 + 1}, \frac{L_L s}{C - L_L - 2 + 1} + R_L)$
	$C_5s+rac{1}{R_5}+rac{1}{C_5s},  C_LL_Ls^2+1+14L igg)$
0.80INVALID-ORDER-80 $Z(s) = $	$C_{5}, \infty, \infty, \frac{1}{C_{5}s+\frac{1}{R_{5}}+\frac{1}{L_{5}s}}, \frac{1}{L_{L}s+R_{L}+\frac{1}{C_{L}s}} $
0.81INVALID-ORDER-81 $Z(s) = ($	$1, \infty, \infty, \frac{L_5s}{C_5L_5s^2+1} + R_5, R_L $
0.82INVALID-ORDER-82 $Z(s) = \left(\begin{array}{c} 0.82INVALID-ORDER-82 & Z(s) \end{array}\right)$	$egin{array}{c} egin{array}{c} \egin{array}{c} \egin{array}{c} \egin{array}{c} \egin{array}$
$0.83111 \text{ VALID-ORDER-83 } Z(s) = \left( \frac{1}{2} \right) = \left( \frac{1}{2$	$(1, \infty)$ , $\infty$ , $(1, \infty)$ , $(1,$
0.85INVALID-ORDER-85 $Z(s) = ($	$egin{array}{cccccccccccccccccccccccccccccccccccc$
0.86INVALID-ORDER-86 $Z(s) = ($	$egin{array}{cccccccccccccccccccccccccccccccccccc$
0.87INVALID-ORDER-87 $Z(s) = \left( \begin{array}{c} \\ \end{array} \right)$	$\mathcal{L}_{SL_{S}}^{SL_{S}} = \mathcal{L}_{SL_{S}}^{SL_{S}} + \mathcal{L}_{SL_{S}}^{SL_{$
0.88INVALID-ORDER-88 $Z(s) = 0$	$0, \infty, \infty, \frac{L_5s}{C_7L_7s^2+1} + R_5, \frac{1}{C_7s^2+1} + R_5, \frac{1}{C_7s^2+1} + R_5$
0.89INVALID-ORDER-89 $Z(s) = \left( \begin{array}{c} 1 \\ 1 \\ 1 \end{array} \right)$	$0 \le L_s \le R_L + R_L \le L_s \le R_L + R_L \le L_s \le R_L \le $
$0.901NVALID_{ORDER_{2}}$	$L_{5S}$ $L_{5S}$ $L_{7}$ $R_{L}$ $\left(L_{LS}+rac{1}{C_{L^{S}}} ight)$
$\frac{1}{2} \frac{1}{2} \frac{1}$	$R_{5}\left(L_{5}R_{5}+rac{1}{C_{5}} ight)$
0.91INVALID-ORDER-91 $Z(s) = \left(\frac{1}{2}\right)$	$L_{0}, \infty, \infty, \frac{\frac{e^{-\sqrt{c_5s_5}}}{L_{5s}+R_5+\frac{1}{C_5s}}}{\frac{e^{-\sqrt{c_5s_5}}}{L_{5s}+R_5+\frac{1}{C_5s}}}, R_L$
0.92INVALID-ORDER-92 $Z(s) = \left( \right.$	$(x, \infty, \infty, \infty, \frac{R_5\left(L_5 s + \frac{1}{C_5 s}\right)}{L_5 s + R_5 + \frac{1}{C_5 s}}, \frac{1}{C_L s})$
0.93INVALID-ORDER-93 $Z(s) = 0$	$(x), \infty, \infty, \frac{R_5\left(L_5s+rac{1}{C_5s} ight)}{L_7s+R_7+rac{1}{L_7}}, \frac{R_L}{C_1R_1s+1}  ight) \ldots \ldots$
) 94INV4LID_ORDER_94_Z(s) = (	$\sim \sum_{s=0}^{\infty} \frac{R_5 \left(L_5 s + \frac{1}{C_5 s}\right)}{R_5 \left(L_5 s + \frac{1}{C_5 s}\right)} R_5 + \frac{1}{C_5 s}$
$\frac{1}{2} \frac{1}{2} \frac{1}$	$\frac{1}{C_5s+R_5+rac{1}{C_5s}}, \; R_L+rac{1}{C_Ls}$
0.95INVALID-ORDER-95 $Z(s) = \left(\frac{1}{2}\right)$	$C_{C_{C_{C_{C_{C_{C_{C_{C_{C_{C_{C_{C_{C$
0.96INVALID-ORDER-96 $Z(s) = \left( \right.$	$(x), \; \infty, \; \infty, \; rac{R_5\left(L_5 s + rac{1}{C_5 s} ight)}{L_5 s + R_5 + rac{1}{C_5 s}}, \; rac{L_L s}{C_L L_L s^2 + 1}  ight) \; \; \ldots $
).97INVALID-ORDER-97 $Z(s) = \left(\begin{array}{c} \\ \end{array}\right)$	$(x), \; \infty, \; \infty, \; \frac{R_5\left(L_5s+rac{1}{C_5s} ight)}{L_5s+R_5+rac{1}{C_1s}}, \; L_Ls+R_L+rac{1}{C_Ls} ight) \; \ldots \; $
O OSINVALID-ORDER OF Z(a) =	$R_5\left(L_5s+rac{1}{C_5s} ight) \qquad \qquad 1$
	$R_5\left(L_5s+rac{R_5\left(L_5s+rac{1}{C_5s} ight)}{L_5c_5}, rac{1}{C_Ls+rac{1}{L_Ls}} ight)$
`	$(x_1, x_2, x_3, x_4, x_5, x_5, x_5, x_5, x_5, x_5, x_5, x_5$
0.100NVALID-ORDER- $100~Z(s) =$	$\infty, \; \infty, \; \infty, \; rac{R_5 \left(L_5 s + rac{1}{C_5 s} ight)}{L_5 s + R_5 + rac{1}{C_5 s}}, \; rac{R_L \left(L_L s + rac{1}{C_L s} ight)}{L_L s + R_L + rac{1}{C_L s}} ight) \; . \;$

