## Filter Summary Report: VLSI,CMMF,Automated,NA,Z2,Z3,Z5,Z6

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Contents

1 Examined H(z) for VLSI CMMF Automated NA Z2 Z3 Z5 Z6:  $\frac{Z_2Z_6}{Z_5}$ 

$$H(z) = \frac{Z_2 Z_6}{Z_5}$$

**2** AP

3 BP

**3.1** BP-1  $Z(s) = \left(\infty, R_2, R_3, \infty, R_5 + \frac{1}{C_5 s}, \frac{R_6}{C_6 R_6 s + 1}\right)$ 

 $H(s) = \frac{C_5 R_2 R_6 s}{C_5 C_6 R_5 R_6 s^2 + s \left(C_5 R_5 + C_6 R_6\right) + 1}$ 

Parameters:

Q:  $\frac{\sqrt{C_5}\sqrt{C_6}\sqrt{R_5}\sqrt{R_6}}{C_5R_5+C_6R_6}$  wo:  $\frac{1}{\sqrt{C_5}\sqrt{C_6}\sqrt{R_5}\sqrt{R_6}}$  bandwidth:  $\frac{C_5R_5+C_6R_6}{C_5C_6R_5R_6}$  K-LP: 0 K-HP: 0 K-BP:  $\frac{C_5R_2R_6}{C_5R_5+C_6R_6}$  Qz: None Wz: None

**3.2** BP-2  $Z(s) = \left(\infty, R_2, \frac{1}{C_3 s}, \infty, R_5 + \frac{1}{C_5 s}, \frac{R_6}{C_6 R_6 s + 1}\right)$ 

 $H(s) = \frac{C_5 R_2 R_6 s}{C_5 C_6 R_5 R_6 s^2 + s \left(C_5 R_5 + C_6 R_6\right) + 1}$ 

Parameters:

Q:  $\frac{\sqrt{C_5}\sqrt{C_6}\sqrt{R_5}\sqrt{R_6}}{C_5R_5+C_6R_6}$  wo:  $\frac{1}{\sqrt{C_5}\sqrt{C_6}\sqrt{R_5}\sqrt{R_6}}$  bandwidth:  $\frac{C_5R_5+C_6R_6}{C_5C_6R_5R_6}$  K-LP: 0 K-HP: 0 K-BP:  $\frac{C_5R_2R_6}{C_5R_5+C_6R_6}$  Qz: None Wz: None

**3.3 BP-3**  $Z(s) = \left(\infty, R_2, R_3 + \frac{1}{C_3 s}, \infty, R_5 + \frac{1}{C_5 s}, \frac{R_6}{C_6 R_6 s + 1}\right)$ 

 $H(s) = \frac{C_5 R_2 R_6 s}{C_5 C_6 R_5 R_6 s^2 + s \left(C_5 R_5 + C_6 R_6\right) + 1}$ 

Parameters:

Q:  $\frac{\sqrt{C_5}\sqrt{C_6}\sqrt{R_5}\sqrt{R_6}}{C_5R_5+C_6R_6}$  wo:  $\frac{1}{\sqrt{C_5}\sqrt{C_6}\sqrt{R_5}\sqrt{R_6}}$  bandwidth:  $\frac{C_5R_5+C_6R_6}{C_5C_6R_5R_6}$  K-LP: 0 K-HP: 0 K-BP:  $\frac{C_5R_2R_6}{C_5R_5+C_6R_6}$  Qz: None Wz: None

**3.4** BP-4 
$$Z(s) = \left(\infty, R_2, \frac{R_3}{C_3 R_3 s + 1}, \infty, R_5 + \frac{1}{C_5 s}, \frac{R_6}{C_6 R_6 s + 1}\right)$$

Q:  $\frac{\sqrt{C_5}\sqrt{C_6}\sqrt{R_5}\sqrt{R_6}}{C_5R_5+C_6R_6}$  wo:  $\frac{1}{\sqrt{C_5}\sqrt{C_6}\sqrt{R_5}\sqrt{R_6}}$  bandwidth:  $\frac{C_5R_5+C_6R_6}{C_5C_6R_5R_6}$  K-LP: 0 K-HP: 0 K-BP:  $\frac{C_5R_2R_6}{C_5R_5+C_6R_6}$  Qz: None Wz: None

**3.5 BP-5** 
$$Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, R_3, \infty, \frac{1}{C_5 s}, \frac{R_6}{C_6 R_6 s + 1}\right)$$

#### Parameters:

Q:  $\frac{\sqrt{C_2}\sqrt{C_6}\sqrt{R_2}\sqrt{R_6}}{C_2R_2+C_6R_6}$  wo:  $\frac{1}{\sqrt{C_2}\sqrt{C_6}\sqrt{R_2}\sqrt{R_6}}$  bandwidth:  $\frac{C_2R_2+C_6R_6}{C_2C_6R_2R_6}$  K-LP: 0 K-HP: 0 K-BP:  $\frac{C_5R_2R_6}{C_2R_2+C_6R_6}$  Qz: None Wz: None

**3.6 BP-6** 
$$Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, R_3, \infty, R_5 + \frac{1}{C_5 s}, R_6\right)$$

#### Parameters:

Q:  $\frac{\sqrt{C_2}\sqrt{C_5}\sqrt{R_2}\sqrt{R_5}}{C_2R_2+C_5R_5}$  wo:  $\frac{1}{\sqrt{C_2}\sqrt{C_5}\sqrt{R_2}\sqrt{R_5}}$  bandwidth:  $\frac{C_2R_2+C_5R_5}{C_2C_5R_2R_5}$  K-LP: 0 K-HP: 0 K-BP:  $\frac{C_5R_2R_6}{C_2R_2+C_5R_5}$  Qz: None Wz: None

3.7 BP-7 
$$Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, \frac{1}{C_3 s}, \infty, \frac{1}{C_5 s}, \frac{R_6}{C_6 R_6 s + 1}\right)$$

#### Parameters:

Q:  $\frac{\sqrt{C_2}\sqrt{C_6}\sqrt{R_2}\sqrt{R_6}}{C_2R_2+C_6R_6}$  wo:  $\frac{1}{\sqrt{C_2}\sqrt{C_6}\sqrt{R_2}\sqrt{R_6}}$  bandwidth:  $\frac{C_2R_2+C_6R_6}{C_2C_6R_2R_6}$  K-LP: 0

$$H(s) = \frac{C_5 R_2 R_6 s}{C_5 C_6 R_5 R_6 s^2 + s \left(C_5 R_5 + C_6 R_6\right) + 1}$$

$$H(s) = \frac{C_5 R_2 R_6 s}{C_2 C_6 R_2 R_6 s^2 + s (C_2 R_2 + C_6 R_6) + 1}$$

$$H(s) = \frac{C_5 R_2 R_6 s}{C_2 C_5 R_2 R_5 s^2 + s \left(C_2 R_2 + C_5 R_5\right) + 1}$$

$$H(s) = \frac{C_5 R_2 R_6 s}{C_2 C_6 R_2 R_6 s^2 + s \left(C_2 R_2 + C_6 R_6\right) + 1}$$

K-HP: 0 K-BP:  $\frac{C_5R_2R_6}{C_2R_2+C_6R_6}$ Qz: None Wz: None

**3.8** BP-8 
$$Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, \frac{1}{C_3 s}, \infty, R_5 + \frac{1}{C_5 s}, R_6\right)$$

#### Parameters:

Q:  $\frac{\sqrt{C_2}\sqrt{C_5}\sqrt{R_2}\sqrt{R_5}}{C_2R_2+C_5R_5}$  wo:  $\frac{1}{\sqrt{C_2}\sqrt{C_5}\sqrt{R_2}\sqrt{R_5}}$  bandwidth:  $\frac{C_2R_2+C_5R_5}{C_2C_5R_2R_5}$ 

K-LP: 0

K-HP: 0 K-BP:  $\frac{C_5R_2R_6}{C_2R_2+C_5R_5}$ Qz: None

Wz: None

**3.9 BP-9** 
$$Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, R_3 + \frac{1}{C_3 s}, \infty, \frac{1}{C_5 s}, \frac{R_6}{C_6 R_6 s + 1}\right)$$

#### Parameters:

Q:  $\frac{\sqrt{C_2}\sqrt{C_6}\sqrt{R_2}\sqrt{R_6}}{C_2R_2+C_6R_6}$  wo:  $\frac{1}{\sqrt{C_2}\sqrt{C_6}\sqrt{R_2}\sqrt{R_6}}$  bandwidth:  $\frac{C_2R_2+C_6R_6}{C_2C_6R_2R_6}$  K. I.P. 0

K-LP: 0

K-HP: 0 K-BP:  $\frac{C_5R_2R_6}{C_2R_2+C_6R_6}$ Qz: None

Wz: None

**3.10** BP-10 
$$Z(s) = \left(\infty, \frac{R_2}{C_2R_2s+1}, R_3 + \frac{1}{C_3s}, \infty, R_5 + \frac{1}{C_5s}, R_6\right)$$

#### Parameters:

Q:  $\frac{\sqrt{C_2}\sqrt{C_5}\sqrt{R_2}\sqrt{R_5}}{C_2R_2+C_5R_5}$  wo:  $\frac{1}{\sqrt{C_2}\sqrt{C_5}\sqrt{R_2}\sqrt{R_5}}$  bandwidth:  $\frac{C_2R_2+C_5R_5}{C_2C_5R_2R_5}$  K I.D. O

K-LP: 0 K-HP: 0

K-BP:  $\frac{C_5R_2R_6}{C_2R_2+C_5R_5}$ Qz: None

Wz: None

$$H(s) = \frac{C_5 R_2 R_6 s}{C_2 C_5 R_2 R_5 s^2 + s \left(C_2 R_2 + C_5 R_5\right) + 1}$$

$$H(s) = \frac{C_5 R_2 R_6 s}{C_2 C_6 R_2 R_6 s^2 + s \left(C_2 R_2 + C_6 R_6\right) + 1}$$

$$H(s) = \frac{C_5 R_2 R_6 s}{C_2 C_5 R_2 R_5 s^2 + s \left(C_2 R_2 + C_5 R_5\right) + 1}$$

**3.11 BP-11** 
$$Z(s) = \left(\infty, \frac{R_2}{C_2R_2s+1}, \frac{R_3}{C_3R_3s+1}, \infty, \frac{1}{C_5s}, \frac{R_6}{C_6R_6s+1}\right)$$

Q:  $\frac{\sqrt{C_2}\sqrt{C_6}\sqrt{R_2}\sqrt{R_6}}{C_2R_2+C_6R_6}$  wo:  $\frac{1}{\sqrt{C_2}\sqrt{C_6}\sqrt{R_2}\sqrt{R_6}}$  bandwidth:  $\frac{C_2R_2+C_6R_6}{C_2C_6R_2R_6}$  K-LP: 0 K-HP: 0 K-BP:  $\frac{C_5R_2R_6}{C_2R_2+C_6R_6}$  Qz: None Wz: None

**3.12** BP-12  $Z(s) = \left(\infty, \frac{R_2}{C_2R_2s+1}, \frac{R_3}{C_3R_3s+1}, \infty, R_5 + \frac{1}{C_5s}, R_6\right)$ 

Parameters:

Q:  $\frac{\sqrt{C_2}\sqrt{C_5}\sqrt{R_2}\sqrt{R_5}}{C_2R_2+C_5R_5}$  wo:  $\frac{1}{\sqrt{C_2}\sqrt{C_5}\sqrt{R_2}\sqrt{R_5}}$  bandwidth:  $\frac{C_2R_2+C_5R_5}{C_2C_5R_2R_5}$  K-LP: 0

K-HP: 0 K-BP:  $\frac{C_5R_2R_6}{C_2R_2+C_5R_5}$ Qz: None

Wz: None

4 BP-UNSTABLE-ZERO

5 BS

6 **GE** 

7 HP

8 LP

**8.1** LP-1  $Z(s) = \left(\infty, \frac{1}{C_2 s}, R_3, \infty, R_5 + \frac{1}{C_5 s}, \frac{R_6}{C_6 R_6 s + 1}\right)$ 

Parameters:

Q:  $\frac{\sqrt{C_5}\sqrt{C_6}\sqrt{R_5}\sqrt{R_6}}{C_5R_5+C_6R_6}$  wo:  $\frac{1}{\sqrt{C_5}\sqrt{C_6}\sqrt{R_5}\sqrt{R_6}}$  bandwidth:  $\frac{C_5R_5+C_6R_6}{C_5C_6R_5R_6}$  K-LP:  $\frac{C_5R_6}{C_2}$ 

$$H(s) = \frac{C_5 R_2 R_6 s}{C_2 C_6 R_2 R_6 s^2 + s \left(C_2 R_2 + C_6 R_6\right) + 1}$$

$$H(s) = \frac{C_5 R_2 R_6 s}{C_2 C_5 R_2 R_5 S^2 + s (C_2 R_2 + C_5 R_5) + 1}$$

$$H(s) = \frac{C_5 R_6}{C_2 C_5 C_6 R_5 R_6 s^2 + C_2 + s \left(C_2 C_5 R_5 + C_2 C_6 R_6\right)}$$

K-HP: 0 K-BP: 0 Qz: None Wz: None

**8.2** LP-2 
$$Z(s) = \left(\infty, \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, R_5 + \frac{1}{C_5 s}, \frac{R_6}{C_6 R_6 s + 1}\right)$$

