93 Using the bilinear transformation, design a
highpass filter, monotonic in passbond with
cutoff frequency of 1000 Hz & down 10 ds at
350 Hz. The sampling Grey is 5000 Hz. Implement
using basic building blocks. Show derivation for
filter Demonstrate filteris olp for 5 diff. beg.
donging from 100 Mz to 10000Mz. Choose these
free smartly to demonstrate the filter working
=) Given:
Passbard atten = dp = 3 dB
Shakend atten. = dr = 10 dB
Stopband atten. = &s = 10 dB Sampling freq = fram = 5000 M2
N= 0.982
:. Ts = 1/5000 = 2 × 10-45
Fp = 1000 Hz 1914 xA
Fs = 350 Mz 1/19 27 15 29 A + 3 B
2 = (b) H
Sup = 2 tan We To Coss + a
TZ
= 2 ton [211 Go Ts] 10
= 2 ton {211 Gp Ts } 100
= 104 tan [TI × 1000] 5000
- 104 ton [0,2Ti] = 7265.4 rad/s.
- 1265, 9 rad Is.
Control of the Contro
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2 ton [Ws Trum
$\Omega s = \frac{2}{7} \text{ton } \left[\frac{Ws}{2} \frac{Tun}{2} \right]$
$\frac{325 = \frac{1}{7} \cdot \frac{1}{2}}{10^{6} \cdot \tan \left[0.07\pi\right]} = 2235.3 \text{ rad } 15$
the New English and the second
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The order of Fitter,
E = 110 -1 = 1
$E = \sqrt{10^{\circ 12} - 1} = 3$
$\frac{1}{100} = \frac{\log (\lambda / \epsilon)}{\log (\sqrt{N} s / \sqrt{N} p)} = \frac{\log 3}{\log 3.25}$
$N = \log \left(\frac{\log \log n}{\log \log n} \right)$
10g (33/30p) 20g-0
the good - we to the fourth when
.: N = 0.932
T= 15000 = 2 × 165
For HPF: TC = Ap = 7265 rad/s
2c = Ap = 7265 rad/s
: H(s) = s
S+7265 TAN AT S - 10
31/203
Using BLT:
H(2) = H(5) 104 (1-2-1)
(1+2-)
: H(z) = 0.5792 (1-27)
1-0.15842-1
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