$\textbf{1}  \textbf{Examined}  H(z)  \textbf{for}  \textbf{TIA}  \textbf{full}  \textbf{parasitic}  \textbf{Z5}  \textbf{ZL:}  \frac{Z_L(C_gds-g_m)(Z_5g_mr_o+Z_5-r_o)}{C_{qd}^2C_gs}Z_5Z_Lr_os^2+C_{gd}Z_Lr_os^2+C_{gd}Z_Lr_os^2+C_{gd}Z_Lr_os^2+C_{gd}Z_Lr_os^2+C_{gd}Z_Lr_os^2+C_{gd}Z_Lr_os^2+C_{gd}Z_Lr_os^2+C_{gd}Z_Lr_os^2+C_{gd}Z_L$	
$H(z) = \frac{Z_L\left(C_{gd}s - g_m\right)\left(Z_5g_mr_o + Z_5 - r_o\right)}{C_{gd}^2C_{gs}Z_5Z_Lr_o^2s^3 + C_{gd}^2Z_5Z_Lr_os^2 + C_{gd}Z_5Z_Lr_os^2 + C_$	
f 2 HP	
3 BP	
$4 \mathrm{LP}$	
f 5 BS	
$6\mathbf{GE}$	
7 AP	
8 INVALID-NUMER	
9  INVALID-WZ	
10 INVALID-ORDER	
$ 10.1  \text{INVALID-ORDER-1} \ Z(s) = (\infty, \ \infty, \ \infty, \ \infty, \ R_5, \ R_L) $	
$H(s) = \frac{R_L \left( C_{gd}s - g_m \right) \left( R_5 g_m r_o + R_5 - r_o \right)}{C_{gd}^2 C_{gs} R_5 R_L r_o^2 s^3 + C_{gd}^2 R_5 R_L r_o^2 s^2 + C_{gd} C_{gs} R_5 r_o^2 s^2 + C_{gd} C_{gs} R_5 r_o^2 s^2 + C_{gd} C_{gs} R_5 r_o^2 s^2 + C_{gd} R_5 g_m r_o^2 s $	
10.2 INVALID-ORDER-2 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \infty, \ R_5, \ \frac{1}{C_L s}\right)$	
$H(s) = \frac{(C_{gd}s - g_m)\left(R_{5}g_mr_o + R_{5} - r_o\right)}{C_{L}C_{gd}C_{gs}R_{5}r_o^2s^3 + C_{L}C_{gd}R_{5}g_mr_os^2 + C_{L}C_{gd}R_{5}g_mr_os^$	
$\textbf{10.3}  \textbf{INVALID-ORDER-3}  Z(s) = \left(\infty,  \infty,  \infty,  \infty,  \infty,  \infty,  \frac{R_L}{C_L R_L s + 1}\right)$	
$H(s) = \frac{R_L \left( C_{gd} s - g_m \right) \left( R_5 g_m r_o + R_5 - r_o \right)}{C_L C_{gd} C_{gs} R_5 R_L r_o^2 s^3 + C_L C_{gd} R_5 R_L r_o^2 s^2 + 2 C_L C_{gd} R_5 R_L r_o^2 s^$	$\zeta_L g_m r_o s + 2$
$\textbf{10.4}  \textbf{INVALID-ORDER-4}  Z(s) = \left( \infty,  \infty,  \infty,  \infty,  \infty,  R_5,  R_L + \frac{1}{C_L s} \right)$	
$H(s) = \frac{\left(C_{gd}s - g_{m}\right)\left(C_{L}R_{L}s + 1\right)\left(R_{5}g_{m}r_{o} + R_{5} - r_{o}\right)}{C_{L}C_{gd}^{2}C_{gs}R_{5}R_{L}r_{o}^{2}s^{4} + C_{L}C_{gd}^{2}R_{5}R_{L}r_{o}s^{3} + C_{L}C_{gd}R_{5}r_{o}s^{2} + C_{L}C_{gd}R_{5}r_$	$\overline{C_{gs}R_Ls^2 -}$
10.5 INVALID-ORDER-5 $Z(s) = \left(\infty,  \infty,  \infty,  \infty,  \infty,  R_5,  L_L s + \frac{1}{C_L s} \right)$	
$H(s) = \frac{(C_{gd}s - g_{m})\left(C_{L}L_{s}^{2} + 1\right)\left(R_{5}g_{m}r_{o} + R_{5} - r_{o}\right)}{C_{L}C_{gd}^{2}C_{gs}L_{L}R_{5}r_{o}^{2}s^{5} + C_{L}C_{gd}^{2}L_{L}R_{5}r_{o}s^{4} + C_{L}C_{gd}C_{gs}L_{L}R_{5}r_{o}s^{4} + C_{L}C_{gd}C_{gs}L_{L}R_{5}r_{o}s$	$R_5s^2 - 2C$
10.6 INVALID-ORDER-6 $Z(s) = \left(\infty, \infty, \infty, \infty, R_5, \frac{L_L s}{C_L L_L s^2 + 1}\right)$	
$L_{LS}\left(C_{gd}s-g_{m}\right)\left(R_{5}g_{m}r_{o}+R_{5}-r_{o}\right) \\ = \frac{L_{LS}\left(C_{gd}s-g_{m}\right)\left(R_{5}g_{m}r_{o}+R_{5}-r_{o}\right)}{C_{L}C_{gd}C_{gs}L_{L}R_{5}r_{o}^{2}s^{4}+C_{L}C_{gd}L_{L}R_{5}g_{m}r_{o}^{2}s^{3}+2C_{L}C_{gd}L_{L}R_{5}g_{m}r_{o}s^{3}+C_{L}C_{gd}L_{L}R_{5}g_{m}r_{o$	$2C_{gd}R_5g_m$
10.7 INVALID-ORDER-7 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \infty, \ \infty, \ R_5, \ L_L s + R_L + \frac{1}{C_L s}\right)$	
$H(s) = \frac{1}{C_L C_{gd}^2 C_{gs} L_L R_5 r_o^2 s^5 + C_L C_{gd}^2 C_{gs} R_5 R_L r_o^2 s^4 + C_L C_{gd}^2 C_{gs}^2 R_5 R_L r_o^2 s^4 + C_L C_{gd}^2$	$\overline{{}_{jd}R_5R_Lg_mr}$
10.8 INVALID-ORDER-8 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \infty, \ \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}}\right)$	
$H(s) = \frac{L_L R_L s \left( C_{gg} C_{gs} L_L R_5 R_L r_o^2 s^4 + C_L C_{gd} L_L R_5 R_L r_o s^3 + C_L $	$\frac{s - g_m) \left(R_5 R_L g_m r_o\right)}{R_5 R_L g_m r_o}$
10.9 INVALID-ORDER-9 $Z(s) = \left(\infty,  \infty,  \infty,  \infty,  R_5,  rac{L_L s}{C_L L_L s^2 + 1} + R_L ight)$	
$H(s) = \frac{1}{C_L C_{gd}^2 C_{gs} L_L R_5 R_L r_o^2 s^5 + C_L C_{gd}^2 L_L R_5 R_L r_o s^4 + C_L C_{gd} L_L R_5 r_o s^4 + C_L C_{gd}$	$L_L R_5 r_o s^3 +$
10.10 INVALID-ORDER-10 $Z(s) = \left(\infty,  \infty,  \infty,  \infty,  R_5,  \frac{R_L\left(L_L s + \frac{1}{C_L s}\right)}{L_L s + R_L + \frac{1}{C_L s}}\right)$	
$H(s) = \frac{1}{C_L C_{gd}^2 C_{gs} L_L R_5 R_L r_o^2 s^5 + C_L C_{gd}^2 L_L R_5 R_L r_o s^4 + C_L C_{gd}^2 C_{gs} L_L R_5 R_L r_o s^4 + C_L C_{gd}^2 C_{gs} L_L R_5 R_L r_o s^4 + C_L C_{gd}^2 C_{gs} L_L R_5 R_L r_o s^4 + C_L C_{gd}^2 C_{gs} L_L R_5 R_L r_o s^4 + C_L C_{gd}^2 L_L R_5 R_L r_o s^4 + C_L C_{gd}^2 C_{gs}^2 L_L R_5 R_L r_o s^4 + C_L C_{gd}^2 C_{gs}^2 L_L R_5 R_L r_o s^4 + C_L C_{gd}^2 C_{gs}^2 L_L R_5 R_L r_o s^4 + C_L C_{gd}^2 C_{gs}^2 L_L R_5 R_L r_o s^4 + C_L C_{gd}^2 C_{gs}^2 L_L R_5 R_L r_o s^4 + C_L C_{gd}^2 C_{gs}^2 L_L R_5 R_L r_o s^4 + C_L C_{gd}^2 C_{gs}^2 L_L R_5 R_L r_o s^4 + C_L C_{gd}^2 C_{gs}^2 L_L R_5 R_L r_o s^4 + C_L C_{gd}^2 C_{gs}^2 L_L R_5 R_L r_o s^4 + C_L C_{gd}^2 C_{gs}^2 L_L R_5 R_L r_o s^4 + C_L C_{gd}^2 C_{gs}^2 L_L R_5 R_L r_o s^4 + C_L C_{gd}^2 C_{gs}^2 L_L R_5 R_L r_o s^4 + C_L $	$2 \overline{R_L g_m r_o s^2}$
10.11 INVALID-ORDER-11 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \infty, \ \frac{1}{C_5 s}, \ R_L\right)$	
$H(s) = \frac{R_L \left( C_{gd}s - g_m \right) \left( -C_5 r_o s + g_m r_o + 1 \right)}{3C_5 C_{gd}^2 R_L r_o s^3 + 2C_5 C_{gd} C_{gs} R_L r_o s^2 + 2C_5 C_{gd} R_L g_m r_o s^2 $	
$\textbf{10.12}  \textbf{INVALID-ORDER-12} \ Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{1}{C_5 s}, \ \frac{1}{C_L s}\right)$	
$H(s) = \frac{\left(C_{gd}s - g_m\right)\left(-C_5r_os + g_mr_o + 1\right)}{s\left(C_5C_LC_{gd}r_os^2 - C_5C_Lg_mr_os + 3C_5C_{gd}^2r_os^2 + 2C_5C_{gd}G_gsr_o^2s^2 + C_5C_{gd}G_gsr_os^2 + 2C_5C_{gd}G_mr_os + 2C_$	
$10.13  \text{INVALID-ORDER-13}  Z(s) = \left( \infty, \ \infty, \ \infty, \ \infty, \ \frac{1}{C_5 s}, \ \frac{R_L}{C_L R_L s + 1} \right)$	
$R_L \left( C_{gd} s - g_m  ight) \left( - C_5 r_o s + g_m r_o + 1  ight)$	2 . ~ -
$ \frac{H\left(s\right)}{C_{5}C_{L}C_{gd}R_{L}r_{o}s^{3}-C_{5}C_{L}R_{L}g_{m}r_{o}s^{2}+3C_{5}C_{gd}R_{L}g_{m}r_{o}s^{2}+2C_{5}C_{gd}R_{L}g_{m}r$	$+ C_{gd}C_{gs}I$

 $10.14 \quad \text{INVALID-ORDER-14} \ Z(s) = \left( \infty, \ \infty, \ \infty, \ \infty, \ \frac{1}{C_5 s}, \ R_L + \frac{1}{C_L s} \right)$   $(C_{gds} - g_m) \left( C_L R_L s + 1 \right) \left( -C_5 r_o s + g_m r_o + 1 \right)$   $\left( s_g - g_m \right) \left( C_L R_L s + 1 \right) \left( -C_5 r_o s + g_m r_o + 1 \right)$   $\left( s_g - g_m \right) \left( C_L R_L s + 1 \right) \left( -C_5 r_o s + g_m r_o + 1 \right)$   $\left( s_g - g_m \right) \left( C_L R_L s + 1 \right) \left( -C_5 r_o s + g_m r_o + 1 \right)$   $\left( s_g - g_m \right) \left( c_L R_L s + 1 \right) \left( -C_5 r_o s + g_m r_o + 2 \right)$   $\left( s_g - g_m \right) \left( c_L R_L s + 1 \right) \left( -C_5 r_o s + g_m r_o + 2 \right)$   $\left( s_g - g_m \right) \left( c_L R_L s + 1 \right) \left( -C_5 r_o s + g_m r_o + 2 \right)$   $\left( s_g - g_m \right) \left( c_L R_L s + 1 \right) \left( -C_5 r_o s + g_m r_o + 2 \right)$   $\left( s_g - g_m \right) \left( c_L R_L s + 1 \right) \left( -C_5 r_o s + g_m r_o + 2 \right)$   $\left( s_g - g_m \right) \left( c_L R_L s + 1 \right) \left( -C_5 r_o s + g_m r_o + 2 \right)$   $\left( s_g - g_m \right) \left( s_g - g_m \right) \left( s_g - g_m r_o + 2 \right)$   $\left( s_g - g_m r_o s + 2 \right) \left( s_g - g_m r_o s + 2 \right)$   $\left( s_g - g_m r_o s + 2 \right) \left( s_g - g_m r_o s + 2 \right) \left( s_g - g_m r_o s + 2 \right)$   $\left( s_g - g_m r_o s + 2 \right) \left( s_g - g_m r_o s + 2 \right)$   $\left( s_g - g_m r_o s + 2 \right) \left( s_g - g_m r_o s + 2 \right) \left( s_g - g_m r_o s + 2 \right)$   $\left( s_g - g_m r_o s + 2 \right) \left( s_g - g_m r_o s + 2 \right) \left( s_g - g_m r_o s + 2 \right) \left( s_g - g_m r_o s + 2 \right)$   $\left( s_g - g_m r_o s + 2 \right) \left( s_g -$ 