#### Parameters:

Qz: None Wz: None

Q:  $\frac{\sqrt{C_5}\sqrt{C_6}\sqrt{R_5}\sqrt{R_6}}{C_5R_5+C_6R_6}$ wo:  $\frac{1}{\sqrt{C_5}\sqrt{C_6}\sqrt{R_5}\sqrt{R_6}}$ bandwidth:  $\frac{C_5R_5+C_6R_6}{C_5C_6R_5R_6}$ 

K-LP:  $\frac{C_5R_6}{C_2}$ K-HP: 0 K-BP: 0

**8.3** LP-3  $Z(s) = \left(\infty, \frac{1}{C_2 s}, R_3 + \frac{1}{C_3 s}, \infty, R_5 + \frac{1}{C_5 s}, \frac{R_6}{C_6 R_6 s + 1}\right)$ 

#### Parameters:

Q:  $\frac{\sqrt{C_5}\sqrt{C_6}\sqrt{R_5}\sqrt{R_6}}{C_5R_5+C_6R_6}$  wo:  $\frac{1}{\sqrt{C_5}\sqrt{C_6}\sqrt{R_5}\sqrt{R_6}}$  bandwidth:  $\frac{C_5R_5+C_6R_6}{C_5C_6R_5R_6}$ 

K-LP:  $\frac{C_5R_6}{C_2}$ K-HP: 0

K-BP: 0

Qz: None

Wz: None

**8.4** LP-4  $Z(s) = \left(\infty, \frac{1}{C_2 s}, \frac{R_3}{C_3 R_3 s + 1}, \infty, R_5 + \frac{1}{C_5 s}, \frac{R_6}{C_6 R_6 s + 1}\right)$ 

#### Parameters:

Q:  $\frac{\sqrt{C_5}\sqrt{C_6}\sqrt{R_5}\sqrt{R_6}}{C_5R_5+C_6R_6}$  wo:  $\frac{1}{\sqrt{C_5}\sqrt{C_6}\sqrt{R_5}\sqrt{R_6}}$  bandwidth:  $\frac{C_5R_5+C_6R_6}{C_5C_6R_5R_6}$ 

K-LP:  $\frac{C_5 R_6}{C_2}$ K-HP: 0 K-BP: 0

Qz: None

Wz: None

$$H(s) = \frac{C_5 R_6}{C_2 C_5 C_6 R_5 R_6 s^2 + C_2 + s \left(C_2 C_5 R_5 + C_2 C_6 R_6\right)}$$

$$H(s) = \frac{C_5 R_6}{C_2 C_5 C_6 R_5 R_6 s^2 + C_2 + s \left(C_2 C_5 R_5 + C_2 C_6 R_6\right)}$$

$$H(s) = \frac{C_5 R_6}{C_2 C_5 C_6 R_5 R_6 s^2 + C_2 + s \left(C_2 C_5 R_5 + C_2 C_6 R_6\right)}$$

**8.5** LP-5 
$$Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, R_3, \infty, R_5, \frac{R_6}{C_6 R_6 s + 1}\right)$$

Q:  $\frac{\sqrt{C_2}\sqrt{C_6}\sqrt{R_2}\sqrt{R_6}}{C_2R_2+C_6R_6}$  wo:  $\frac{1}{\sqrt{C_2}\sqrt{C_6}\sqrt{R_2}\sqrt{R_6}}$  bandwidth:  $\frac{C_2R_2+C_6R_6}{C_2C_6R_2R_6}$  K-LP:  $\frac{R_2R_6}{R_5}$  K-HP: 0 K-BP: 0 Qz: None Wz: None

**8.6** LP-6 
$$Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, R_3, \infty, R_5 + \frac{1}{C_5 s}, \frac{1}{C_6 s}\right)$$

#### Parameters:

Q:  $\frac{\sqrt{C_2}\sqrt{C_5}\sqrt{R_2}\sqrt{R_5}}{C_2R_2+C_5R_5}$  wo:  $\frac{1}{\sqrt{C_2}\sqrt{C_5}\sqrt{R_2}\sqrt{R_5}}$  bandwidth:  $\frac{C_2R_2+C_5R_5}{C_2C_5R_2R_5}$  K-LP:  $\frac{C_5R_2}{C_6}$  K-HP: 0 K-BP: 0 Qz: None Wz: None

**8.7** LP-7 
$$Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, \frac{1}{C_3 s}, \infty, R_5, \frac{R_6}{C_6 R_6 s + 1}\right)$$

#### Parameters:

Q:  $\frac{\sqrt{C_2}\sqrt{C_6}\sqrt{R_2}\sqrt{R_6}}{C_2R_2+C_6R_6}$  wo:  $\frac{1}{\sqrt{C_2}\sqrt{C_6}\sqrt{R_2}\sqrt{R_6}}$  bandwidth:  $\frac{C_2R_2+C_6R_6}{C_2C_6R_2R_6}$  K-LP:  $\frac{R_2R_6}{R_5}$  K-HP: 0 K-BP: 0 Qz: None Wz: None

**8.8** LP-8 
$$Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, \frac{1}{C_3 s}, \infty, R_5 + \frac{1}{C_5 s}, \frac{1}{C_6 s}\right)$$

#### Parameters:

 $\begin{array}{l} \text{Q: } \frac{\sqrt{C_2}\sqrt{C_5}\sqrt{R_2}\sqrt{R_5}}{C_2R_2+C_5R_5} \\ \text{wo: } \frac{1}{\sqrt{C_2}\sqrt{C_5}\sqrt{R_2}\sqrt{R_5}} \\ \text{bandwidth: } \frac{C_2R_2+C_5R_5}{C_2C_5R_2R_5} \\ \text{K-LP: } \frac{C_5R_2}{C_6} \end{array}$ 

$$H(s) = \frac{R_2 R_6}{C_2 C_6 R_2 R_5 R_6 s^2 + R_5 + s \left(C_2 R_2 R_5 + C_6 R_5 R_6\right)}$$

$$H(s) = \frac{C_5 R_2}{C_2 C_5 C_6 R_2 R_5 s^2 + C_6 + s \left(C_2 C_6 R_2 + C_5 C_6 R_5\right)}$$

$$H(s) = \frac{R_2 R_6}{C_2 C_6 R_2 R_5 R_6 s^2 + R_5 + s \left(C_2 R_2 R_5 + C_6 R_5 R_6\right)}$$

$$H(s) = \frac{C_5 R_2}{C_2 C_5 C_6 R_2 R_5 s^2 + C_6 + s \left(C_2 C_6 R_2 + C_5 C_6 R_5\right)}$$

K-HP: 0 K-BP: 0 Qz: None Wz: None

**8.9** LP-9 
$$Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, R_3 + \frac{1}{C_3 s}, \infty, R_5, \frac{R_6}{C_6 R_6 s + 1}\right)$$

#### Parameters:

Q:  $\frac{\sqrt{C_2}\sqrt{C_6}\sqrt{R_2}\sqrt{R_6}}{C_2R_2+C_6R_6}$  wo:  $\frac{1}{\sqrt{C_2}\sqrt{C_6}\sqrt{R_2}\sqrt{R_6}}$  bandwidth:  $\frac{C_2R_2+C_6R_6}{C_2C_6R_2R_6}$  K-LP:  $\frac{R_2R_6}{R_5}$  K-HP: 0

K-BP: 0 Qz: None Wz: None

**8.10** LP-10 
$$Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, R_3 + \frac{1}{C_3 s}, \infty, R_5 + \frac{1}{C_5 s}, \frac{1}{C_6 s}\right)$$

#### Parameters:

Q:  $\frac{\sqrt{C_2}\sqrt{C_5}\sqrt{R_2}\sqrt{R_5}}{C_2R_2+C_5R_5}$  wo:  $\frac{1}{\sqrt{C_2}\sqrt{C_5}\sqrt{R_2}\sqrt{R_5}}$  bandwidth:  $\frac{C_2R_2+C_5R_5}{C_2C_5R_2R_5}$  K-LP:  $\frac{C_5R_2}{C_6}$  K-HP: 0 K-BP: 0 Qz: None

**8.11** LP-11  $Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, \frac{R_3}{C_3 R_3 s + 1}, \infty, R_5, \frac{R_6}{C_6 R_6 s + 1}\right)$ 

#### Parameters:

Wz: None

Q:  $\frac{\sqrt{C_2}\sqrt{C_6}\sqrt{R_2}\sqrt{R_6}}{C_2R_2+C_6R_6}$  wo:  $\frac{1}{\sqrt{C_2}\sqrt{C_6}\sqrt{R_2}\sqrt{R_6}}$  bandwidth:  $\frac{C_2R_2+C_6R_6}{C_2C_6R_2R_6}$  K-LP:  $\frac{R_2R_6}{R_5}$  K-HP: 0 K-BP: 0 Qz: None Wz: None

$$H(s) = \frac{R_2 R_6}{C_2 C_6 R_2 R_5 R_6 s^2 + R_5 + s \left(C_2 R_2 R_5 + C_6 R_5 R_6\right)}$$

$$H(s) = \frac{C_5 R_2}{C_2 C_5 C_6 R_2 R_5 s^2 + C_6 + s \left(C_2 C_6 R_2 + C_5 C_6 R_5\right)}$$

$$H(s) = \frac{R_2 R_6}{C_2 C_6 R_2 R_5 R_6 s^2 + R_5 + s \left(C_2 R_2 R_5 + C_6 R_5 R_6\right)}$$

**8.12** LP-12 
$$Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, \frac{R_3}{C_3 R_3 s + 1}, \infty, R_5 + \frac{1}{C_5 s}, \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_5 R_2}{C_2 C_5 C_6 R_2 R_5 s^2 + C_6 + s \left(C_2 C_6 R_2 + C_5 C_6 R_5\right)}$$

Q: 
$$\frac{\sqrt{C_2}\sqrt{C_5}\sqrt{R_2}\sqrt{R_5}}{C_2R_2+C_5R_5}$$
 wo:  $\frac{1}{\sqrt{C_2}\sqrt{C_5}\sqrt{R_2}\sqrt{R_5}}$  bandwidth:  $\frac{C_2R_2+C_5R_5}{C_2C_5R_2R_5}$  K-LP:  $\frac{C_5R_2}{C_6}$  K-HP: 0 K-BP: 0 Qz: None Wz: None

#### 9 X-INVALID-NUMER

**9.1** X-INVALID-NUMER-1 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, R_3, \infty, R_5 + \frac{1}{C_5 s}, \frac{R_6}{C_6 R_6 s + 1}\right)$$

$$H(s) = \frac{C_2C_5R_2R_6s + C_5R_6}{C_2C_5C_6R_5R_6s^2 + C_2 + s\left(C_2C_5R_5 + C_2C_6R_6\right)}$$

Parameters:

Q: 
$$\frac{\sqrt{C_5}\sqrt{C_6}\sqrt{R_5}\sqrt{R_6}}{C_5R_5+C_6R_6}$$
 wo:  $\frac{1}{\sqrt{C_5}\sqrt{C_6}\sqrt{R_5}\sqrt{R_6}}$  bandwidth:  $\frac{C_5R_5+C_6R_6}{C_5C_6R_5R_6}$  K-LP:  $\frac{C_5R_6}{C_2}$  K-HP: 0 K-BP:  $\frac{C_5R_2R_6}{C_5R_5+C_6R_6}$  Qz: None Wz: None

**9.2** X-INVALID-NUMER-2 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, R_5 + \frac{1}{C_5 s}, \frac{R_6}{C_6 R_6 s + 1}\right)$$

$$H(s) = \frac{C_2 C_5 R_2 R_6 s + C_5 R_6}{C_2 C_5 C_6 R_5 R_6 s^2 + C_2 + s \left(C_2 C_5 R_5 + C_2 C_6 R_6\right)}$$

Parameters:

Q: 
$$\frac{\sqrt{C_5}\sqrt{C_6}\sqrt{R_5}\sqrt{R_6}}{C_5R_5+C_6R_6}$$
 wo:  $\frac{1}{\sqrt{C_5}\sqrt{C_6}\sqrt{R_5}\sqrt{R_6}}$  bandwidth:  $\frac{C_5R_5+C_6R_6}{C_5C_6R_5R_6}$  K-LP:  $\frac{C_5R_6}{C_2}$  K-HP: 0 K-BP:  $\frac{C_5R_2R_6}{C_5R_5R_6+C_6R_6}$  Qz: None Wz: None

**9.3** X-INVALID-NUMER-3 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, R_3 + \frac{1}{C_3 s}, \infty, R_5 + \frac{1}{C_5 s}, \frac{R_6}{C_6 R_6 s + 1}\right)$$

$$H(s) = \frac{C_2C_5R_2R_6s + C_5R_6}{C_2C_5C_6R_5R_6s^2 + C_2 + s\left(C_2C_5R_5 + C_2C_6R_6\right)}$$

Parameters:

Q: 
$$\frac{\sqrt{C_5}\sqrt{C_6}\sqrt{R_5}\sqrt{R_6}}{C_5R_5+C_6R_6}$$

wo: 
$$\frac{1}{\sqrt{C_5}\sqrt{C_6}\sqrt{R_5}\sqrt{R_6}}$$
 bandwidth:  $\frac{C_5R_5+C_6R_6}{C_5C_6R_5R_6}$  K-LP:  $\frac{C_5R_6}{C_2}$  K-HP: 0 K-BP:  $\frac{C_5R_2R_6}{C_5R_5+C_6R_6}$  Qz: None