 $10.15 \quad \text{INVALID-ORDER-15} \ Z(s) = \left( \infty, \ \infty, \ \infty, \ \frac{1}{C_5 s}, \ L_L s + \frac{1}{C_L s} \right)$   $(C_{gd} s - g_m) \left( C_L L_L s^2 + 1 \right) \left( -C_5 r_o s + g_m r_o + 1 \right)$   $(C_{gd} s - g_m) \left( C_L L_L s^2 + 1 \right) \left( -C_5 r_o s + g_m r_o + 1 \right)$   $(C_{gd} s - g_m) \left( C_L L_L s^2 + 1 \right) \left( -C_5 r_o s + g_m r_o + 1 \right)$   $(S_{gd} s - g_m) \left( C_L L_L s^2 + 1 \right) \left( -C_5 r_o s + g_m r_o + 1 \right)$   $(S_{gd} s - g_m) \left( C_L L_L s^2 + 1 \right) \left( -C_5 r_o s + g_m r_o + 1 \right)$   $(S_{gd} s - g_m) \left( C_L L_L s^2 + 1 \right) \left( -C_5 r_o s + g_m r_o + 1 \right)$   $(S_{gd} s - g_m) \left( C_L L_L s^2 + 1 \right) \left( -C_5 r_o s + g_m r_o + 1 \right)$   $(S_{gd} s - g_m) \left( C_L L_L s^2 + 1 \right) \left( -C_5 r_o s + g_m r_o + 1 \right)$   $(S_{gd} s - g_m) \left( C_L L_L s^2 + 1 \right) \left( -C_5 r_o s + g_m r_o + 1 \right)$   $(S_{gd} s - g_m) \left( C_L L_L s^2 + 1 \right) \left( -C_5 r_o s + g_m r_o + 1 \right)$   $(S_{gd} s - g_m) \left( C_L L_L s^2 + 1 \right) \left( -C_5 r_o s + g_m r_o + 1 \right)$   $(S_{gd} s - g_m) \left( C_L L_L s^2 + 1 \right) \left( -C_5 r_o s + g_m r_o + 1 \right)$   $(S_{gd} s - g_m) \left( C_L L_L s^2 + 1 \right) \left( -C_5 r_o s + g_m r_o + 1 \right)$   $(S_{gd} s - g_m) \left( C_L L_L s^2 + 1 \right) \left( -C_5 r_o s + g_m r_o + 1 \right)$   $(S_{gd} s - g_m) \left( C_L L_L s^2 + 1 \right) \left( -C_5 r_o s + g_m r_o + 1 \right)$   $(S_{gd} s - g_m) \left( C_L L_L s^2 + 1 \right) \left( -C_5 r_o s + g_m r_o + 1 \right)$   $(S_{gd} s - g_m) \left( C_L L_L s^2 + 1 \right) \left( -C_5 r_o s + g_m r_o + 1 \right)$   $(S_{gd} s - g_m) \left( C_L L_L s^2 + 1 \right) \left( -C_5 r_o s + g_m r_o + 1 \right)$   $(S_{gd} s - g_m) \left( C_L L_L s^2 + 1 \right) \left( -C_5 r_o s + g_m r_o + 1 \right)$   $(S_{gd} s - g_m) \left( C_L L_L s^2 + 1 \right) \left( -C_5 r_o s + g_m r_o + 1 \right)$   $(S_{gd} s - g_m) \left( C_L L_L s^2 + 1 \right) \left( -C_5 r_o s + g_m r_o + 1 \right)$   $(S_{gd} s - g_m) \left( C_L L_L s^2 + 1 \right) \left( -C_5 r_o s + g_m r_o + 1 \right)$   $(S_{gd} s - g_m) \left( C_L L_L s^2 + 1 \right) \left( -C_5 r_o s + g_m r_o + 1 \right)$   $(S_{gd} s - g_m) \left( C_L L_L s^2 + 1 \right) \left( -C_5 r_o s + g_m r_o + 1 \right)$   $(S_{gd} s - g_m) \left( C_L L_L s^2 + 1 \right) \left( -C_5 r_o s + g_m r_o + 1 \right)$   $(S_{gd} s - g_m) \left( C_L L_L s^2 + 1 \right) \left( -C_5 r_o s + g_m r_o + 1 \right)$   $(S_{gd} s - g_m) \left( C_$ 

10.16 INVALID-ORDER-16  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{1}{C_5 s}, \frac{L_L s}{C_L L_L s^2 + 1}\right)$ 

 $H(s) = \frac{L_L s \left( C_{gd} s - g_m \right) \left( -C_5 r_o s + g_m r_o + 1 \right)}{C_5 C_L C_{gd} L_L r_o s^4 - C_5 C_L L_L g_m r_o s^3 + 3 C_5 C_{gd}^2 L_L r_o s^4 + 2 C_5 C_{gd} L_L g_m r_o s^3 + 2$ 

10.17 INVALID-ORDER-17  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{1}{C_5 s}, L_L s + R_L + \frac{1}{C_L s}\right)$ 

 $H(s) = \frac{}{s\left(3C_5C_LC_{gd}^2L_Lr_os^4 + 3C_5C_LC_{gd}^2R_Lr_os^3 + 2C_5C_LC_{gd}C_{gs}L_Lr_os^3 + 2C_5C_LC_{gd}C_{gs}R_Lr_os^3 + 2C_5C_LC_{gd}C_{gs}R_Lr$ 

10.18 INVALID-ORDER-18  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{1}{C_5 s}, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}}\right)$ 

 $H(s) = \frac{L_L R_L s \left( C_{gd} s - g_m \right) \left( -C_5 r_o s + g_m r_o + 1 \right)}{C_5 C_L C_{gd} L_L R_L r_o s^4 - C_5 C_L L_L R_L g_m r_o s^3 + 3 C_5 C_{gd}^2 L_L R_L r_o s^4 + 2 C_5 C_{gd} L_L R_L r_o s^3 + 2 C_5 C_{gd} L_L$ 

10.19 INVALID-ORDER-19  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{1}{C_5 s}, \frac{L_L s}{C_L L_L s^2 + 1} + R_L\right)$ 

 $H(s) = \frac{1}{3C_5C_LC_{gd}^2L_LR_Lr_os^5 + 2C_5C_LC_{gd}C_{gs}L_LR_Lr_os^5 + 2C_5C_LC_{gd}C_{gs}L_LR_Lr_os^4 + 2C_5C_LC_{gd}L_LR_Lr_os^4 + 2C$ 

10.20 INVALID-ORDER-20  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{1}{C_5 s}, \frac{R_L \left(L_L s + \frac{1}{C_L s}\right)}{L_L s + R_L + \frac{1}{C_L s}}\right)$ 

 $H(s) = \frac{1}{3C_5C_LC_{gd}^2L_LR_Lr_os^5 + 2C_5C_LC_{gd}C_{gs}L_LR_Lr_os^5 + 2C_5C_LC_{gd}C_{gs}L_LR_Lr_os^4 + 2C_5C_LC_{gd}L_LR_Lr_os^4 + 2C$ 

10.21 INVALID-ORDER-21  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{R_5}{C_5 R_5 s + 1}, R_L\right)$ 

 $H(s) = -\frac{R_L \left( C_{gd}s - g_m \right) \left( C_5 R_5 r_o s - R_5 g_m r_o - R_5 + r_o \right)}{3 C_5 C_{gd}^2 R_5 R_L r_o s^3 + 2 C_5 C_{gd} R_5 R_L r_o s^3 + 2 C_5 C_{gd} R_5 R_L r_o s^2 + 2 C_5 C_$ 

10.22 INVALID-ORDER-22  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{R_5}{C_5 R_5 s + 1}, \frac{1}{C_L s}\right)$ 

 $H(s) = -\frac{\left(C_{gd}s - g_{m}\right)\left(C_{5}R_{5}r_{o}s - R_{5}g_{m}r_{o} - R_{5} + r_{o}\right)}{C_{5}C_{L}C_{gd}R_{5}r_{o}s^{3} - C_{5}C_{L}R_{5}g_{m}r_{o}s^{2} + 2C_{5}C_{gd}R_{5}r_{o}s^{3} + 2C_{5}C_{gd}R_{5}r_{o}s^{2} + 2C$ 

10.23 INVALID-ORDER-23  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{R_5}{C_5R_5s+1}, \frac{R_L}{C_LR_Ls+1}\right)$ 

 $H(s) = -\frac{R_L \left( C_{gd}s - g_m \right) \left( C_5 R_5 r_o s - R_{55} R_{15} R_{15} r_o s + C_5 C_{gd} R_5 R_L r_o s^2 + C_5 C_{gd} R_5 R_L$ 