Wz: None

9.4 X-INVALID-NUMER-4  $Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, \frac{R_3}{C_3 R_3 s + 1}, \infty, R_5 + \frac{1}{C_5 s}, \frac{R_6}{C_6 R_6 s + 1}\right)$ 

$$H(s) = \frac{C_2C_5R_2R_6s + C_5R_6}{C_2C_5C_6R_5R_6s^2 + C_2 + s\left(C_2C_5R_5 + C_2C_6R_6\right)}$$

#### Parameters:

Q:  $\frac{\sqrt{C_5}\sqrt{C_6}\sqrt{R_5}\sqrt{R_6}}{C_5R_5+C_6R_6}$  wo:  $\frac{1}{\sqrt{C_5}\sqrt{C_6}\sqrt{R_5}\sqrt{R_6}}$  bandwidth:  $\frac{C_5R_5+C_6R_6}{C_5C_6R_5R_6}$ 

K-LP:  $\frac{C_5R_6}{C_2}$ K-HP: 0 K-BP:  $\frac{C_5 R_2 R_6}{C_5 R_5 + C_6 R_6}$ Qz: None

Wz: None

**9.5** X-INVALID-NUMER-5  $Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, R_3, \infty, R_5 + \frac{1}{C_5 s}, R_6 + \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_5 C_6 R_2 R_6 s + C_5 R_2}{C_2 C_5 C_6 R_2 R_5 s^2 + C_6 + s \left(C_2 C_6 R_2 + C_5 C_6 R_5\right)}$$

#### Parameters:

Q:  $\frac{\sqrt{C_2}\sqrt{C_5}\sqrt{R_2}\sqrt{R_5}}{C_2R_2+C_5R_5}$  wo:  $\frac{1}{\sqrt{C_2}\sqrt{C_5}\sqrt{R_2}\sqrt{R_5}}$  bandwidth:  $\frac{C_2R_2+C_5R_5}{C_2C_5R_2R_5}$ 

K-LP:  $\frac{C_5 R_2}{C_6}$ K-HP: 0

K-BP:  $\frac{C_5R_2R_6}{C_2R_2+C_5R_5}$  Qz: None

Wz: None

**9.6** X-INVALID-NUMER-6  $Z(s) = \left(\infty, \frac{R_2}{C_2R_2s+1}, R_3, \infty, \frac{R_5}{C_5R_5s+1}, \frac{R_6}{C_6R_6s+1}\right)$ 

$$H(s) = \frac{C_5 R_2 R_5 R_6 s + R_2 R_6}{C_2 C_6 R_2 R_5 R_6 s^2 + R_5 + s \left(C_2 R_2 R_5 + C_6 R_5 R_6\right)}$$

#### Parameters:

Q:  $\frac{\sqrt{C_2}\sqrt{C_6}\sqrt{R_2}\sqrt{R_6}}{C_2R_2+C_6R_6}$  wo:  $\frac{1}{\sqrt{C_2}\sqrt{C_6}\sqrt{R_2}\sqrt{R_6}}$  bandwidth:  $\frac{C_2R_2+C_6R_6}{C_2C_6R_2R_6}$ 

K-LP:  $\frac{R_2R_6}{R_5}$ K-HP: 0 K-BP:  $\frac{C_5R_2R_6}{C_2R_2+C_6R_6}$ Qz: None

Wz: None

9.7 X-INVALID-NUMER-7 
$$Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, \frac{1}{C_3 s}, \infty, R_5 + \frac{1}{C_5 s}, R_6 + \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_5 C_6 R_2 R_6 s + C_5 R_2}{C_2 C_5 C_6 R_2 R_5 s^2 + C_6 + s \left(C_2 C_6 R_2 + C_5 C_6 R_5\right)}$$

Q:  $\frac{\sqrt{C_2}\sqrt{C_5}\sqrt{R_2}\sqrt{R_5}}{C_2R_2+C_5R_5}$  wo:  $\frac{1}{\sqrt{C_2}\sqrt{C_5}\sqrt{R_2}\sqrt{R_5}}$  bandwidth:  $\frac{C_2R_2+C_5R_5}{C_2C_5R_2R_5}$ 

K-LP:  $\frac{C_5R_2}{C_6}$ K-HP: 0 K-BP:  $\frac{C_5R_2R_6}{C_2R_2+C_5R_5}$ Qz: None Wz: None

**9.8** X-INVALID-NUMER-8  $Z(s) = \left(\infty, \frac{R_2}{C_2R_2s+1}, \frac{1}{C_3s}, \infty, \frac{R_5}{C_5R_5s+1}, \frac{R_6}{C_6R_6s+1}\right)$ 

$$H(s) = \frac{C_5 R_2 R_5 R_6 s + R_2 R_6}{C_2 C_6 R_2 R_5 R_6 s^2 + R_5 + s \left(C_2 R_2 R_5 + C_6 R_5 R_6\right)}$$

#### Parameters:

Q:  $\frac{\sqrt{C_2}\sqrt{C_6}\sqrt{R_2}\sqrt{R_6}}{C_2R_2+C_6R_6}$  wo:  $\frac{1}{\sqrt{C_2}\sqrt{C_6}\sqrt{R_2}\sqrt{R_6}}$  bandwidth:  $\frac{C_2R_2+C_6R_6}{C_2C_6R_2R_6}$ 

K-LP:  $\frac{R_2R_6}{R_5}$ K-HP: 0 K-BP:  $\frac{C_5R_2R_6}{C_2R_2+C_6R_6}$ Qz: None Wz: None

**9.9** X-INVALID-NUMER-9  $Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, R_3 + \frac{1}{C_3 s}, \infty, R_5 + \frac{1}{C_5 s}, R_6 + \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_5 C_6 R_2 R_6 s + C_5 R_2}{C_2 C_5 C_6 R_2 R_5 s^2 + C_6 + s \left(C_2 C_6 R_2 + C_5 C_6 R_5\right)}$$

#### Parameters:

Q:  $\frac{\sqrt{C_2}\sqrt{C_5}\sqrt{R_2}\sqrt{R_5}}{C_2R_2+C_5R_5}$  wo:  $\frac{1}{\sqrt{C_2}\sqrt{C_5}\sqrt{R_2}\sqrt{R_5}}$  bandwidth:  $\frac{C_2R_2+C_5R_5}{C_2C_5R_2R_5}$  K-LP:  $\frac{C_5R_2}{C_6}$  K-HP: 0 K-BP:  $\frac{C_5R_2R_6}{C_2R_2+C_5R_5}$  Qz: None Wz: None

**9.10** X-INVALID-NUMER-10  $Z(s) = \left(\infty, \frac{R_2}{C_2R_2s+1}, R_3 + \frac{1}{C_3s}, \infty, \frac{R_5}{C_5R_5s+1}, \frac{R_6}{C_6R_6s+1}\right)$ 

$$H(s) = \frac{C_5 R_2 R_5 R_6 s + R_2 R_6}{C_2 C_6 R_2 R_5 R_6 s^2 + R_5 + s \left(C_2 R_2 R_5 + C_6 R_5 R_6\right)}$$

#### Parameters:

Q:  $\frac{\sqrt{C_2}\sqrt{C_6}\sqrt{R_2}\sqrt{R_6}}{C_2R_2+C_6R_6}$ wo:  $\frac{1}{\sqrt{C_2}\sqrt{C_6}\sqrt{R_2}\sqrt{R_6}}$ bandwidth:  $\frac{C_2R_2+C_6R_6}{C_2C_6R_2R_6}$ K-LP:  $\frac{R_2R_6}{R_5}$ 

K-HP: 0 K-BP:  $\frac{C_5R_2R_6}{C_2R_2+C_6R_6}$ Qz: None Wz: None

# 9.11 X-INVALID-NUMER-11 $Z(s) = \left(\infty, \frac{R_2}{C_2R_2s+1}, \frac{R_3}{C_3R_3s+1}, \infty, R_5 + \frac{1}{C_5s}, R_6 + \frac{1}{C_6s}\right)$

$$H(s) = \frac{C_5 C_6 R_2 R_6 s + C_5 R_2}{C_2 C_5 C_6 R_2 R_5 s^2 + C_6 + s \left(C_2 C_6 R_2 + C_5 C_6 R_5\right)}$$

#### Parameters:

Q:  $\frac{\sqrt{C_2}\sqrt{C_5}\sqrt{R_2}\sqrt{R_5}}{C_2R_2+C_5R_5}$  wo:  $\frac{1}{\sqrt{C_2}\sqrt{C_5}\sqrt{R_2}\sqrt{R_5}}$  bandwidth:  $\frac{C_2R_2+C_5R_5}{C_2C_5R_2R_5}$ 

K-LP:  $\frac{C_5R_2}{C_6}$ K-HP: 0

K-BP:  $\frac{C_5R_2R_6}{C_2R_2+C_5R_5}$  Qz: None

Wz: None

**9.12** X-INVALID-NUMER-12 
$$Z(s) = \left(\infty, \frac{R_2}{C_2R_2s+1}, \frac{R_3}{C_3R_3s+1}, \infty, \frac{R_5}{C_5R_5s+1}, \frac{R_6}{C_6R_6s+1}\right)$$

$$H(s) = \frac{C_5 R_2 R_5 R_6 s + R_2 R_6}{C_2 C_6 R_2 R_5 R_6 s^2 + R_5 + s \left(C_2 R_2 R_5 + C_6 R_5 R_6\right)}$$

#### Parameters:

Q:  $\frac{\sqrt{C_2}\sqrt{C_6}\sqrt{R_2}\sqrt{R_6}}{C_2R_2+C_6R_6}$  wo:  $\frac{1}{\sqrt{C_2}\sqrt{C_6}\sqrt{R_2}\sqrt{R_6}}$  bandwidth:  $\frac{C_2R_2+C_6R_6}{C_2C_6R_2R_6}$ 

K-LP:  $\frac{R_2R_6}{R_5}$ K-HP: 0 K-BP:  $\frac{C_5R_2R_6}{C_2R_2+C_6R_6}$ Qz: None

Wz: None

### 10 X-INVALID-ORDER

10.1 X-INVALID-ORDER-1  $Z(s) = (\infty, R_2, R_3, \infty, R_5, R_6)$ 

$$H(s) = \frac{R_2 R_6}{R_5}$$

10.2 X-INVALID-ORDER-2  $Z(s) = \left(\infty, R_2, R_3, \infty, R_5, \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{R_2}{C_6 R_5 s}$$

10.3 X-INVALID-ORDER-3  $Z(s) = \left(\infty, R_2, R_3, \infty, R_5, R_6 + \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_6 R_2 R_6 s + R_2}{C_6 R_5 s}$$

**10.4** X-INVALID-ORDER-4  $Z(s) = \left(\infty, R_2, R_3, \infty, R_5, \frac{R_6}{C_6 R_6 s + 1}\right)$ 

$$H(s) = \frac{R_2 R_6}{C_6 R_5 R_6 s + R_5}$$

10.5 X-INVALID-ORDER-5  $Z(s) = \left(\infty, R_2, R_3, \infty, \frac{1}{C_5 s}, R_6\right)$ 

$$H(s) = C_5 R_2 R_6 s$$

10.6 X-INVALID-ORDER-6  $Z(s) = \left(\infty, R_2, R_3, \infty, \frac{1}{C_5 s}, \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_5 R_2}{C_6}$$

10.7 X-INVALID-ORDER-7  $Z(s) = \left(\infty, R_2, R_3, \infty, \frac{1}{C_5 s}, R_6 + \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_5 C_6 R_2 R_6 s + C_5 R_2}{C_6}$$

**10.8** X-INVALID-ORDER-8  $Z(s) = \left(\infty, R_2, R_3, \infty, \frac{1}{C_5 s}, \frac{R_6}{C_6 R_6 s + 1}\right)$ 

$$H(s) = \frac{C_5 R_2 R_6 s}{C_6 R_6 s + 1}$$

**10.9** X-INVALID-ORDER-9  $Z(s) = \left(\infty, R_2, R_3, \infty, R_5 + \frac{1}{C_5 s}, R_6\right)$ 

$$H(s) = \frac{C_5 R_2 R_6 s}{C_5 R_5 s + 1}$$

10.10 X-INVALID-ORDER-10  $Z(s) = \left(\infty, R_2, R_3, \infty, R_5 + \frac{1}{C_5 s}, \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_5 R_2}{C_5 C_6 R_5 s + C_6}$$

10.11 X-INVALID-ORDER-11  $Z(s) = \left(\infty, R_2, R_3, \infty, R_5 + \frac{1}{C_5 s}, R_6 + \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_5 C_6 R_2 R_6 s + C_5 R_2}{C_5 C_6 R_5 s + C_6}$$

10.12 X-INVALID-ORDER-12  $Z(s) = \left(\infty, R_2, R_3, \infty, \frac{R_5}{C_5 R_5 s + 1}, R_6\right)$ 

$$H(s) = \frac{C_5 R_2 R_5 R_6 s + R_2 R_6}{R_5}$$

**10.13** X-INVALID-ORDER-13  $Z(s) = \left(\infty, R_2, R_3, \infty, \frac{R_5}{C_5 R_5 s + 1}, \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_5 R_2 R_5 s + R_2}{C_6 R_5 s}$$

10.14 X-INVALID-ORDER-14  $Z(s) = \left(\infty, R_2, R_3, \infty, \frac{R_5}{C_5 R_5 s + 1}, R_6 + \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_5 C_6 R_2 R_5 R_6 s^2 + R_2 + s \left(C_5 R_2 R_5 + C_6 R_2 R_6\right)}{C_6 R_5 s}$$

10.15 X-INVALID-ORDER-15  $Z(s) = \left(\infty, R_2, R_3, \infty, \frac{R_5}{C_5 R_5 s + 1}, \frac{R_6}{C_6 R_6 s + 1}\right)$ 

$$H(s) = \frac{C_5 R_2 R_5 R_6 s + R_2 R_6}{C_6 R_5 R_6 s + R_5}$$

10.16 X-INVALID-ORDER-16  $Z(s) = \left(\infty, R_2, \frac{1}{C_3 s}, \infty, R_5, R_6\right)$ 

$$H(s) = \frac{R_2 R_6}{R_5}$$

10.17 X-INVALID-ORDER-17  $Z(s) = \left(\infty, R_2, \frac{1}{C_3 s}, \infty, R_5, \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{R_2}{C_6 R_5 s}$$

10.18 X-INVALID-ORDER-18  $Z(s) = \left(\infty, R_2, \frac{1}{C_3 s}, \infty, R_5, R_6 + \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_6 R_2 R_6 s + R_2}{C_6 R_5 s}$$

10.19 X-INVALID-ORDER-19  $Z(s) = \left(\infty, R_2, \frac{1}{C_3 s}, \infty, R_5, \frac{R_6}{C_6 R_6 s + 1}\right)$ 

$$H(s) = \frac{R_2 R_6}{C_6 R_5 R_6 s + R_5}$$

**10.20** X-INVALID-ORDER-20  $Z(s) = \left(\infty, R_2, \frac{1}{C_3 s}, \infty, \frac{1}{C_5 s}, R_6\right)$ 

$$H(s) = C_5 R_2 R_6 s$$

10.21 X-INVALID-ORDER-21  $Z(s) = \left(\infty, R_2, \frac{1}{C_3 s}, \infty, \frac{1}{C_5 s}, \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_5 R_2}{C_6}$$

10.22 X-INVALID-ORDER-22  $Z(s) = \left(\infty, R_2, \frac{1}{C_3 s}, \infty, \frac{1}{C_5 s}, R_6 + \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_5 C_6 R_2 R_6 s + C_5 R_2}{C_6}$$

10.23 X-INVALID-ORDER-23  $Z(s) = \left(\infty, R_2, \frac{1}{C_3 s}, \infty, \frac{1}{C_5 s}, \frac{R_6}{C_6 R_6 s + 1}\right)$ 

$$H(s) = \frac{C_5 R_2 R_6 s}{C_6 R_6 s + 1}$$

**10.24** X-INVALID-ORDER-24  $Z(s) = \left(\infty, \ R_2, \ \frac{1}{C_3 s}, \ \infty, \ R_5 + \frac{1}{C_5 s}, \ R_6\right)$ 

$$H(s) = \frac{C_5 R_2 R_6 s}{C_5 R_5 s + 1}$$

10.25 X-INVALID-ORDER-25  $Z(s) = \left(\infty, R_2, \frac{1}{C_3 s}, \infty, R_5 + \frac{1}{C_5 s}, \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_5 R_2}{C_5 C_6 R_5 s + C_6}$$

**10.26** X-INVALID-ORDER-26  $Z(s) = \left(\infty, R_2, \frac{1}{C_3 s}, \infty, R_5 + \frac{1}{C_5 s}, R_6 + \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_5 C_6 R_2 R_6 s + C_5 R_2}{C_5 C_6 R_5 s + C_6}$$

10.27 X-INVALID-ORDER-27  $Z(s) = \left(\infty, R_2, \frac{1}{C_3 s}, \infty, \frac{R_5}{C_5 R_5 s + 1}, R_6\right)$ 

$$H(s) = \frac{C_5 R_2 R_5 R_6 s + R_2 R_6}{R_5}$$

10.28 X-INVALID-ORDER-28  $Z(s) = \left(\infty, R_2, \frac{1}{C_3 s}, \infty, \frac{R_5}{C_5 R_5 s + 1}, \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_5 R_2 R_5 s + R_2}{C_6 R_5 s}$$

10.29 X-INVALID-ORDER-29  $Z(s) = \left(\infty, R_2, \frac{1}{C_3 s}, \infty, \frac{R_5}{C_5 R_5 s + 1}, R_6 + \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_5 C_6 R_2 R_5 R_6 s^2 + R_2 + s \left(C_5 R_2 R_5 + C_6 R_2 R_6\right)}{C_6 R_5 s}$$

10.30 X-INVALID-ORDER-30  $Z(s) = \left(\infty, R_2, \frac{1}{C_3 s}, \infty, \frac{R_5}{C_5 R_5 s + 1}, \frac{R_6}{C_6 R_6 s + 1}\right)$ 

$$H(s) = \frac{C_5 R_2 R_5 R_6 s + R_2 R_6}{C_6 R_5 R_6 s + R_5}$$

**10.31** X-INVALID-ORDER-31  $Z(s) = \left(\infty, R_2, R_3 + \frac{1}{C_3 s}, \infty, R_5, R_6\right)$ 

$$H(s) = \frac{R_2 R_6}{R_5}$$

10.32 X-INVALID-ORDER-32  $Z(s) = \left(\infty, R_2, R_3 + \frac{1}{C_3 s}, \infty, R_5, \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{R_2}{C_6 R_5 s}$$

**10.33** X-INVALID-ORDER-33  $Z(s) = \left(\infty, R_2, R_3 + \frac{1}{C_3 s}, \infty, R_5, R_6 + \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_6 R_2 R_6 s + R_2}{C_6 R_5 s}$$

**10.34** X-INVALID-ORDER-34  $Z(s) = \left(\infty, R_2, R_3 + \frac{1}{C_3 s}, \infty, R_5, \frac{R_6}{C_6 R_6 s + 1}\right)$ 

$$H(s) = \frac{R_2 R_6}{C_6 R_5 R_6 s + R_5}$$

**10.35** X-INVALID-ORDER-35  $Z(s) = \left(\infty, R_2, R_3 + \frac{1}{C_3 s}, \infty, \frac{1}{C_5 s}, R_6\right)$ 

$$H(s) = C_5 R_2 R_6 s$$

**10.36** X-INVALID-ORDER-36  $Z(s) = \left(\infty, R_2, R_3 + \frac{1}{C_3 s}, \infty, \frac{1}{C_5 s}, \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_5 R_2}{C_6}$$

10.37 X-INVALID-ORDER-37  $Z(s) = \left(\infty, R_2, R_3 + \frac{1}{C_3 s}, \infty, \frac{1}{C_5 s}, R_6 + \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_5 C_6 R_2 R_6 s + C_5 R_2}{C_6}$$

10.38 X-INVALID-ORDER-38  $Z(s) = \left(\infty, R_2, R_3 + \frac{1}{C_3 s}, \infty, \frac{1}{C_5 s}, \frac{R_6}{C_6 R_6 s + 1}\right)$ 

$$H(s) = \frac{C_5 R_2 R_6 s}{C_6 R_6 s + 1}$$

**10.39** X-INVALID-ORDER-39  $Z(s) = \left(\infty, R_2, R_3 + \frac{1}{C_3 s}, \infty, R_5 + \frac{1}{C_5 s}, R_6\right)$ 

$$H(s) = \frac{C_5 R_2 R_6 s}{C_5 R_5 s + 1}$$

10.40 X-INVALID-ORDER-40  $Z(s) = \left(\infty, R_2, R_3 + \frac{1}{C_3 s}, \infty, R_5 + \frac{1}{C_5 s}, \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_5 R_2}{C_5 C_6 R_5 s + C_6}$$

10.41 X-INVALID-ORDER-41  $Z(s) = \left(\infty, R_2, R_3 + \frac{1}{C_3 s}, \infty, R_5 + \frac{1}{C_5 s}, R_6 + \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_5 C_6 R_2 R_6 s + C_5 R_2}{C_5 C_6 R_5 s + C_6}$$

10.42 X-INVALID-ORDER-42  $Z(s) = \left(\infty, R_2, R_3 + \frac{1}{C_3 s}, \infty, \frac{R_5}{C_5 R_5 s + 1}, R_6\right)$ 

$$H(s) = \frac{C_5 R_2 R_5 R_6 s + R_2 R_6}{R_5}$$

10.43 X-INVALID-ORDER-43  $Z(s) = \left(\infty, R_2, R_3 + \frac{1}{C_3 s}, \infty, \frac{R_5}{C_5 R_5 s + 1}, \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_5 R_2 R_5 s + R_2}{C_6 R_5 s}$$

10.44 X-INVALID-ORDER-44  $Z(s) = \left(\infty, R_2, R_3 + \frac{1}{C_3 s}, \infty, \frac{R_5}{C_5 R_5 s + 1}, R_6 + \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_5 C_6 R_2 R_5 R_6 s^2 + R_2 + s \left(C_5 R_2 R_5 + C_6 R_2 R_6\right)}{C_6 R_5 s}$$

10.45 X-INVALID-ORDER-45  $Z(s) = \left(\infty, R_2, R_3 + \frac{1}{C_3 s}, \infty, \frac{R_5}{C_5 R_5 s + 1}, \frac{R_6}{C_6 R_6 s + 1}\right)$ 

$$H(s) = \frac{C_5 R_2 R_5 R_6 s + R_2 R_6}{C_6 R_5 R_6 s + R_5}$$

**10.46** X-INVALID-ORDER-46  $Z(s) = \left(\infty, R_2, \frac{R_3}{C_3 R_3 s + 1}, \infty, R_5, R_6\right)$ 

$$H(s) = \frac{R_2 R_6}{R_5}$$

10.47 X-INVALID-ORDER-47  $Z(s) = \left(\infty, R_2, \frac{R_3}{C_3 R_3 s + 1}, \infty, R_5, \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{R_2}{C_6 R_5 s}$$

10.48 X-INVALID-ORDER-48  $Z(s) = \left(\infty, \ R_2, \ \frac{R_3}{C_3 R_3 s + 1}, \ \infty, \ R_5, \ R_6 + \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_6 R_2 R_6 s + R_2}{C_6 R_5 s}$$

10.49 X-INVALID-ORDER-49  $Z(s) = \left(\infty, R_2, \frac{R_3}{C_3 R_3 s + 1}, \infty, R_5, \frac{R_6}{C_6 R_6 s + 1}\right)$ 

$$H(s) = \frac{R_2 R_6}{C_6 R_5 R_6 s + R_5}$$

10.50 X-INVALID-ORDER-50  $Z(s) = \left(\infty, R_2, \frac{R_3}{C_3 R_3 s + 1}, \infty, \frac{1}{C_5 s}, R_6\right)$ 

$$H(s) = C_5 R_2 R_6 s$$

10.51 X-INVALID-ORDER-51  $Z(s) = \left(\infty, R_2, \frac{R_3}{C_3 R_3 s + 1}, \infty, \frac{1}{C_5 s}, \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_5 R_2}{C_6}$$

10.52 X-INVALID-ORDER-52  $Z(s) = \left(\infty, \ R_2, \ \frac{R_3}{C_3R_3s+1}, \ \infty, \ \frac{1}{C_5s}, \ R_6 + \frac{1}{C_6s}\right)$ 

$$H(s) = \frac{C_5 C_6 R_2 R_6 s + C_5 R_2}{C_6}$$

10.53 X-INVALID-ORDER-53  $Z(s) = \left(\infty, R_2, \frac{R_3}{C_3 R_3 s + 1}, \infty, \frac{1}{C_5 s}, \frac{R_6}{C_6 R_6 s + 1}\right)$ 

$$H(s) = \frac{C_5 R_2 R_6 s}{C_6 R_6 s + 1}$$

10.54 X-INVALID-ORDER-54 
$$Z(s) = \left(\infty, R_2, \frac{R_3}{C_3 R_3 s + 1}, \infty, R_5 + \frac{1}{C_5 s}, R_6\right)$$

$$H(s) = \frac{C_5 R_2 R_6 s}{C_5 R_5 s + 1}$$

10.55 X-INVALID-ORDER-55 
$$Z(s) = \left(\infty, R_2, \frac{R_3}{C_3 R_3 s + 1}, \infty, R_5 + \frac{1}{C_5 s}, \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_5 R_2}{C_5 C_6 R_5 s + C_6}$$

10.56 X-INVALID-ORDER-56 
$$Z(s) = \left(\infty, R_2, \frac{R_3}{C_3 R_3 s + 1}, \infty, R_5 + \frac{1}{C_5 s}, R_6 + \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_5 C_6 R_2 R_6 s + C_5 R_2}{C_5 C_6 R_5 s + C_6}$$

10.57 X-INVALID-ORDER-57 
$$Z(s) = \left(\infty, R_2, \frac{R_3}{C_3 R_3 s + 1}, \infty, \frac{R_5}{C_5 R_5 s + 1}, R_6\right)$$

$$H(s) = \frac{C_5 R_2 R_5 R_6 s + R_2 R_6}{R_5}$$

10.58 X-INVALID-ORDER-58 
$$Z(s) = \left(\infty, \ R_2, \ \frac{R_3}{C_3R_3s+1}, \ \infty, \ \frac{R_5}{C_5R_5s+1}, \ \frac{1}{C_6s}\right)$$

$$H(s) = \frac{C_5 R_2 R_5 s + R_2}{C_6 R_5 s}$$

**10.59** X-INVALID-ORDER-59 
$$Z(s) = \left(\infty, \ R_2, \ \frac{R_3}{C_3R_3s+1}, \ \infty, \ \frac{R_5}{C_5R_5s+1}, \ R_6 + \frac{1}{C_6s}\right)$$

$$H(s) = \frac{C_5 C_6 R_2 R_5 R_6 s^2 + R_2 + s \left(C_5 R_2 R_5 + C_6 R_2 R_6\right)}{C_6 R_5 s}$$