10.24 INVALID-ORDER-24  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{R_5}{C_5 R_5 s + 1}, R_L + \frac{1}{C_L s}\right)$ 

 $H(s) = -\frac{1}{3C_5C_LC_{gd}^2R_5R_Lr_os^4 + 2C_5C_LC_{gd}C_{gs}R_5R_Lr_os^4 + 2C_5C_LC_{gd}R_5r_os^2 + 2C_5C_{gd}R_5r_os^3 + 2C_5C_LC_{gd}R_5r_os^3 + 2C_5C_LC_{gd}R_5r_os$ 

10.25 INVALID-ORDER-25  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{R_5}{C_5 R_5 s + 1}, L_L s + \frac{1}{C_L s}\right)$ 

 $H(s) = -\frac{1}{3C_5C_LC_{gd}^2L_LR_5r_os^5 + 2C_5C_LC_{gd}C_{gs}L_LR_5r_os^5 + 2C_5C_LC_{gd}C_{gs}L_LR_5r_os^4 + 2C_5C_LC_{gd}L_LR_5r_os^4 + 2$ 

10.26 INVALID-ORDER-26  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{R_5}{C_5 R_5 s + 1}, \frac{L_L s}{C_L L_L s^2 + 1}\right)$ 

 $H(s) = -\frac{L_L s \left(C_{gd} s - g_m\right) \left(C_5 R_5 r_o s^4 - C_5 C_L L_L R_5 g_m r_o s^3 + 3 C_5 C_{gd} L_L R_5 r_o s^4 + 2 C_5 C_{gd} L_L R_5 r_o s^4 + 2 C_5 C_{gd} L_L R_5 r_o s^3 + 2 C_L C_{gd} L_L R_5 r_o s^3 + 2 C_L C_{gd} L_L R_5 r_o s^3 + 2 C_5 C_{gd} L_L R_5 r_o s^3 + 2 C_5$ 

10.27 INVALID-ORDER-27  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{R_5}{C_5 R_5 s + 1}, L_L s + R_L + \frac{1}{C_L s}\right)$ 

 $H(s) = -\frac{1}{3C_5C_LC_{gd}^2L_LR_5r_os^5 + 3C_5C_LC_{gd}R_5R_Lr_os^4 + 2C_5C_LC_{gd}R_5R_Lr_os^4 + 2C_5C_LC_{gd}$ 

10.28 INVALID-ORDER-28  $Z(s) = \left(\infty, \ \infty, \ \infty, \ \infty, \ \frac{R_5}{C_5 R_5 s + 1}, \ \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}}\right)$ 

 $H(s) = -\frac{1}{C_5 C_L C_{gd} L_L R_5 R_L r_o s^4 - C_5 C_L L_L R_5 R_L g_m r_o s^3 + 3 C_5 C_{gd} L_L R_5 R_L r_o s^4 + 2 C_5 C_{gd} L_L R_5 R_L r_o s^4 + 2 C_5 C_{gd} L_L R_5 R_L r_o s^3 +$ 

**10.29** INVALID-ORDER-29  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{R_5}{C_5 R_5 s + 1}, \frac{L_L s}{C_L L_L s^2 + 1} + R_L\right)$ 

 $H(s) = -\frac{1}{3C_5C_LC_{gd}^2L_LR_5R_Lr_os^5 + 2C_5C_LC_{gd}C_{gs}L_LR_5R_Lr_os^5 + 2C_5C_LC_{gd}L_LR_5R_Lr_os^4 + 2C_5C_LC$ 

10.30 INVALID-ORDER-30  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{R_5}{C_5 R_5 s + 1}, \frac{R_L \left(L_L s + \frac{1}{C_L s}\right)}{L_L s + R_L + \frac{1}{C_L s}}\right)$ 

 $H(s) = -\frac{1}{3C_5C_LC_{gd}^2L_LR_5R_Lr_os^5 + 2C_5C_LC_{gd}C_{gs}L_LR_5R_Lr_os^5 + 2C_5C_LC_{gd}L_LR_5R_Lr_os^5 + 2C_5C_LC_{gd}L_LR_5R_Lr_os^5 + 2C_5C_LC_{gd}L_LR_5R_Lr_os^4 + 2C_5C_LC$ 

10.31 INVALID-ORDER-31  $Z(s) = \left(\infty, \infty, \infty, \infty, R_5 + \frac{1}{C_5 s}, R_L\right)$ 

 $H(s) = \frac{R_L \left( C_{gds} - g_m \right) \left( C_5 R_5 g_m r_o s + C_5 R_5 s - C_5 r_o s + g_m r_o + 1 \right)}{C_5 C_{gd}^2 C_{gs} R_5 R_L r_o^2 s^3 + C_5 C_{gd}^2 R_5 R_L r_o s^3 + C_5 C_{gd}^2 R_5$ 

10.32 INVALID-ORDER-32  $Z(s) = \left(\infty, \infty, \infty, \infty, R_5 + \frac{1}{C_5 s}, \frac{1}{C_L s}\right)$ 

 $H(s) = \frac{\left(C_{gds} - g_{m}\right)\left(C_{5}R_{5}g_{m}r_{o}s + C_{5}R_{5}s - C_{5}r_{o}s + g_{m}r_{o} + 1\right)}{s\left(C_{5}C_{L}C_{gd}C_{gs}R_{5}r_{o}^{2}s^{2} + C_{5}C_{L}C_{gd}R_{5}g_{m}r_{o}s^{2} + C_{5}C_{L}C_{gd}R_{5}g_{m$ 

```
10.33 INVALID-ORDER-33 Z(s) = \left(\infty, \infty, \infty, \infty, R_5 + \frac{1}{C_5 s}, \frac{R_L}{C_L R_L s + 1}\right)
```

 $H(s) = \frac{1}{C_5 C_L C_{gd} C_{gs} R_5 R_L r_o^2 s^4 + C_5 C_L C_{gd} R_5 R_L r_o s^3 + 2 C_5 C_L C_{gd} R_5 R_L r_o s^3$ 

## 10.34 INVALID-ORDER-34 $Z(s) = \left(\infty, \infty, \infty, \infty, R_5 + \frac{1}{C_5 s}, R_L + \frac{1}{C_L s}\right)$

 $H(s) = \frac{}{s\left(C_{5}C_{L}C_{gd}^{2}C_{gs}R_{5}R_{L}r_{o}^{2}s^{4} + C_{5}C_{L}C_{gd}R_{5}R_{L}r_{o}s^{3} + C_{5}C_{L}C_{gd}R_{5}R_{L}r$ 

#### 10.35 INVALID-ORDER-35 $Z(s) = \left(\infty, \infty, \infty, \infty, R_5 + \frac{1}{C_5 s}, L_L s + \frac{1}{C_L s}\right)$

 $H(s) = \frac{1}{s\left(C_{5}C_{L}C_{gd}^{2}C_{gs}L_{L}R_{5}r_{o}^{2}s^{5} + C_{5}C_{L}C_{gd}C_{gs}L_{L}R_{5}r_{o}s^{4} + C_{5}C_{L}C_{gd}C_{gs}L_{L}R_{5}r_{o}s^{4$ 

#### 10.36 INVALID-ORDER-36 $Z(s) = \left(\infty, \infty, \infty, \infty, R_5 + \frac{1}{C_5 s}, \frac{L_L s}{C_L L_L s^2 + 1}\right)$

 $H(s) = \frac{1}{C_5 C_L C_{gd} C_{gs} L_L R_5 r_o^2 s^5 + C_5 C_L C_{gd} L_L R_5 g_m r_o^2 s^4 + C$ 

## 10.37 INVALID-ORDER-37 $Z(s) = \left(\infty, \infty, \infty, \infty, R_5 + \frac{1}{C_5 s}, L_L s + R_L + \frac{1}{C_L s}\right)$

 $H(s) = \frac{1}{s\left(C_{5}C_{L}C_{gd}^{2}C_{gs}L_{L}R_{5}r_{o}^{2}s^{5} + C_{5}C_{L}C_{gd}C_{gs}R_{L}r_{o}s^{3} + C_{5}C_{L}C_{gd}$ 

## 10.38 INVALID-ORDER-38 $Z(s) = \left(\infty, \infty, \infty, \infty, R_5 + \frac{1}{C_5 s}, \frac{1}{C_L s + \frac{1}{R_5} + \frac{1}{L_5 s}}\right)$

 $H(s) = \frac{1}{C_5 C_L C_{gg} C_{gg} L_L R_5 R_L r_o^2 s^5 + C_5 C_L C_{gg} L_L R_5 R_L r_o s^4 + C_5 C_L C_{gg} L_L R_5 R_$ 

#### 10.39 INVALID-ORDER-39 $Z(s) = \left(\infty, \infty, \infty, \infty, R_5 + \frac{1}{C_5 s}, \frac{L_L s}{C_L L_L s^2 + 1} + R_L\right)$

 $H(s) = \frac{1}{C_5 C_L C_{gd}^2 C_{gs} L_L R_5 R_L r_o^2 s^6 + C_5 C_L C_{gd} L_L R_5 R_L r_o s^5 + C_5 C_L C_{gd} L_L R_5 r_o s^4 +$ 

## 10.40 INVALID-ORDER-40 $Z(s) = \left(\infty, \infty, \infty, \infty, R_5 + \frac{1}{C_5 s}, \frac{R_L \left(L_L s + \frac{1}{C_L s}\right)}{L_L s + R_L + \frac{1}{C_5 s}}\right)$