10.60 X-INVALID-ORDER-60  $Z(s) = \left(\infty, R_2, \frac{R_3}{C_3 R_3 s + 1}, \infty, \frac{R_5}{C_5 R_5 s + 1}, \frac{R_6}{C_6 R_6 s + 1}\right)$ 

$$H(s) = \frac{C_5 R_2 R_5 R_6 s + R_2 R_6}{C_6 R_5 R_6 s + R_5}$$

**10.61** X-INVALID-ORDER-61  $Z(s) = \left(\infty, \frac{1}{C_2 s}, R_3, \infty, R_5, R_6\right)$ 

$$H(s) = \frac{R_6}{C_2 R_5 s}$$

10.62 X-INVALID-ORDER-62  $Z(s) = \left(\infty, \frac{1}{C_2 s}, R_3, \infty, R_5, \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{1}{C_2 C_6 R_5 s^2}$$

**10.63** X-INVALID-ORDER-63  $Z(s) = \left(\infty, \frac{1}{C_2 s}, R_3, \infty, R_5, R_6 + \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_6 R_6 s + 1}{C_2 C_6 R_5 s^2}$$

10.64 X-INVALID-ORDER-64  $Z(s) = \left(\infty, \frac{1}{C_2 s}, R_3, \infty, R_5, \frac{R_6}{C_6 R_6 s + 1}\right)$ 

 $H(s) = \frac{R_6}{C_2 C_6 R_5 R_6 s^2 + C_2 R_5 s}$ 

**10.65** X-INVALID-ORDER-65  $Z(s) = \left(\infty, \frac{1}{C_2 s}, R_3, \infty, \frac{1}{C_5 s}, R_6\right)$ 

 $H(s) = \frac{C_5 R_6}{C_2}$ 

**10.66** X-INVALID-ORDER-66  $Z(s) = \left(\infty, \frac{1}{C_2 s}, R_3, \infty, \frac{1}{C_5 s}, \frac{1}{C_6 s}\right)$ 

 $H(s) = \frac{C_5}{C_2 C_6 s}$ 

10.67 X-INVALID-ORDER-67  $Z(s) = \left(\infty, \frac{1}{C_2 s}, R_3, \infty, \frac{1}{C_5 s}, R_6 + \frac{1}{C_6 s}\right)$ 

 $H(s) = \frac{C_5 C_6 R_6 s + C_5}{C_2 C_6 s}$ 

10.68 X-INVALID-ORDER-68  $Z(s) = \left(\infty, \frac{1}{C_2 s}, R_3, \infty, \frac{1}{C_5 s}, \frac{R_6}{C_6 R_6 s + 1}\right)$ 

 $H(s) = \frac{C_5 R_6}{C_2 C_6 R_6 s + C_2}$ 

10.69 X-INVALID-ORDER-69  $Z(s) = \left(\infty, \frac{1}{C_2 s}, R_3, \infty, R_5 + \frac{1}{C_5 s}, R_6\right)$ 

 $H(s) = \frac{C_5 R_6}{C_2 C_5 R_5 s + C_2}$ 

**10.70** X-INVALID-ORDER-70  $Z(s) = \left(\infty, \frac{1}{C_2 s}, R_3, \infty, R_5 + \frac{1}{C_5 s}, \frac{1}{C_6 s}\right)$ 

 $H(s) = \frac{C_5}{C_2 C_5 C_6 R_5 s^2 + C_2 C_6 s}$ 

10.71 X-INVALID-ORDER-71  $Z(s) = \left(\infty, \frac{1}{C_2 s}, R_3, \infty, R_5 + \frac{1}{C_5 s}, R_6 + \frac{1}{C_6 s}\right)$ 

 $H(s) = \frac{C_5 C_6 R_6 s + C_5}{C_2 C_5 C_6 R_5 s^2 + C_2 C_6 s}$ 

10.72 X-INVALID-ORDER-72  $Z(s) = \left(\infty, \frac{1}{C_2 s}, R_3, \infty, \frac{R_5}{C_5 R_5 s + 1}, R_6\right)$ 

 $H(s) = \frac{C_5 R_5 R_6 s + R_6}{C_2 R_5 s}$ 

10.73 X-INVALID-ORDER-73  $Z(s) = \left(\infty, \frac{1}{C_2 s}, R_3, \infty, \frac{R_5}{C_5 R_5 s + 1}, \frac{1}{C_6 s}\right)$ 

 $H(s) = \frac{C_5 R_5 s + 1}{C_2 C_6 R_5 s^2}$ 

10.74 X-INVALID-ORDER-74  $Z(s) = \left(\infty, \frac{1}{C_2 s}, R_3, \infty, \frac{R_5}{C_5 R_5 s + 1}, R_6 + \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_5 C_6 R_5 R_6 s^2 + s \left(C_5 R_5 + C_6 R_6\right) + 1}{C_2 C_6 R_5 s^2}$$

10.75 X-INVALID-ORDER-75  $Z(s) = \left(\infty, \frac{1}{C_2 s}, R_3, \infty, \frac{R_5}{C_5 R_5 s + 1}, \frac{R_6}{C_6 R_6 s + 1}\right)$ 

$$H(s) = \frac{C_5 R_5 R_6 s + R_6}{C_2 C_6 R_5 R_6 s^2 + C_2 R_5 s}$$

10.76 X-INVALID-ORDER-76  $Z(s) = \left(\infty, \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, R_5, R_6\right)$ 

$$H(s) = \frac{R_6}{C_2 R_5 s}$$

10.77 X-INVALID-ORDER-77  $Z(s) = \left(\infty, \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, R_5, \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{1}{C_2 C_6 R_5 s^2}$$

10.78 X-INVALID-ORDER-78  $Z(s) = \left(\infty, \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, R_5, R_6 + \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_6 R_6 s + 1}{C_2 C_6 R_5 s^2}$$

10.79 X-INVALID-ORDER-79  $Z(s) = \left(\infty, \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, R_5, \frac{R_6}{C_6 R_6 s + 1}\right)$ 

$$H(s) = \frac{R_6}{C_2 C_6 R_5 R_6 s^2 + C_2 R_5 s}$$

**10.80** X-INVALID-ORDER-80  $Z(s) = \left(\infty, \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, \frac{1}{C_5 s}, R_6\right)$ 

$$H(s) = \frac{C_5 R_6}{C_2}$$

10.81 X-INVALID-ORDER-81  $Z(s) = \left(\infty, \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, \frac{1}{C_5 s}, \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_5}{C_2 C_6 s}$$

**10.82** X-INVALID-ORDER-82  $Z(s) = \left(\infty, \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, \frac{1}{C_5 s}, R_6 + \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_5 C_6 R_6 s + C_5}{C_2 C_6 s}$$

10.83 X-INVALID-ORDER-83  $Z(s) = \left(\infty, \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, \frac{1}{C_5 s}, \frac{R_6}{C_6 R_6 s + 1}\right)$ 

$$H(s) = \frac{C_5 R_6}{C_2 C_6 R_6 s + C_2}$$

**10.84** X-INVALID-ORDER-84 
$$Z(s) = \left(\infty, \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, R_5 + \frac{1}{C_5 s}, R_6\right)$$

$$H(s) = \frac{C_5 R_6}{C_2 C_5 R_5 s + C_2}$$

**10.85** X-INVALID-ORDER-85 
$$Z(s) = \left(\infty, \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, R_5 + \frac{1}{C_5 s}, \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_5}{C_2 C_5 C_6 R_5 s^2 + C_2 C_6 s}$$

**10.86** X-INVALID-ORDER-86 
$$Z(s) = \left(\infty, \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, R_5 + \frac{1}{C_5 s}, R_6 + \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_5 C_6 R_6 s + C_5}{C_2 C_5 C_6 R_5 s^2 + C_2 C_6 s}$$

10.87 X-INVALID-ORDER-87 
$$Z(s) = \left(\infty, \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, \frac{R_5}{C_5 R_5 s + 1}, R_6\right)$$

$$H(s) = \frac{C_5 R_5 R_6 s + R_6}{C_2 R_5 s}$$

10.88 X-INVALID-ORDER-88 
$$Z(s) = \left(\infty, \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, \frac{R_5}{C_5 R_5 s + 1}, \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_5 R_5 s + 1}{C_2 C_6 R_5 s^2}$$

**10.89** X-INVALID-ORDER-89 
$$Z(s) = \left(\infty, \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, \frac{R_5}{C_5 R_5 s + 1}, R_6 + \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_5 C_6 R_5 R_6 s^2 + s \left(C_5 R_5 + C_6 R_6\right) + 1}{C_2 C_6 R_5 s^2}$$

10.90 X-INVALID-ORDER-90 
$$Z(s) = \left(\infty, \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, \frac{R_5}{C_5 R_5 s + 1}, \frac{R_6}{C_6 R_6 s + 1}\right)$$

$$H(s) = \frac{C_5 R_5 R_6 s + R_6}{C_2 C_6 R_5 R_6 s^2 + C_2 R_5 s}$$

**10.91** X-INVALID-ORDER-91 
$$Z(s) = \left(\infty, \frac{1}{C_2 s}, R_3 + \frac{1}{C_3 s}, \infty, R_5, R_6\right)$$

$$H(s) = \frac{R_6}{C_2 R_5 s}$$

10.92 X-INVALID-ORDER-92 
$$Z(s) = \left(\infty, \frac{1}{C_2 s}, R_3 + \frac{1}{C_3 s}, \infty, R_5, \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{1}{C_2 C_6 R_5 s^2}$$

**10.93** X-INVALID-ORDER-93 
$$Z(s) = \left(\infty, \frac{1}{C_2 s}, R_3 + \frac{1}{C_3 s}, \infty, R_5, R_6 + \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_6 R_6 s + 1}{C_2 C_6 R_5 s^2}$$

**10.94** X-INVALID-ORDER-94  $Z(s) = \left(\infty, \frac{1}{C_2 s}, R_3 + \frac{1}{C_3 s}, \infty, R_5, \frac{R_6}{C_6 R_6 s + 1}\right)$ 

$$H(s) = \frac{R_6}{C_2 C_6 R_5 R_6 s^2 + C_2 R_5 s}$$

**10.95** X-INVALID-ORDER-95  $Z(s) = \left(\infty, \frac{1}{C_2 s}, R_3 + \frac{1}{C_3 s}, \infty, \frac{1}{C_5 s}, R_6\right)$ 

$$H(s) = \frac{C_5 R_6}{C_2}$$

**10.96** X-INVALID-ORDER-96  $Z(s) = \left(\infty, \frac{1}{C_2 s}, R_3 + \frac{1}{C_3 s}, \infty, \frac{1}{C_5 s}, \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_5}{C_2 C_6 s}$$

10.97 X-INVALID-ORDER-97  $Z(s) = \left(\infty, \frac{1}{C_2 s}, R_3 + \frac{1}{C_3 s}, \infty, \frac{1}{C_5 s}, R_6 + \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_5 C_6 R_6 s + C_5}{C_2 C_6 s}$$

10.98 X-INVALID-ORDER-98  $Z(s) = \left(\infty, \ \frac{1}{C_2 s}, \ R_3 + \frac{1}{C_3 s}, \ \infty, \ \frac{1}{C_5 s}, \ \frac{R_6}{C_6 R_6 s + 1}\right)$ 

$$H(s) = \frac{C_5 R_6}{C_2 C_6 R_6 s + C_2}$$

**10.99** X-INVALID-ORDER-99  $Z(s) = \left(\infty, \frac{1}{C_2 s}, R_3 + \frac{1}{C_3 s}, \infty, R_5 + \frac{1}{C_5 s}, R_6\right)$ 

$$H(s) = \frac{C_5 R_6}{C_2 C_5 R_5 s + C_2}$$

10.100 X-INVALID-ORDER-100  $Z(s) = \left(\infty, \frac{1}{C_2 s}, R_3 + \frac{1}{C_3 s}, \infty, R_5 + \frac{1}{C_5 s}, \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_5}{C_2 C_5 C_6 R_5 s^2 + C_2 C_6 s}$$

10.101 X-INVALID-ORDER-101  $Z(s) = \left(\infty, \frac{1}{C_2 s}, R_3 + \frac{1}{C_3 s}, \infty, R_5 + \frac{1}{C_5 s}, R_6 + \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_5 C_6 R_6 s + C_5}{C_2 C_5 C_6 R_5 s^2 + C_2 C_6 s}$$

**10.102** X-INVALID-ORDER-102  $Z(s) = \left(\infty, \frac{1}{C_2 s}, R_3 + \frac{1}{C_3 s}, \infty, \frac{R_5}{C_5 R_5 s + 1}, R_6\right)$ 

$$H(s) = \frac{C_5 R_5 R_6 s + R_6}{C_2 R_5 s}$$

**10.103** X-INVALID-ORDER-103  $Z(s) = \left(\infty, \frac{1}{C_2 s}, R_3 + \frac{1}{C_3 s}, \infty, \frac{R_5}{C_5 R_5 s + 1}, \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_5 R_5 s + 1}{C_2 C_6 R_5 s^2}$$