 $H(s) = \frac{1}{C_5 C_L C_{gd}^2 C_{gs} L_L R_5 R_L r_o^2 s^6 + C_5 C_L C_{gd}^2 L_L R_5 R_L r_o s^5 + C_5 C_L C_{gd} L_L R_$ 

#### 10.41 INVALID-ORDER-41 $Z(s) = \left(\infty, \infty, \infty, \infty, L_5 s + \frac{1}{C_5 s}, R_L\right)$

 $H(s) = \frac{R_L \left( C_{gd}s - g_m \right) \left( C_5 L_5 g_m r_o s^2 + C_5 L_5 s^2 - C_5 r_o s + g_m r_o + 1 \right)}{C_5 C_{od}^2 C_{os} L_5 R_L r_o^2 s^5 + C_5 C_{od}^2 L_5 R_L r_o s^4 + C_5 C_{od}^2 L_5 R_L r_o s^3 + C_5 C_{od}^2$ 

#### 10.42 INVALID-ORDER-42 $Z(s) = \left(\infty, \infty, \infty, \infty, L_5 s + \frac{1}{C_5 s}, \frac{1}{C_L s}\right)$

 $H(s) = \frac{(C_{gds} - g_{m}) \cdot (C_{5}L_{5}g_{m}r_{o}s + C_{5}L_{5}G_{g}C_{g}s + C_{5}C_{L}C_{gd}L_{5}g_{m}r_{o}s + C_{5}L_{5}G_{g}C_{g}s + C_{5}C_{L}C_{gd}L_{5}g_{m}r_{o}s + C_{5}C_{L}C_{gd}L$ 

### 10.43 INVALID-ORDER-43 $Z(s) = \left(\infty, \infty, \infty, \infty, L_5 s + \frac{1}{C_5 s}, \frac{R_L}{C_L R_L s + 1}\right)$

 $H(s) = \frac{1}{C_5 C_L C_{gd} C_{gs} L_5 R_L r_o^2 s^5 + C_5 C_L C_{gd} L_5 R_L r_o s^4 + C_5 C_L C_$ 

#### 10.44 INVALID-ORDER-44 $Z(s) = \left(\infty, \infty, \infty, \infty, L_5 s + \frac{1}{C_5 s}, R_L + \frac{1}{C_L s}\right)$

 $H(s) = \frac{1}{s\left(C_{5}C_{L}C_{gd}^{2}C_{gs}L_{5}R_{L}r_{o}^{2}s^{5} + C_{5}C_{L}C_{gd}L_{5}R_{L}r_{o}s^{4} + C_{5}C_{L}C_{gd}C_{gs}L_{5}R_{L}r_{o}s^{4} + C_$ 

#### 10.45 INVALID-ORDER-45 $Z(s) = \left(\infty, \infty, \infty, \infty, L_5 s + \frac{1}{C_5 s}, L_L s + \frac{1}{C_L s}\right)$

 $H(s) = \frac{}{s\left(C_{5}C_{L}C_{gd}^{2}C_{gs}L_{5}L_{L}r_{o}^{2}s^{6} + C_{5}C_{L}C_{gd}L_{5}L_{L}r_{o}s^{5} + C_{5}C_{L}C_{gd}L_{5}R_{c}r_{o}s^{4} + C_{5}C_{L}C_{gd}L_{5}R_{c}r$ 

## 10.46 INVALID-ORDER-46 $Z(s) = \left(\infty, \infty, \infty, \infty, L_5 s + \frac{1}{C_5 s}, \frac{L_L s}{C_L L_L s^2 + 1}\right)$

 $H(s) = \frac{1}{C_5 C_L C_{gd} C_{gs} L_5 L_L r_o^2 s^6 + C_5 C_L C_{gd} L_5 L_L g_m r_o^2 s^5 + C$ 

## 10.47 INVALID-ORDER-47 $Z(s) = \left(\infty, \infty, \infty, \infty, L_5 s + \frac{1}{C_5 s}, L_L s + R_L + \frac{1}{C_L s}\right)$

 $H(s) = \frac{1}{s\left(C_{5}C_{L}C_{gd}^{2}C_{gs}L_{5}L_{L}r_{o}^{2}s^{6} + C_{5}C_{L}C_{gd}C_{gs}L_{5}L_{L}r_{o}s^{5} + C_{5}C_{L}C_{gd}C_{gs}L_{5}L_{L}r_{o}s^{5$ 

## **10.48** INVALID-ORDER-48 $Z(s) = \left( \infty, \infty, \infty, \infty, L_5 s + \frac{1}{C_5 s}, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

 $H(s) = \frac{1}{C_5 C_L C_{gd} C_{gs} L_5 L_L R_L r_o^2 s^6 + C_5 C_L C_{gd} L_5 L_L R_L r_o s^5 + C_5 C_L C_{gd} L_5 L_L R_$ 

#### 10.49 INVALID-ORDER-49 $Z(s) = \left(\infty, \infty, \infty, \infty, L_5 s + \frac{1}{C_5 s}, \frac{L_L s}{C_L L_L s^2 + 1} + R_L\right)$

 $H(s) = \frac{1}{C_5 C_L C_{gd}^2 C_{gs} L_5 L_L R_L r_o^2 s^7 + C_5 C_L C_{gd} L_5 L_L R_L r_o s^6 + C_5 C_L C_{gd} L_5 L_L$ 

## 10.50 INVALID-ORDER-50 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \infty, \ L_5 s + \frac{1}{C_5 s}, \ \frac{R_L \left(L_L s + \frac{1}{C_L s}\right)}{L_L s + R_L + \frac{1}{C_L s}}\right)$

 $H(s) = \frac{H(s) = \frac{1}{C_5 C_L C_{gd}^2 C_{gs} L_5 L_L R_L r_o^2 s^7 + C_5 C_L C_{gd} L_5 L_L R_L r_o s^6 + C_5 C_L C_{gd}$ 