10.104 X-INVALID-ORDER-104 
$$Z(s) = \left(\infty, \frac{1}{C_2 s}, R_3 + \frac{1}{C_3 s}, \infty, \frac{R_5}{C_5 R_5 s + 1}, R_6 + \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_5 C_6 R_5 R_6 s^2 + s (C_5 R_5 + C_6 R_6) + 1}{C_2 C_6 R_5 s^2}$$

10.105 X-INVALID-ORDER-105 
$$Z(s) = \left(\infty, \frac{1}{C_2 s}, R_3 + \frac{1}{C_3 s}, \infty, \frac{R_5}{C_5 R_5 s + 1}, \frac{R_6}{C_6 R_6 s + 1}\right)$$

$$H(s) = \frac{C_5 R_5 R_6 s + R_6}{C_2 C_6 R_5 R_6 s^2 + C_2 R_5 s}$$

**10.106** X-INVALID-ORDER-106 
$$Z(s) = \left(\infty, \frac{1}{C_2 s}, \frac{R_3}{C_3 R_3 s + 1}, \infty, R_5, R_6\right)$$

$$H(s) = \frac{R_6}{C_2 R_5 s}$$

**10.107** X-INVALID-ORDER-107 
$$Z(s) = \left(\infty, \frac{1}{C_2 s}, \frac{R_3}{C_3 R_3 s + 1}, \infty, R_5, \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{1}{C_2 C_6 R_5 s^2}$$

10.108 X-INVALID-ORDER-108 
$$Z(s) = \left(\infty, \frac{1}{C_2 s}, \frac{R_3}{C_3 R_3 s + 1}, \infty, R_5, R_6 + \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_6 R_6 s + 1}{C_2 C_6 R_5 s^2}$$

10.109 X-INVALID-ORDER-109 
$$Z(s) = \left(\infty, \frac{1}{C_2 s}, \frac{R_3}{C_3 R_3 s + 1}, \infty, R_5, \frac{R_6}{C_6 R_6 s + 1}\right)$$

$$H(s) = \frac{R_6}{C_2 C_6 R_5 R_6 s^2 + C_2 R_5 s}$$

10.110 X-INVALID-ORDER-110 
$$Z(s) = \left(\infty, \frac{1}{C_2 s}, \frac{R_3}{C_3 R_3 s + 1}, \infty, \frac{1}{C_5 s}, R_6\right)$$

$$H(s) = \frac{C_5 R_6}{C_2}$$

10.111 X-INVALID-ORDER-111 
$$Z(s) = \left(\infty, \frac{1}{C_2 s}, \frac{R_3}{C_3 R_3 s + 1}, \infty, \frac{1}{C_5 s}, \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_5}{C_2 C_6 s}$$

10.112 X-INVALID-ORDER-112 
$$Z(s) = \left(\infty, \frac{1}{C_2 s}, \frac{R_3}{C_3 R_3 s + 1}, \infty, \frac{1}{C_5 s}, R_6 + \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_5 C_6 R_6 s + C_5}{C_2 C_6 s}$$

**10.113** X-INVALID-ORDER-113 
$$Z(s) = \left(\infty, \ \frac{1}{C_2 s}, \ \frac{R_3}{C_3 R_3 s + 1}, \ \infty, \ \frac{1}{C_5 s}, \ \frac{R_6}{C_6 R_6 s + 1}\right)$$

$$H(s) = \frac{C_5 R_6}{C_2 C_6 R_6 s + C_2}$$

**10.114** X-INVALID-ORDER-114 
$$Z(s) = \left(\infty, \frac{1}{C_2 s}, \frac{R_3}{C_3 R_3 s + 1}, \infty, R_5 + \frac{1}{C_5 s}, R_6\right)$$

$$H(s) = \frac{C_5 R_6}{C_2 C_5 R_5 s + C_2}$$

10.115 X-INVALID-ORDER-115 
$$Z(s) = \left(\infty, \frac{1}{C_2 s}, \frac{R_3}{C_3 R_3 s + 1}, \infty, R_5 + \frac{1}{C_5 s}, \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_5}{C_2 C_5 C_6 R_5 s^2 + C_2 C_6 s}$$

10.116 X-INVALID-ORDER-116 
$$Z(s) = \left(\infty, \frac{1}{C_2 s}, \frac{R_3}{C_3 R_3 s + 1}, \infty, R_5 + \frac{1}{C_5 s}, R_6 + \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_5 C_6 R_6 s + C_5}{C_2 C_5 C_6 R_5 s^2 + C_2 C_6 s}$$

**10.117** X-INVALID-ORDER-117 
$$Z(s) = \left(\infty, \frac{1}{C_2 s}, \frac{R_3}{C_3 R_3 s + 1}, \infty, \frac{R_5}{C_5 R_5 s + 1}, R_6\right)$$

$$H(s) = \frac{C_5 R_5 R_6 s + R_6}{C_2 R_5 s}$$

10.118 X-INVALID-ORDER-118 
$$Z(s) = \left(\infty, \frac{1}{C_2 s}, \frac{R_3}{C_3 R_3 s + 1}, \infty, \frac{R_5}{C_5 R_5 s + 1}, \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_5 R_5 s + 1}{C_2 C_6 R_5 s^2}$$

**10.119** X-INVALID-ORDER-119 
$$Z(s) = \left(\infty, \frac{1}{C_2 s}, \frac{R_3}{C_3 R_3 s + 1}, \infty, \frac{R_5}{C_5 R_5 s + 1}, R_6 + \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_5 C_6 R_5 R_6 s^2 + s \left(C_5 R_5 + C_6 R_6\right) + 1}{C_2 C_6 R_5 s^2}$$

10.120 X-INVALID-ORDER-120 
$$Z(s) = \left(\infty, \frac{1}{C_2 s}, \frac{R_3}{C_3 R_3 s + 1}, \infty, \frac{R_5}{C_5 R_5 s + 1}, \frac{R_6}{C_6 R_6 s + 1}\right)$$

$$H(s) = \frac{C_5 R_5 R_6 s + R_6}{C_2 C_6 R_5 R_6 s^2 + C_2 R_5 s}$$

**10.121** X-INVALID-ORDER-121 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, R_3, \infty, R_5, R_6\right)$$

$$H(s) = \frac{C_2 R_2 R_6 s + R_6}{C_2 R_5 s}$$

10.122 X-INVALID-ORDER-122 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, R_3, \infty, R_5, \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_2 R_2 s + 1}{C_2 C_6 R_5 s^2}$$

**10.123** X-INVALID-ORDER-123 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, R_3, \infty, R_5, R_6 + \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_2 C_6 R_2 R_6 s^2 + s \left(C_2 R_2 + C_6 R_6\right) + 1}{C_2 C_6 R_5 s^2}$$

10.124 X-INVALID-ORDER-124 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, R_3, \infty, R_5, \frac{R_6}{C_6 R_6 s + 1}\right)$$

$$H(s) = \frac{C_2 R_2 R_6 s + R_6}{C_2 C_6 R_5 R_6 s^2 + C_2 R_5 s}$$

10.125 X-INVALID-ORDER-125 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, R_3, \infty, \frac{1}{C_5 s}, R_6\right)$$

$$H(s) = \frac{C_2 C_5 R_2 R_6 s + C_5 R_6}{C_2}$$

**10.126** X-INVALID-ORDER-126 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, R_3, \infty, \frac{1}{C_5 s}, \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_2 C_5 R_2 s + C_5}{C_2 C_6 s}$$

10.127 X-INVALID-ORDER-127 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, R_3, \infty, \frac{1}{C_5 s}, R_6 + \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_2 C_5 C_6 R_2 R_6 s^2 + C_5 + s \left(C_2 C_5 R_2 + C_5 C_6 R_6\right)}{C_2 C_6 s}$$

10.128 X-INVALID-ORDER-128 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, R_3, \infty, \frac{1}{C_5 s}, \frac{R_6}{C_6 R_6 s + 1}\right)$$

$$H(s) = \frac{C_2 C_5 R_2 R_6 s + C_5 R_6}{C_2 C_6 R_6 s + C_2}$$

10.129 X-INVALID-ORDER-129 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, R_3, \infty, R_5 + \frac{1}{C_5 s}, R_6\right)$$

$$H(s) = \frac{C_2 C_5 R_2 R_6 s + C_5 R_6}{C_2 C_5 R_5 s + C_2}$$

10.130 X-INVALID-ORDER-130 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, R_3, \infty, R_5 + \frac{1}{C_5 s}, \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_2 C_5 R_2 s + C_5}{C_2 C_5 C_6 R_5 s^2 + C_2 C_6 s}$$

10.131 X-INVALID-ORDER-131 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, R_3, \infty, R_5 + \frac{1}{C_5 s}, R_6 + \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_2 C_5 C_6 R_2 R_6 s^2 + C_5 + s \left(C_2 C_5 R_2 + C_5 C_6 R_6\right)}{C_2 C_5 C_6 R_5 s^2 + C_2 C_6 s}$$

**10.132** X-INVALID-ORDER-132 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, R_3, \infty, \frac{R_5}{C_5 R_5 s + 1}, R_6\right)$$

$$H(s) = \frac{C_2 C_5 R_2 R_5 R_6 s^2 + R_6 + s \left(C_2 R_2 R_6 + C_5 R_5 R_6\right)}{C_2 R_5 s}$$

10.133 X-INVALID-ORDER-133 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, R_3, \infty, \frac{R_5}{C_5 R_5 s + 1}, \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_2 C_5 R_2 R_5 s^2 + s \left(C_2 R_2 + C_5 R_5\right) + 1}{C_2 C_6 R_5 s^2}$$

$$\textbf{10.134} \quad \textbf{X-INVALID-ORDER-134} \ Z(s) = \left( \infty, \ R_2 + \frac{1}{C_2 s}, \ R_3, \ \infty, \ \frac{R_5}{C_5 R_5 s + 1}, \ R_6 + \frac{1}{C_6 s} \right)$$
 
$$H(s) = \frac{C_2 C_5 C_6 R_2 R_5 R_6 s^3 + s^2 \left( C_2 C_5 R_2 R_5 + C_2 C_6 R_2 R_6 + C_5 C_6 R_5 R_6 \right) + s \left( C_2 R_2 + C_5 R_5 + C_6 R_6 \right) + 1}{C_2 C_6 R_5 s^2}$$

10.135 X-INVALID-ORDER-135 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, R_3, \infty, \frac{R_5}{C_5 R_5 s + 1}, \frac{R_6}{C_6 R_6 s + 1}\right)$$

$$H(s) = \frac{C_2 C_5 R_2 R_5 R_6 s^2 + R_6 + s \left(C_2 R_2 R_6 + C_5 R_5 R_6\right)}{C_2 C_6 R_5 R_6 s^2 + C_2 R_5 s}$$

**10.136** X-INVALID-ORDER-136 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, R_5, R_6\right)$$

$$H(s) = \frac{C_2 R_2 R_6 s + R_6}{C_2 R_5 s}$$

10.137 X-INVALID-ORDER-137 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, R_5, \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_2 R_2 s + 1}{C_2 C_6 R_5 s^2}$$

10.138 X-INVALID-ORDER-138 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, R_5, R_6 + \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_2 C_6 R_2 R_6 s^2 + s (C_2 R_2 + C_6 R_6) + 1}{C_2 C_6 R_5 s^2}$$

**10.139** X-INVALID-ORDER-139 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, R_5, \frac{R_6}{C_6 R_6 s + 1}\right)$$

$$H(s) = \frac{C_2 R_2 R_6 s + R_6}{C_2 C_6 R_5 R_6 s^2 + C_2 R_5 s}$$

10.140 X-INVALID-ORDER-140 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, \frac{1}{C_5 s}, R_6\right)$$

$$H(s) = \frac{C_2 C_5 R_2 R_6 s + C_5 R_6}{C_2}$$

10.141 X-INVALID-ORDER-141 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, \frac{1}{C_5 s}, \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_2 C_5 R_2 s + C_5}{C_2 C_6 s}$$

10.142 X-INVALID-ORDER-142 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, \frac{1}{C_5 s}, R_6 + \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_2 C_5 C_6 R_2 R_6 s^2 + C_5 + s \left(C_2 C_5 R_2 + C_5 C_6 R_6\right)}{C_2 C_6 s}$$

**10.143** X-INVALID-ORDER-143 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, \frac{1}{C_5 s}, \frac{R_6}{C_6 R_6 s + 1}\right)$$

$$H(s) = \frac{C_2 C_5 R_2 R_6 s + C_5 R_6}{C_2 C_6 R_6 s + C_2}$$

**10.144** X-INVALID-ORDER-144 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, R_5 + \frac{1}{C_5 s}, R_6\right)$$

$$H(s) = \frac{C_2 C_5 R_2 R_6 s + C_5 R_6}{C_2 C_5 R_5 s + C_2}$$

10.145 X-INVALID-ORDER-145 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, R_5 + \frac{1}{C_5 s}, \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_2C_5R_2s + C_5}{C_2C_5C_6R_5s^2 + C_2C_6s}$$