10.51 INVALID-ORDER-51  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{L_{5s}}{C_5 L_5 s^2 + 1}, R_L\right)$ 10.52 INVALID-ORDER-52  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{L_5 s}{C_5 L_5 s^2 + 1}, \frac{1}{C_L s}\right)$  $H(s) = -\frac{(C_{gd}s - g_{m})\left(C_{5}L_{5}r_{o}s^{2} - L_{5}g_{m}r_{o}s - L_{5}s + r_{o}\right)}{C_{5}C_{L}C_{gd}L_{5}r_{o}s^{4} - C_{5}C_{L}L_{5}g_{m}r_{o}s^{3} + 3C_{5}C_{gd}L_{5}r_{o}s^{4} + 2C_{5}C_{gd}L_{5}g_{m}r_{o}s^{3} + 2C_$ 10.53 INVALID-ORDER-53  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{L_5 s}{C_5 L_5 s^2 + 1}, \frac{R_L}{C_L R_L s + 1}\right)$  $H(s) = -\frac{R_L \left( C_{gds} - g_m \right) \left( C_5 L_5 r_o s^2 - L_5 \right)}{C_5 C_L C_{gd} L_5 R_L r_o s^4 + C_5 C_{gd} L_5 R_L r_o s^4 + 2 C_5 C_{gd} L_5 R_L r_o s^3 + 2 C_5 C_{gd} L_5 R_L r_o s^3$ 10.54 INVALID-ORDER-54  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{L_{5}s}{C_{5}L_{5}s^{2}+1}, R_{L} + \frac{1}{C_{L}s}\right)$  $H(s) = -\frac{1}{3C_5C_LC_{ad}^2L_5R_Lr_os^5 + 2C_5C_LC_{gd}C_{gs}L_5R_Lr_os^5 + 2C_5C_LC_{gd}L_5R_Lr_os^5 + 2C_5C_LC_{gd}L_5R_Lr_os^5 + 2C_5C_LC_{gd}L_5R_Lr_os^4 + 2C_5C_L$ **10.55** INVALID-ORDER-55  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{L_5 s}{C_5 L_5 s^2 + 1}, L_L s + \frac{1}{C_L s}\right)$  $H(s) = -\frac{1}{3C_5C_LC_{cd}^2L_5L_Lr_os^6 + 2C_5C_LC_{ad}C_{as}L_5L_Lr_os^6 + 2C_5C_LC_{ad}C_{as}L_5L_Lr_os^6 + 2C_5C_LC_{ad}L_5L_Lr_os^6 + 2$ 10.56 INVALID-ORDER-56  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{L_5 s}{C_5 L_5 s^2 + 1}, \frac{L_L s}{C_L L_L s^2 + 1}\right)$  $H(s) = -\frac{L_L S \left( C_{gd} S - S_{gd} L_5 L_L r_o s^5 - C_5 C_L L_5 L_L g_m r_o s^4 + 3 C_5 C_{gd} L_5 L_L r_o s^5 + 2 C_5 C_{gd} L_5 L_L r_o s^5 + 2 C_5 C_{gd} L_5 L_L r_o s^4 + 2 C_5$ 10.57 INVALID-ORDER-57  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{L_5 s}{C_5 L_5 s^2 + 1}, L_L s + R_L + \frac{1}{C_L s}\right)$  $H(s) = -\frac{H(s)}{3C_5C_LC_{ad}^2L_5L_Lr_os^6 + 3C_5C_LC_{gd}L_5L_Lr_os^6 + 3C_5C_LC_{gd}L_5L_Lr_os^6 + 2C_5C_LC_{gd}L_5L_Lr_os^6 + 2C_5C_LC_{$ 10.58 INVALID-ORDER-58  $Z(s) = \left( \infty, \infty, \infty, \infty, \frac{L_5 s}{C_5 L_5 s^2 + 1}, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$  $H(s) = -\frac{1}{C_5C_LC_{ad}L_5L_LR_Lr_os^5 - C_5C_LL_5L_LR_Lg_mr_os^4 + 3C_5C_{ad}L_5L_LR_Lr_os^5 + 2C_5C_{ad}L_5L_LR_Lg_mr_os^4 + 2C_5C_{ad}Lg_Lg_mr_os^4 + 2C_5C_{ad}Lg_Lg_mr_os^4 + 2C_5C_{ad}Lg_Lg_mr_os^4 + 2C_5C_{ad}Lg_Lg_mr_os^4 + 2C_5C_{ad}Lg_$ 10.59 INVALID-ORDER-59  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{L_5 s}{C_5 L_5 s^2 + 1}, \frac{L_L s}{C_L L_L s^2 + 1} + R_L\right)$  $H(s) = -\frac{1}{3C_5C_LC_{ad}^2L_5L_LR_Lr_os^6 + 2C_5C_LC_{gd}L_5L_LR_Lr_os^6 + 2C_5C_LC_{gd}L_5L_Lr_os^6 + 2C_5C_LC_{$ 10.60 INVALID-ORDER-60  $Z(s) = \left( \infty, \infty, \infty, \infty, \frac{L_5 s}{C_5 L_5 s^2 + 1}, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$  $H(s) = -\frac{1}{3C_5C_LC_{cs}^2L_5L_LR_Lr_os^6 + 2C_5C_LC_{gd}L_5L_LR_Lr_os^6 + 2C_5C_LC_{gd}L_5L_Lr_os^6 + 2C_5C_LC_{gd}L_5L_Lr_os^6 + 2C_5C_LC_{gd}L_5L_Lr$ 10.61 INVALID-ORDER-61  $Z(s) = \left(\infty, \infty, \infty, \infty, L_5 s + R_5 + \frac{1}{C_5 s}, R_L\right)$  $H(s) = \frac{1}{C_5 C_{ad}^2 C_{gs} L_5 R_L r_o^2 s^5 + C_5 C_{ad}^2 C_{gs} R_5 R_L r_o^2 s^4 + C_5 C_{gd}^2 C_{gs} R_5 R_L r_o s^3 + C_5 C_{gd}^2 C_{gs}^2 R_5 R_L r_o s^3 + C_5 C_{gd}^2 C_{gs}^$ 10.62 INVALID-ORDER-62  $Z(s) = \left(\infty, \infty, \infty, \infty, L_5 s + R_5 + \frac{1}{C_5 s}, \frac{1}{C_L s}\right)$  $H(s) = \frac{(C_{1})}{s\left(C_{1}C_{2}C_{3}C_{3}C_{3}C_{5}C_{1}C_{3}C_{3}C_{3}C_{5}C_{1}C_{2}C_{3}C_{3}C_{3}C_{5}C_{1}C_{3}C_{3}C_{$ 10.63 INVALID-ORDER-63  $Z(s) = \left(\infty, \infty, \infty, \infty, L_5 s + R_5 + \frac{1}{C_5 s}, \frac{R_L}{C_L R_L s + 1}\right)$  $H(s) = \frac{1}{C_5 C_L C_{gd} C_{gs} L_5 R_L r_o^2 s^5 + C_5 C_L C_{gd} R_5 R_L r_o^2 s^4 + C_5 C_L C_{gd} L_5 R_L g_m r_o s^4 + C_5 C_L C_{gd} L_5 R_L g_m r_o s^4 + C_5 C_L C_{gd} L_5 R_L g_m r_o s^4 + C_5 C_L C_{gd} R_5 R_L r_o s^$ **10.64** INVALID-ORDER-64  $Z(s) = \left(\infty, \infty, \infty, \infty, L_5 s + R_5 + \frac{1}{C_5 s}, R_L + \frac{1}{C_L s}\right)$  $H(s) = \frac{H(s) = \frac{H(s)}{s\left(C_{5}C_{L}C_{ad}^{2}C_{gs}L_{5}R_{L}r_{o}^{2}s^{4} + C_{5}C_{L}C_{ad}C_{gs}R_{5}R_{L}r_{o}s^{3} + C_{5}C_{L}C_{ad}C_{gs}R_{5}R_$ 

**10.65** INVALID-ORDER-65  $Z(s) = \left(\infty, \infty, \infty, \infty, L_5 s + R_5 + \frac{1}{C_5 s}, L_L s + \frac{1}{C_L s}\right)$ 

 $H(s) = \frac{-}{s\left(C_{5}C_{L}C_{gd}^{2}C_{gs}L_{5}L_{L}r_{o}^{2}s^{6} + C_{5}C_{L}C_{gd}C_{gs}L_{L}R_{5}r_{o}^{2}s^{5} + C_{5}C_{L}C_{gd}C_{gs}L_{L}R_{5}r_{o}s^{4} + C_{5}C_{L}C_{gd}C_{gs}L_{L}R_{5}r_{o}$ 

**10.66** INVALID-ORDER-66  $Z(s) = \left(\infty, \infty, \infty, \infty, L_5 s + R_5 + \frac{1}{C_5 s}, \frac{L_L s}{C_L L_L s^2 + 1}\right)$ 

 $H(s) = \frac{H(s) = \frac{1}{C_5 C_L C_{gd} C_{gs} L_5 L_L r_o^2 s^6 + C_5 C_L C_{gd} L_5 L_L r_o s^5 + C_5 C_L C_{gd} L_L r_o s^5$ 

**10.67** INVALID-ORDER-67  $Z(s) = \left(\infty, \infty, \infty, \infty, L_5 s + R_5 + \frac{1}{C_5 s}, L_L s + R_L + \frac{1}{C_L s}\right)$ 

 $H(s) = \frac{}{s\left(C_{5}C_{L}C_{gd}^{2}C_{gs}L_{5}L_{L}r_{o}^{2}s^{6} + C_{5}C_{L}C_{gd}^{2}C_{gs}L_{5}L_{L}r_{o}s^{5} + C_{5}C_{L}C_{gd}^{2}C_{gs}L_{5}L_{L}r_{o}s^{5} + C_{5}C_{L}C_{gd}^{2}C_{gs}L_{5}L_{L}r_{o}s^{4} + C_{5}C_{L}C_{gd}^$ 

**10.68** INVALID-ORDER-68  $Z(s) = \left(\infty, \infty, \infty, \infty, L_5 s + R_5 + \frac{1}{C_5 s}, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}}\right)$ 

 $H(s) = \frac{H(s)}{C_5C_LC_{qd}C_{qs}L_5L_LR_Lr_o^2s^6 + C_5C_LC_{qd}L_LR_5R_Lr_o^2s^5 + C_5C_LC$ 

- 10.69 INVALID-ORDER-69  $Z(s) = \left(\infty, \infty, \infty, \infty, L_5 s + R_5 + \frac{1}{C_5 s}, \frac{L_L s}{C_L L_L s^2 + 1} + R_L\right)$
- $H(s) = \frac{1}{C_5 C_L C_{gd}^2 C_{gs} L_5 L_L R_L r_o^2 s^7 + C_5 C_L C_{gd}^2 C_{gs} L_L R_5 R_L r_o^2 s^5 + C_5 C_L C_{gd} C_{gs} L_L R_5 R_L r_o^2 s^5 + C_5 C_L C_{gd}^2 C_{gs}^2 L_L R_5 R_L r_o^2 s^5 + C_5 C_L C_{gd}^2 C_{gs}^2 L_L R_5 R_L r_o^2 s^5 + C_5 C_L C_{gd}^2 C_{gs}^2 L_L R_5 R_L r_o^2 s^5 + C_5 C_L C_{gd}^2 C_{gs}^2 L_L R_5 R_L r_o^2 s^5 + C_5 C_L C_$
- 10.70 INVALID-ORDER-70  $Z(s) = \left(\infty, \infty, \infty, \infty, L_5 s + R_5 + \frac{1}{C_5 s}, \frac{R_L \left(L_L s + \frac{1}{C_L s}\right)}{L_L s + R_L + \frac{1}{C_L s}}\right)$
- $H(s) = \frac{1}{C_5 C_L C_{gd}^2 C_{gs} L_5 L_L R_L r_o^2 s^7 + C_5 C_L C_{gd}^2 C_{gs} L_L R_5 r_o^2 s^5 + C_5 C_L C_{gd}^2 C_{gs} L_L R_5 r_o^2 c^5 + C_5 C_L C_{gd}^2 C_{gs}^2 L_L R_5 r_o^2 c^5 + C_5 C_L C_{gd}^2 C_{gs}^2 L_L R_5 r_o^2 c^5 + C_5 C_L C_{gd}^2 C_{gs}^2 L_L R_5 r_o^2 c^5 + C_5 C_L C_{gd}^2 C_{gs}^2 L_L R_5 r_o^2 c^$
- 10.71 INVALID-ORDER-71  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{1}{C_5 s + \frac{1}{R_5} + \frac{1}{L_5 s}}, R_L\right)$
- $H(s) = -\frac{1}{3C_5C_{gd}^2L_5R_5R_Lr_os^4 + 2C_5C_{gd}C_{gs}L_5R_5R_Lr_os^4 + 2C_5C_{gd}C_{gs}L_5R_5R_Lr_os^3 + 2C_5C_{gd}L_5R_5R_Lr_os^3 + 2$
- 10.72 INVALID-ORDER-72  $Z(s) = \left(\infty, \ \infty, \ \infty, \ \infty, \ \frac{1}{C_5 s + \frac{1}{R_5} + \frac{1}{L_5 s}}, \ \frac{1}{C_L s}\right)$
- $H(s) = -\frac{(C_{gds} g_m)\left(C_{5}L_{5}R_{5}r_{o}s^{2} L_{5}R_{5}g_{m}r_{o}s^{3} + 2C_{5}C_{gd}L_{5}R_{5}r_{o}s^{4} + C_{5}C_{gd}L_{5}R_{5}r_{o}s^{4} + 2C_{5}C_{gd}L_{5}R_{5}r_{o}s^{4} + 2C_{5}C_{gd}L_{5}R_{5}r_{o}s^{3} + 2C_{5}C_{gd}L_{5}R_{5}r_{o}s^{4} + 2C_{5}C_{gd}L_{5}R_{5}r_{o}s^{3} + 2C$
- 10.73 INVALID-ORDER-73  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{1}{C_5 s + \frac{1}{R_5} + \frac{1}{L_5 s}}, \frac{R_L}{C_L R_L s + 1}\right)$
- $H(s) = -\frac{1}{C_5 C_L C_{gd} L_5 R_5 R_L r_o s^4 C_5 C_L L_5 R_5 R_L r_o s^4 + 2 C_5 C_{gd} L_5 R_5 R_L r_o s^3 + 2 C_5 C_{gd} L_5 R_5 R_L r_o s^4 + 2 C_5 C_{gd} L_5 R_5 R_L r_o s^3 + 2 C_$
- 10.74 INVALID-ORDER-74  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{1}{C_5 s + \frac{1}{R_5} + \frac{1}{L_5 s}}, R_L + \frac{1}{C_L s}\right)$
- $H(s) = -\frac{1}{3C_5C_LC_{gd}^2L_5R_5R_Lr_os^5 + 2C_5C_LC_{gd}C_{gs}L_5R_5R_Lr_os^5 + 2C_5C_LC_{gd}L_5R_5R_Lr_os^4 + 2C_5C_LC$
- 10.75 INVALID-ORDER-75  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{1}{C_5 s + \frac{1}{R_5} + \frac{1}{L_5 s}}, L_L s + \frac{1}{C_L s}\right)$
- $H(s) = -\frac{1}{3C_5C_LC_{gd}^2L_5L_LR_5r_os^6 + 2C_5C_LC_{gd}L_5L_LR_5r_os^6 + 2C_5C_LC_{gd}L_5R_5r_os^4 + 2C_5C_{gd}L_5R_5r_os^4 + 2C_5C_{gd}L_5R_5$
- **10.76** INVALID-ORDER-76  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{1}{C_5 s + \frac{1}{R_{\kappa}} + \frac{1}{L_{\kappa} s}}, \frac{L_L s}{C_L L_L s^2 + 1}\right)$
- $H(s) = -\frac{1}{C_5C_LC_{gd}L_5L_LR_5r_os^5 C_5C_LL_5L_LR_5g_mr_os^4 + 3C_5C_{gd}L_5L_LR_5r_os^5 + 2C_5C_{gd}L_5L_LR_5r_os^4 + 2C_5C_{gd}L_5L$
- 10.77 INVALID-ORDER-77  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{1}{C_5 s + \frac{1}{R_5} + \frac{1}{L_5 s}}, L_L s + R_L + \frac{1}{C_L s}\right)$
- $H(s) = -\frac{1}{3C_5C_LC_{gd}^2L_5L_LR_5r_os^6 + 3C_5C_LC_{gd}L_5R_5R_Lr_os^5 + 2C_5C_LC_{gd}L_5R_5R_Lr_os^5 + 2C_5C_LC_{gd}L$
- 10.78 INVALID-ORDER-78  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{1}{C_5 s + \frac{1}{R_5} + \frac{1}{L_5 s}}, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}}\right)$
- $H(s) = -\frac{1}{C_5C_LC_{gd}L_5L_LR_5R_Lr_os^5 C_5C_LL_5L_LR_5R_Lr_os^5 + 2C_5C_{gd}L_5L_LR_5R_Lr_os^5 + 2C_5C_{gd}L_5L_LR_$
- 10.79 INVALID-ORDER-79  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{1}{C_5 s + \frac{1}{R_5} + \frac{1}{L_5 s}}, \frac{L_L s}{C_L L_L s^2 + 1} + R_L\right)$
- $H(s) = -\frac{1}{3C_5C_LC_{gd}^2L_5L_LR_5R_Lr_os^6 + 2C_5C_LC_{gd}C_{gs}L_5L_LR_5R_Lr_os^6 + 2C_5C_LC_{gd}L_5L_LR_5R_Lr_os^5 + 2C_5C_LC_{gd}L_5L$
- 10.80 INVALID-ORDER-80  $Z(s) = \left(\infty, \ \infty, \ \infty, \ \infty, \ \frac{1}{C_5 s + \frac{1}{R_5} + \frac{1}{L_5 s}}, \ \frac{R_L \left(L_L s + \frac{1}{C_L s}\right)}{L_L s + R_L + \frac{1}{C_L s}}\right)$
- $H(s) = -\frac{1}{3C_5C_LC_{gd}^2L_5L_LR_5R_Lr_os^6 + 2C_5C_LC_{gd}L_5L_LR_5R_Lr_os^6 + 2C_5C_LC_{gd}L_5L_LR_5R$
- 10.81 INVALID-ORDER-81  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{L_5 s}{C_5 L_5 s^2 + 1} + R_5, R_L\right)$
- $H(s) = \frac{1}{C_5 C_{gd}^2 C_{gs} L_5 R_5 R_L r_o^2 s^5 + C_5 C_{gd}^2 L_5 R_5 R_L r_o s^4 + C_5 C_{gd} L_5 R_$
- 10.82 INVALID-ORDER-82  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{L_5 s}{C_5 L_5 s^2 + 1} + R_5, \frac{1}{C_L s}\right)$
- $H(s) = \frac{1}{C_5 C_L C_{gd} C_{gs} L_5 R_5 r_o^2 s^5 + C_5 C_L C_{gd} L_5 R_5 r_o^2 s^5 + C_5 C_L C_{gd} L_5 R_5 r_o s^4 + C_5 C_L$
- 10.83 INVALID-ORDER-83  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{L_5 s}{C_5 L_5 s^2 + 1} + R_5, \frac{R_L}{C_L R_L s + 1}\right)$
- $H(s) = \frac{H(s)}{C_5 C_L C_{gd} C_{gs} L_5 R_5 R_L r_o^2 s^5 + C_5 C_L C_{gd} L_5 R_5 R_L r_o s^4 + C_5 C_L C_{gd} L_5 R_5$
- 10.84 INVALID-ORDER-84  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{L_5 s}{C_5 L_5 s^2 + 1} + R_5, R_L + \frac{1}{C_L s}\right)$
- $H(s) = \frac{1}{C_5 C_L C_{gd}^2 C_{gs} L_5 R_5 R_L r_o^2 s^6 + C_5 C_L C_{gd} L_5 R_5 R_L r_o s^5 + C_5 C_L C_{gd} L_5 R_L$
- 10.85 INVALID-ORDER-85  $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_5 s}{C_5 L_5 s^2 + 1} + R_5, \ L_L s + \frac{1}{C_L s}\right)$
- $H(s) = \frac{1}{C_5 C_L C_{gd}^2 C_{gs} L_5 L_L R_5 r_o^2 s^7 + C_5 C_L C_{gd} L_5 L_L R_5 r_o s^6 + C_5 C_L C_{gd} L_5 L_L$
- **10.86** INVALID-ORDER-86  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{L_5 s}{C_5 L_5 s^2 + 1} + R_5, \frac{L_L s}{C_L L_L s^2 + 1}\right)$
- $H(s) = \frac{1}{C_5 C_L C_{gd} C_{gs} L_5 L_L R_5 r_o^2 s^6 + C_5 C_L C_{gd} L_5 L_L R_5 g_m r_o^2 s^5 + C_5 C_L C_{gd} L_5 L_L R_5 g_m r_o^2 s^5 + C_5 C_L C_{gd} L_5 L_L R_5 r_o s^5 + C_5 C_L C_{gd$