**10.146** X-INVALID-ORDER-146 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, R_5 + \frac{1}{C_5 s}, R_6 + \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_2 C_5 C_6 R_2 R_6 s^2 + C_5 + s \left(C_2 C_5 R_2 + C_5 C_6 R_6\right)}{C_2 C_5 C_6 R_5 s^2 + C_2 C_6 s}$$

10.147 X-INVALID-ORDER-147 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, \frac{R_5}{C_5 R_5 s + 1}, R_6\right)$$

$$H(s) = \frac{C_2 C_5 R_2 R_5 R_6 s^2 + R_6 + s \left(C_2 R_2 R_6 + C_5 R_5 R_6\right)}{C_2 R_5 s}$$

10.148 X-INVALID-ORDER-148 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, \frac{R_5}{C_5 R_5 s + 1}, \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_2 C_5 R_2 R_5 s^2 + s (C_2 R_2 + C_5 R_5) + 1}{C_2 C_6 R_5 s^2}$$

**10.149** X-INVALID-ORDER-149 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, \frac{R_5}{C_5 R_5 s + 1}, R_6 + \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_2C_5C_6R_2R_5R_6s^3 + s^2\left(C_2C_5R_2R_5 + C_2C_6R_2R_6 + C_5C_6R_5R_6\right) + s\left(C_2R_2 + C_5R_5 + C_6R_6\right) + 1}{C_2C_6R_5s^2}$$

10.150 X-INVALID-ORDER-150 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, \frac{1}{C_3 s}, \infty, \frac{R_5}{C_5 R_5 s + 1}, \frac{R_6}{C_6 R_6 s + 1}\right)$$

$$H(s) = \frac{C_2 C_5 R_2 R_5 R_6 s^2 + R_6 + s \left( C_2 R_2 R_6 + C_5 R_5 R_6 \right)}{C_2 C_6 R_5 R_6 s^2 + C_2 R_5 s}$$

**10.151** X-INVALID-ORDER-151  $Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, R_3 + \frac{1}{C_3 s}, \infty, R_5, R_6\right)$ 

$$H(s) = \frac{C_2 R_2 R_6 s + R_6}{C_2 R_5 s}$$

10.152 X-INVALID-ORDER-152  $Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, R_3 + \frac{1}{C_3 s}, \infty, R_5, \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{C_2 R_2 s + 1}{C_2 C_6 R_5 s^2}$$

10.153 X-INVALID-ORDER-153 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, R_3 + \frac{1}{C_3 s}, \infty, R_5, R_6 + \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_2 C_6 R_2 R_6 s^2 + s (C_2 R_2 + C_6 R_6) + 1}{C_2 C_6 R_5 s^2}$$

10.154 X-INVALID-ORDER-154 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, R_3 + \frac{1}{C_3 s}, \infty, R_5, \frac{R_6}{C_6 R_6 s + 1}\right)$$

$$H(s) = \frac{C_2 R_2 R_6 s + R_6}{C_2 C_6 R_5 R_6 s^2 + C_2 R_5 s}$$

10.155 X-INVALID-ORDER-155 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, R_3 + \frac{1}{C_3 s}, \infty, \frac{1}{C_5 s}, R_6\right)$$

$$H(s) = \frac{C_2 C_5 R_2 R_6 s + C_5 R_6}{C_2}$$

**10.156** X-INVALID-ORDER-156 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, R_3 + \frac{1}{C_3 s}, \infty, \frac{1}{C_5 s}, \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_2 C_5 R_2 s + C_5}{C_2 C_6 s}$$

10.157 X-INVALID-ORDER-157 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, R_3 + \frac{1}{C_3 s}, \infty, \frac{1}{C_5 s}, R_6 + \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_2 C_5 C_6 R_2 R_6 s^2 + C_5 + s \left(C_2 C_5 R_2 + C_5 C_6 R_6\right)}{C_2 C_6 s}$$

10.158 X-INVALID-ORDER-158 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, R_3 + \frac{1}{C_3 s}, \infty, \frac{1}{C_5 s}, \frac{R_6}{C_6 R_6 s + 1}\right)$$

$$H(s) = \frac{C_2 C_5 R_2 R_6 s + C_5 R_6}{C_2 C_6 R_6 s + C_2}$$

**10.159** X-INVALID-ORDER-159 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, R_3 + \frac{1}{C_3 s}, \infty, R_5 + \frac{1}{C_5 s}, R_6\right)$$

$$H(s) = \frac{C_2 C_5 R_2 R_6 s + C_5 R_6}{C_2 C_5 R_5 s + C_2}$$

10.160 X-INVALID-ORDER-160 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, R_3 + \frac{1}{C_3 s}, \infty, R_5 + \frac{1}{C_5 s}, \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_2C_5R_2s + C_5}{C_2C_5C_6R_5s^2 + C_2C_6s}$$

10.161 X-INVALID-ORDER-161 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, R_3 + \frac{1}{C_3 s}, \infty, R_5 + \frac{1}{C_5 s}, R_6 + \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_2 C_5 C_6 R_2 R_6 s^2 + C_5 + s \left(C_2 C_5 R_2 + C_5 C_6 R_6\right)}{C_2 C_5 C_6 R_5 s^2 + C_2 C_6 s}$$

**10.162** X-INVALID-ORDER-162 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, R_3 + \frac{1}{C_3 s}, \infty, \frac{R_5}{C_5 R_5 s + 1}, R_6\right)$$

$$H(s) = \frac{C_2 C_5 R_2 R_5 R_6 s^2 + R_6 + s \left(C_2 R_2 R_6 + C_5 R_5 R_6\right)}{C_2 R_5 s}$$

10.163 X-INVALID-ORDER-163 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, R_3 + \frac{1}{C_3 s}, \infty, \frac{R_5}{C_5 R_5 s + 1}, \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_2 C_5 R_2 R_5 s^2 + s \left(C_2 R_2 + C_5 R_5\right) + 1}{C_2 C_6 R_5 s^2}$$

10.165 X-INVALID-ORDER-165 
$$Z(s) = \left(\infty, \ R_2 + \frac{1}{C_2 s}, \ R_3 + \frac{1}{C_3 s}, \ \infty, \ \frac{R_5}{C_5 R_5 s + 1}, \ \frac{R_6}{C_6 R_6 s + 1}\right)$$

$$H(s) = \frac{C_2 C_5 R_2 R_5 R_6 s^2 + R_6 + s \left(C_2 R_2 R_6 + C_5 R_5 R_6\right)}{C_2 C_6 R_5 R_6 s^2 + C_2 R_5 s}$$

10.166 X-INVALID-ORDER-166 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, \frac{R_3}{C_3 R_3 s + 1}, \infty, R_5, R_6\right)$$

$$H(s) = \frac{C_2 R_2 R_6 s + R_6}{C_2 R_5 s}$$

10.167 X-INVALID-ORDER-167 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, \frac{R_3}{C_3 R_3 s + 1}, \infty, R_5, \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_2 R_2 s + 1}{C_2 C_6 R_5 s^2}$$

10.168 X-INVALID-ORDER-168 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, \frac{R_3}{C_3 R_3 s + 1}, \infty, R_5, R_6 + \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_2 C_6 R_2 R_6 s^2 + s (C_2 R_2 + C_6 R_6) + 1}{C_2 C_6 R_5 s^2}$$

**10.169** X-INVALID-ORDER-169 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, \frac{R_3}{C_3 R_3 s + 1}, \infty, R_5, \frac{R_6}{C_6 R_6 s + 1}\right)$$

$$H(s) = \frac{C_2 R_2 R_6 s + R_6}{C_2 C_6 R_5 R_6 s^2 + C_2 R_5 s}$$

10.170 X-INVALID-ORDER-170 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, \frac{R_3}{C_3 R_3 s + 1}, \infty, \frac{1}{C_5 s}, R_6\right)$$

$$H(s) = \frac{C_2 C_5 R_2 R_6 s + C_5 R_6}{C_2}$$

10.171 X-INVALID-ORDER-171 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, \frac{R_3}{C_3 R_3 s + 1}, \infty, \frac{1}{C_5 s}, \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_2 C_5 R_2 s + C_5}{C_2 C_6 s}$$

10.172 X-INVALID-ORDER-172 
$$Z(s) = \left(\infty, \ R_2 + \frac{1}{C_2 s}, \ \frac{R_3}{C_3 R_3 s + 1}, \ \infty, \ \frac{1}{C_5 s}, \ R_6 + \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_2 C_5 C_6 R_2 R_6 s^2 + C_5 + s \left(C_2 C_5 R_2 + C_5 C_6 R_6\right)}{C_2 C_6 s}$$

10.173 X-INVALID-ORDER-173 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, \frac{R_3}{C_3 R_3 s + 1}, \infty, \frac{1}{C_5 s}, \frac{R_6}{C_6 R_6 s + 1}\right)$$

$$H(s) = \frac{C_2 C_5 R_2 R_6 s + C_5 R_6}{C_2 C_6 R_6 s + C_2}$$

10.174 X-INVALID-ORDER-174 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, \frac{R_3}{C_3 R_3 s + 1}, \infty, R_5 + \frac{1}{C_5 s}, R_6\right)$$

$$H(s) = \frac{C_2 C_5 R_2 R_6 s + C_5 R_6}{C_2 C_5 R_5 s + C_2}$$

10.175 X-INVALID-ORDER-175 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, \frac{R_3}{C_3 R_3 s + 1}, \infty, R_5 + \frac{1}{C_5 s}, \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_2 C_5 R_2 s + C_5}{C_2 C_5 C_6 R_5 s^2 + C_2 C_6 s}$$

10.176 X-INVALID-ORDER-176 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, \frac{R_3}{C_3 R_3 s + 1}, \infty, R_5 + \frac{1}{C_5 s}, R_6 + \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_2C_5C_6R_2R_6s^2 + C_5 + s\left(C_2C_5R_2 + C_5C_6R_6\right)}{C_2C_5C_6R_5s^2 + C_2C_6s}$$

**10.177** X-INVALID-ORDER-177 
$$Z(s) = \left(\infty, \ R_2 + \frac{1}{C_2 s}, \ \frac{R_3}{C_3 R_3 s + 1}, \ \infty, \ \frac{R_5}{C_5 R_5 s + 1}, \ R_6\right)$$

$$H(s) = \frac{C_2 C_5 R_2 R_5 R_6 s^2 + R_6 + s \left(C_2 R_2 R_6 + C_5 R_5 R_6\right)}{C_2 R_5 s}$$

10.178 X-INVALID-ORDER-178 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, \frac{R_3}{C_3 R_3 s + 1}, \infty, \frac{R_5}{C_5 R_5 s + 1}, \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_2 C_5 R_2 R_5 s^2 + s (C_2 R_2 + C_5 R_5) + 1}{C_2 C_6 R_5 s^2}$$

10.179 X-INVALID-ORDER-179 
$$Z(s) = \left(\infty, \ R_2 + \frac{1}{C_2 s}, \ \frac{R_3}{C_3 R_3 s + 1}, \ \infty, \ \frac{R_5}{C_5 R_5 s + 1}, \ R_6 + \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_2C_5C_6R_2R_5R_6s^3 + s^2\left(C_2C_5R_2R_5 + C_2C_6R_2R_6 + C_5C_6R_5R_6\right) + s\left(C_2R_2 + C_5R_5 + C_6R_6\right) + 1}{C_2C_6R_5s^2}$$

**10.180** X-INVALID-ORDER-180 
$$Z(s) = \left(\infty, R_2 + \frac{1}{C_2 s}, \frac{R_3}{C_3 R_3 s + 1}, \infty, \frac{R_5}{C_5 R_5 s + 1}, \frac{R_6}{C_6 R_6 s + 1}\right)$$

$$H(s) = \frac{C_2 C_5 R_2 R_5 R_6 s^2 + R_6 + s \left(C_2 R_2 R_6 + C_5 R_5 R_6\right)}{C_2 C_6 R_5 R_6 s^2 + C_2 R_5 s}$$

**10.181** X-INVALID-ORDER-181  $Z(s) = \left(\infty, \frac{R_2}{C_2R_2s+1}, R_3, \infty, R_5, R_6\right)$ 

$$H(s) = \frac{R_2 R_6}{C_2 R_2 R_5 s + R_5}$$

**10.182** X-INVALID-ORDER-182  $Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, R_3, \infty, R_5, \frac{1}{C_6 s}\right)$ 

$$H(s) = \frac{R_2}{C_2 C_6 R_2 R_5 s^2 + C_6 R_5 s}$$

**10.183** X-INVALID-ORDER-183 
$$Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, R_3, \infty, R_5, R_6 + \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_6 R_2 R_6 s + R_2}{C_2 C_6 R_2 R_5 s^2 + C_6 R_5 s}$$

**10.184** X-INVALID-ORDER-184 
$$Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, R_3, \infty, \frac{1}{C_5 s}, R_6\right)$$

$$H(s) = \frac{C_5 R_2 R_6 s}{C_2 R_2 s + 1}$$

**10.185** X-INVALID-ORDER-185 
$$Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, R_3, \infty, \frac{1}{C_5 s}, \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_5 R_2}{C_2 C_6 R_2 s + C_6}$$

10.186 X-INVALID-ORDER-186 
$$Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, R_3, \infty, \frac{1}{C_5 s}, R_6 + \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_5 C_6 R_2 R_6 s + C_5 R_2}{C_2 C_6 R_2 s + C_6}$$