- 10.87 INVALID-ORDER-87  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{L_5 s}{C_5 L_5 s^2 + 1} + R_5, L_L s + R_L + \frac{1}{C_L s}\right)$
- $H(s) = \frac{1}{C_5 C_L C_{gd}^2 C_{gs} L_5 L_L R_5 r_o^2 s^7 + C_5 C_L C_{gd}^2 C_{gs} L_5 R_5 R_L r_o^2 s^5 + C_5 C_L C_{gd}^2 C_{gs} L_5 L_L R_5 r_o^2 s^5 + C_5 C_L C_{gd}^2 C_{gs} L_5 R_L r_o s^5 + C_5 C_L C_{gd}^2 C_{gs}^2 C_{gs}^2 C_{gs}^2 C_{gs}^2 C_{gs}^2 C_{gs}^2 C_{gs}^2 C_$
- 10.88 INVALID-ORDER-88  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{L_5 s}{C_5 L_5 s^2 + 1} + R_5, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}}\right)$
- $H(s) = \frac{1}{C_5C_LC_{gd}C_{gs}L_5L_LR_5R_Lr_o^2s^6 + C_5C_LC_{gd}L_5L_LR_5R_Lr_os^5 + C_5C_LC_{gd$
- **10.89** INVALID-ORDER-89  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{L_5 s}{C_5 L_5 s^2 + 1} + R_5, \frac{L_L s}{C_L L_L s^2 + 1} + R_L\right)$
- $H(s) = \frac{1}{C_5 C_L C_{gd}^2 C_{gs} L_5 L_L R_5 R_L r_o^2 s^7 + C_5 C_L C_{gd} L_5 L_L R_5 R_L r_o s^6 + C_5 C_L C_{g$
- 10.90 INVALID-ORDER-90  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{L_5 s}{C_5 L_5 s^2 + 1} + R_5, \frac{R_L \left(L_L s + \frac{1}{C_L s}\right)}{L_L s + R_L + \frac{1}{C_L s}}\right)$
- $H(s) = \frac{H(s)}{C_5 C_L C_{gd}^2 C_{gs} L_5 L_L R_5 R_L r_o^2 s^7 + C_5 C_L C_{gd} L_5 L_L R_5 R_L r_o s^6 + C_5 C_L C$
- 10.91 INVALID-ORDER-91  $Z(s) = \left(\infty, \ \infty, \ \infty, \ \infty, \ \frac{R_5\left(L_5 s + \frac{1}{C_5 s}\right)}{L_5 s + R_5 + \frac{1}{C_5 s}}, \ R_L\right)$
- $H(s) = \frac{1}{C_5 C_{gd}^2 C_{gs} L_5 R_5 R_L r_o^2 s^5 + C_5 C_{gd}^2 L_5 R_5 R_L r_o s^4 + C_5 C_{gd} C_{gs} L_5 R_L r_o s^4 + C_5 C_{gd} C_{gs} L_5$
- 10.92 INVALID-ORDER-92  $Z(s) = \left(\infty, \ \infty, \ \infty, \ \infty, \ \frac{R_5\left(L_5 s + \frac{1}{C_5 s}\right)}{L_5 s + R_5 + \frac{1}{C_5 s}}, \ \frac{1}{C_L s}\right)$
- $H(s) = \frac{1}{C_5 C_L C_{gd} C_{gs} L_5 R_5 r_o^2 s^5 + C_5 C_L C_{gd} L_5 R_5 r_o s^4 + 2 C_5 C_L C_{gd} L_5 R_5 r_o s^4$
- 10.93 INVALID-ORDER-93  $Z(s) = \left(\infty, \ \infty, \ \infty, \ \infty, \ \frac{R_5\left(L_5 s + \frac{1}{C_5 s}\right)}{L_5 s + R_5 + \frac{1}{C_5 s}}, \ \frac{R_L}{C_L R_L s + 1}\right)$
- $H(s) = \frac{1}{C_5 C_L C_{gd} C_{gs} L_5 R_5 R_L r_o^2 s^5 + C_5 C_L C_{gd} L_5 R_5 R_L r_o s^4 + C_5 C_L C_{gd} L_5 R_5 R_$
- 10.94 INVALID-ORDER-94  $Z(s) = \left(\infty, \ \infty, \ \infty, \ \infty, \ \frac{R_5\left(L_5 s + \frac{1}{C_5 s}\right)}{L_5 s + R_5 + \frac{1}{C_5 s}}, \ R_L + \frac{1}{C_L s}\right)$
- $H(s) = \frac{1}{C_5 C_L C_{gd}^2 C_{gs} L_5 R_5 R_L r_o^2 s^6 + C_5 C_L C_{gd}^2 L_5 R_5 R_L r_o s^5 + C_5 C_L C_{gd} L_5 R_$
- 10.95 INVALID-ORDER-95  $Z(s) = \left(\infty, \ \infty, \ \infty, \ \infty, \ \frac{R_5\left(L_5 s + \frac{1}{C_5 s}\right)}{L_5 s + R_5 + \frac{1}{C_5 s}}, \ L_L s + \frac{1}{C_L s}\right)$
- $H(s) = \frac{1}{C_5 C_L C_{gd}^2 C_{gs} L_5 L_L R_5 r_o^2 s^7 + C_5 C_L C_{gd} L_5 L_L R_5 r_o s^6 + 3 C_5 C_L C_{gd} L_5 L_L R_5 r_o s^6 + 3 C_5 C_L C_{gd} L_5 L_L R_5 r_o s^6 + 2 C_5 C_L C_{gd} L_5 L_L R_5 r_o s^6$
- 10.96 INVALID-ORDER-96  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{R_5\left(L_5 s + \frac{1}{C_5 s}\right)}{L_5 s + R_5 + \frac{1}{C_5 s}}, \frac{L_L s}{C_L L_L s^2 + 1}\right)$
- $H(s) = \frac{1}{C_5 C_L C_{gd} C_{gs} L_5 L_L R_5 r_o^2 s^6 + C_5 C_L C_{gd} L_5 L_L R_5 g_m r_o s^5 + C_5 C_L C_{gd} L_5$
- 10.97 INVALID-ORDER-97  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{R_5\left(L_5 s + \frac{1}{C_5 s}\right)}{L_5 s + R_5 + \frac{1}{C_5 s}}, L_L s + R_L + \frac{1}{C_L s}\right)$
- $H(s) = \frac{1}{C_5 C_L C_{gd}^2 C_{gs} L_5 L_L R_5 r_o^2 s^7 + C_5 C_L C_{gd}^2 C_{gs} L_5 R_5 R_L r_o s^5 + C_5 C_L C_{gd}^2 C_{gs} L_5 L_L R_5 r_o s^6 + C_5 C_L C_{gd}^2 C_{gs} L_5 L_L R_5 r_o s^6 + C_5 C_L C_{gd}^2 C_{gs} L_5 L_L R_5 r_o s^6 + C_5 C_L C_{gd}^2 C_{gs} L_5 L_L R_5 r_o s^6 + C_5 C_L C_{gd}^2 C_{gs} L_5 R_L r_o s^6 + C_5 C_L C_{gd}^2 C_{gs} L_5 L_L R_5 r_o s^6 + C_5 C_L C_{gd}^2 C_{gs} L_5 R_L r_o s^6 + C_5 C_L C_{gd}^2 C_{gs} L_5$
- 10.98 INVALID-ORDER-98  $Z(s) = \left(\infty, \ \infty, \ \infty, \ \infty, \ \frac{R_5\left(L_5s + \frac{1}{C_5s}\right)}{L_5s + R_5 + \frac{1}{C_5s}}, \ \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}}\right)$
- $H(s) = \frac{1}{C_5 C_L C_{gd} C_{gs} L_5 L_L R_5 R_L r_o^2 s^6 + C_5 C_L C_{gd} L_5 L_L R_5 R_L g_m r_o^2 s^5 + C_5 C_L$
- 10.99 INVALID-ORDER-99  $Z(s) = \left(\infty, \infty, \infty, \infty, \frac{R_5\left(L_5 s + \frac{1}{C_5 s}\right)}{L_5 s + R_5 + \frac{1}{C_5 s}}, \frac{L_L s}{C_L L_L s^2 + 1} + R_L\right)$
- $H(s) = \frac{1}{C_5 C_L C_{gd}^2 C_{gs} L_5 L_L R_5 R_L r_o^2 s^7 + C_5 C_L C_{gd}^2 L_5 L_L R_5 R_L r_o s^6 + C_5 C_L C_{gd} C_{gs} L_5 L_L R_5 R_L r_o s^6 + C_5 C_L C_{gd}^2 L_5 L_L R_5 R_L r_o s^6 + C_5 C_L C_{gd}^2 C_{gs}^2 L_5 L_L R_5 R_L r_o s^6 + C_5 C_L C_{gd}^2 C_{gs}^2 L_L R_5 R_L r_o s^6 + C_5 C_L C_{gd}^2 C_{gs}^2 L_L R_5 R_L r_o s^6 + C_5 C_L C_{gd}^2 C_{gs}^2 L_L R_5 R_L r_o s^6 + C_5 C_L C_{gd}^2 C_{gs}^2 L_L R_5 R_L r_o s^6 + C_5 C_L C_{gd}^2 C_{gs}^2 L_L R_5 R_L r_o s^6 + C_5 C_L C_{gd}^2 C_{gs}^2 L_L R_5 R_L r_o s^6 + C_5 C_L C_{gd}^2 C_{gs}^2 L_L R_5 R_L r_o s^6 + C_5 C_L$
- 10.100 INVALID-ORDER-100  $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{R_5\left(L_5s + \frac{1}{C_5s}\right)}{L_5s + R_5 + \frac{1}{C_5s}}, \ \frac{R_L\left(L_Ls + \frac{1}{C_Ls}\right)}{L_Ls + R_L + \frac{1}{C_Ls}}\right)$
- $H(s) = \frac{1}{C_5 C_L C_{gd}^2 C_{gs} L_5 L_L R_5 R_L r_o^2 s^7 + C_5 C_L C_{gd}^2 L_5 L_L R_5 R_L r_o^2 s^6 + C_5 C_L C_{gd}^2 C_{gs} L_L R_5 R_L r_o^2 s^6 + C_5 C_L C_{gd}^2 C_{gs}^2 L_L R_5 R_L r_o^2 s^6 + C_5 C_L C_{gd}^2 C_{gs}^2 L_L R_5 R_L r_o^2 s^6 + C_5 C_L C_{gd}^2 C_{gs}^2 L_L R_5 R_L r_o^2 r_o^2 C_{gs}^2 L_L R_5 R_L r_o^2 r_o^2 C_{gs}^2 L_L R_5 R_L r_o^2 r_o^2 C_{gs}^$