**10.187** X-INVALID-ORDER-187 
$$Z(s) = \left(\infty, \frac{R_2}{C_2R_2s+1}, R_3, \infty, R_5 + \frac{1}{C_5s}, \frac{R_6}{C_6R_6s+1}\right)$$

$$H(s) = \frac{C_5 R_2 R_6 s}{C_2 C_5 C_6 R_2 R_5 R_6 s^3 + s^2 \left(C_2 C_5 R_2 R_5 + C_2 C_6 R_2 R_6 + C_5 C_6 R_5 R_6\right) + s \left(C_2 R_2 + C_5 R_5 + C_6 R_6\right) + 1}$$

10.188 X-INVALID-ORDER-188 
$$Z(s) = \left(\infty, \frac{R_2}{C_2R_2s+1}, R_3, \infty, \frac{R_5}{C_5R_5s+1}, R_6\right)$$

$$H(s) = \frac{C_5 R_2 R_5 R_6 s + R_2 R_6}{C_2 R_2 R_5 s + R_5}$$

10.189 X-INVALID-ORDER-189 
$$Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, R_3, \infty, \frac{R_5}{C_5 R_5 s + 1}, \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_5 R_2 R_5 s + R_2}{C_2 C_6 R_2 R_5 s^2 + C_6 R_5 s}$$

10.190 X-INVALID-ORDER-190 
$$Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, R_3, \infty, \frac{R_5}{C_5 R_5 s + 1}, R_6 + \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_5 C_6 R_2 R_5 R_6 s^2 + R_2 + s \left(C_5 R_2 R_5 + C_6 R_2 R_6\right)}{C_2 C_6 R_2 R_5 s^2 + C_6 R_5 s}$$

**10.191** X-INVALID-ORDER-191  $Z(s) = \left(\infty, \frac{R_2}{C_2R_2s+1}, \frac{1}{C_3s}, \infty, R_5, R_6\right)$ 

$$H(s) = \frac{R_2 R_6}{C_2 R_2 R_5 s + R_5}$$

10.192 X-INVALID-ORDER-192 
$$Z(s) = \left(\infty, \frac{R_2}{C_2R_2s+1}, \frac{1}{C_3s}, \infty, R_5, \frac{1}{C_6s}\right)$$

$$H(s) = \frac{R_2}{C_2 C_6 R_2 R_5 s^2 + C_6 R_5 s}$$

10.193 X-INVALID-ORDER-193 
$$Z(s) = \left(\infty, \frac{R_2}{C_2R_2s+1}, \frac{1}{C_3s}, \infty, R_5, R_6 + \frac{1}{C_6s}\right)$$

$$H(s) = \frac{C_6 R_2 R_6 s + R_2}{C_2 C_6 R_2 R_5 s^2 + C_6 R_5 s}$$

**10.194** X-INVALID-ORDER-194 
$$Z(s) = \left(\infty, \frac{R_2}{C_2R_2s+1}, \frac{1}{C_3s}, \infty, \frac{1}{C_5s}, R_6\right)$$

$$H(s) = \frac{C_5 R_2 R_6 s}{C_2 R_2 s + 1}$$

10.195 X-INVALID-ORDER-195 
$$Z(s) = \left(\infty, \frac{R_2}{C_2R_2s+1}, \frac{1}{C_3s}, \infty, \frac{1}{C_5s}, \frac{1}{C_6s}\right)$$

$$H(s) = \frac{C_5 R_2}{C_2 C_6 R_2 s + C_6}$$

10.196 X-INVALID-ORDER-196 
$$Z(s) = \left(\infty, \frac{R_2}{C_2R_2s+1}, \frac{1}{C_3s}, \infty, \frac{1}{C_5s}, R_6 + \frac{1}{C_6s}\right)$$

$$H(s) = \frac{C_5 C_6 R_2 R_6 s + C_5 R_2}{C_2 C_6 R_2 s + C_6}$$

10.197 X-INVALID-ORDER-197 
$$Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, \frac{1}{C_3 s}, \infty, R_5 + \frac{1}{C_5 s}, \frac{R_6}{C_6 R_6 s + 1}\right)$$

$$H(s) = \frac{C_5 R_2 R_6 s}{C_2 C_5 C_6 R_2 R_5 R_6 s^3 + s^2 \left(C_2 C_5 R_2 R_5 + C_2 C_6 R_2 R_6 + C_5 C_6 R_5 R_6\right) + s \left(C_2 R_2 + C_5 R_5 + C_6 R_6\right) + 1}$$

**10.198** X-INVALID-ORDER-198 
$$Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, \frac{1}{C_3 s}, \infty, \frac{R_5}{C_5 R_5 s + 1}, R_6\right)$$

$$H(s) = \frac{C_5 R_2 R_5 R_6 s + R_2 R_6}{C_2 R_2 R_5 s + R_5}$$

10.199 X-INVALID-ORDER-199 
$$Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, \frac{1}{C_3 s}, \infty, \frac{R_5}{C_5 R_5 s + 1}, \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_5 R_2 R_5 s + R_2}{C_2 C_6 R_2 R_5 s^2 + C_6 R_5 s}$$

10.200 X-INVALID-ORDER-200 
$$Z(s) = \left(\infty, \frac{R_2}{C_2R_2s+1}, \frac{1}{C_3s}, \infty, \frac{R_5}{C_5R_5s+1}, R_6 + \frac{1}{C_6s}\right)$$

$$H(s) = \frac{C_5 C_6 R_2 R_5 R_6 s^2 + R_2 + s \left(C_5 R_2 R_5 + C_6 R_2 R_6\right)}{C_2 C_6 R_2 R_5 s^2 + C_6 R_5 s}$$

**10.201** X-INVALID-ORDER-201 
$$Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, R_3 + \frac{1}{C_3 s}, \infty, R_5, R_6\right)$$

$$H(s) = \frac{R_2 R_6}{C_2 R_2 R_5 s + R_5}$$

**10.202** X-INVALID-ORDER-202 
$$Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, R_3 + \frac{1}{C_3 s}, \infty, R_5, \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{R_2}{C_2 C_6 R_2 R_5 s^2 + C_6 R_5 s}$$

**10.203** X-INVALID-ORDER-203 
$$Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, R_3 + \frac{1}{C_3 s}, \infty, R_5, R_6 + \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_6 R_2 R_6 s + R_2}{C_2 C_6 R_2 R_5 s^2 + C_6 R_5 s}$$

**10.204** X-INVALID-ORDER-204 
$$Z(s) = \left(\infty, \frac{R_2}{C_2R_2s+1}, R_3 + \frac{1}{C_3s}, \infty, \frac{1}{C_5s}, R_6\right)$$

$$H(s) = \frac{C_5 R_2 R_6 s}{C_2 R_2 s + 1}$$

10.205 X-INVALID-ORDER-205 
$$Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, R_3 + \frac{1}{C_3 s}, \infty, \frac{1}{C_5 s}, \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_5 R_2}{C_2 C_6 R_2 s + C_6}$$

10.206 X-INVALID-ORDER-206 
$$Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, R_3 + \frac{1}{C_3 s}, \infty, \frac{1}{C_5 s}, R_6 + \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_5 C_6 R_2 R_6 s + C_5 R_2}{C_2 C_6 R_2 s + C_6}$$

10.207 X-INVALID-ORDER-207 
$$Z(s) = \left(\infty, \frac{R_2}{C_2R_2s+1}, R_3 + \frac{1}{C_3s}, \infty, R_5 + \frac{1}{C_5s}, \frac{R_6}{C_6R_6s+1}\right)$$

$$H(s) = \frac{C_5 R_2 R_6 s}{C_2 C_5 C_6 R_2 R_5 R_6 s^3 + s^2 \left(C_2 C_5 R_2 R_5 + C_2 C_6 R_2 R_6 + C_5 C_6 R_5 R_6\right) + s \left(C_2 R_2 + C_5 R_5 + C_6 R_6\right) + 1}$$

10.208 X-INVALID-ORDER-208 
$$Z(s) = \left(\infty, \frac{R_2}{C_2R_2s+1}, R_3 + \frac{1}{C_3s}, \infty, \frac{R_5}{C_5R_5s+1}, R_6\right)$$

$$H(s) = \frac{C_5 R_2 R_5 R_6 s + R_2 R_6}{C_2 R_2 R_5 s + R_5}$$

**10.209** X-INVALID-ORDER-209 
$$Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, R_3 + \frac{1}{C_3 s}, \infty, \frac{R_5}{C_5 R_5 s + 1}, \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_5 R_2 R_5 s + R_2}{C_2 C_6 R_2 R_5 s^2 + C_6 R_5 s}$$

10.210 X-INVALID-ORDER-210 
$$Z(s) = \left(\infty, \frac{R_2}{C_2 R_2 s + 1}, R_3 + \frac{1}{C_3 s}, \infty, \frac{R_5}{C_5 R_5 s + 1}, R_6 + \frac{1}{C_6 s}\right)$$

$$H(s) = \frac{C_5 C_6 R_2 R_5 R_6 s^2 + R_2 + s \left(C_5 R_2 R_5 + C_6 R_2 R_6\right)}{C_2 C_6 R_2 R_5 s^2 + C_6 R_5 s}$$

**10.211** X-INVALID-ORDER-211 
$$Z(s) = \left(\infty, \frac{R_2}{C_2R_2s+1}, \frac{R_3}{C_3R_3s+1}, \infty, R_5, R_6\right)$$

$$H(s) = \frac{R_2 R_6}{C_2 R_2 R_5 s + R_5}$$

**10.212** X-INVALID-ORDER-212 
$$Z(s) = \left(\infty, \frac{R_2}{C_2R_2s+1}, \frac{R_3}{C_3R_3s+1}, \infty, R_5, \frac{1}{C_6s}\right)$$

$$H(s) = \frac{R_2}{C_2 C_6 R_2 R_5 s^2 + C_6 R_5 s}$$

10.213 X-INVALID-ORDER-213 
$$Z(s) = \left(\infty, \frac{R_2}{C_2R_2s+1}, \frac{R_3}{C_3R_3s+1}, \infty, R_5, R_6 + \frac{1}{C_6s}\right)$$

$$H(s) = \frac{C_6 R_2 R_6 s + R_2}{C_2 C_6 R_2 R_5 s^2 + C_6 R_5 s}$$

10.214 X-INVALID-ORDER-214 
$$Z(s) = \left(\infty, \frac{R_2}{C_2R_2s+1}, \frac{R_3}{C_3R_3s+1}, \infty, \frac{1}{C_5s}, R_6\right)$$

$$H(s) = \frac{C_5 R_2 R_6 s}{C_2 R_2 s + 1}$$

10.215 X-INVALID-ORDER-215 
$$Z(s) = \left(\infty, \ \frac{R_2}{C_2R_2s+1}, \ \frac{R_3}{C_3R_3s+1}, \ \infty, \ \frac{1}{C_5s}, \ \frac{1}{C_6s}\right)$$

$$H(s) = \frac{C_5 R_2}{C_2 C_6 R_2 s + C_6}$$

10.216 X-INVALID-ORDER-216 
$$Z(s) = \left(\infty, \frac{R_2}{C_2R_2s+1}, \frac{R_3}{C_3R_3s+1}, \infty, \frac{1}{C_5s}, R_6 + \frac{1}{C_6s}\right)$$

$$H(s) = \frac{C_5 C_6 R_2 R_6 s + C_5 R_2}{C_2 C_6 R_2 s + C_6}$$

10.217 X-INVALID-ORDER-217 
$$Z(s) = \left(\infty, \frac{R_2}{C_2R_2s+1}, \frac{R_3}{C_3R_3s+1}, \infty, R_5 + \frac{1}{C_5s}, \frac{R_6}{C_6R_6s+1}\right)$$

$$H(s) = \frac{C_5 R_2 R_6 s}{C_2 C_5 C_6 R_2 R_5 R_6 s^3 + s^2 \left(C_2 C_5 R_2 R_5 + C_2 C_6 R_2 R_6 + C_5 C_6 R_5 R_6\right) + s \left(C_2 R_2 + C_5 R_5 + C_6 R_6\right) + 1}$$

10.218 X-INVALID-ORDER-218 
$$Z(s) = \left(\infty, \frac{R_2}{C_2R_2s+1}, \frac{R_3}{C_3R_3s+1}, \infty, \frac{R_5}{C_5R_5s+1}, R_6\right)$$

$$H(s) = \frac{C_5 R_2 R_5 R_6 s + R_2 R_6}{C_2 R_2 R_5 s + R_5}$$

**10.219** X-INVALID-ORDER-219 
$$Z(s) = \left(\infty, \ \frac{R_2}{C_2R_2s+1}, \ \frac{R_3}{C_3R_3s+1}, \ \infty, \ \frac{R_5}{C_5R_5s+1}, \ \frac{1}{C_6s}\right)$$

$$H(s) = \frac{C_5 R_2 R_5 s + R_2}{C_2 C_6 R_2 R_5 s^2 + C_6 R_5 s}$$

10.220 X-INVALID-ORDER-220 
$$Z(s) = \left(\infty, \frac{R_2}{C_2R_2s+1}, \frac{R_3}{C_3R_3s+1}, \infty, \frac{R_5}{C_5R_5s+1}, R_6 + \frac{1}{C_6s}\right)$$

$$H(s) = \frac{C_5 C_6 R_2 R_5 R_6 s^2 + R_2 + s \left(C_5 R_2 R_5 + C_6 R_2 R_6\right)}{C_2 C_6 R_2 R_5 s^2 + C_6 R_5 s}$$

#### 11 X-INVALID-WZ

### 12 X-PolynomialError