**EGN3204 — Engineering Software Tools**

**Pensacola (82151) Section, Fall 2014**

**Problem Set #10 (November 20, 2014 Lecture)**

**(Word, Matlab R2013a)**

James Davis

1. The matlab code for problems 1 is given in Figure 1 and the output for problems 1 is given in Figure 2. This is a band reject filter.

%James Davis, EGN3204, Fall 2014

% MATLAB m file for problem 1, Project 13

clear all

clear console

%define circuit component values

R = 1500;

L = 100e-6;

C = 100e-9;

num = [R\*L\*C 0 R];

den = [R\*L\*C L R];

system = tf(num,den);

figure(1)

set(cstprefs.tbxprefs,'FrequencyUnits','Hz')

bode(system,'k-')

grid on

title('Bode plot for question 1 by James Davis')

**Figure 1.** The matlab m file for problem 1.



**Figure 2.** The matlab graph output for problem 1

2. The matlab code for problem 2 is given in Figure 3 and the output for problem 2 is given in Figure 4.

This is a low pass filter.

%James Davis, EGN3204, Fall 2014

% MATLAB m file for problem 2, Project 13

clear all

clear console

%define circuit component values

R1 = 1000;

R2 = 3000;

C1 = 0.01e-6;

C2 = 10e-6;

num = [C1\*R1\*R2 R2];

den = [C2\*R1\*R2 R1];

system = tf(num,den);

figure(1)

set(cstprefs.tbxprefs,'FrequencyUnits','Hz')

bode(system,'k-')

grid on

title('Bode plot for question 2 by James Davis')

**Figure 3.** The matlab m file for problem 2



**Figure 4.** The matlab graph output for problem 2.

3. The matlab code for problem 3 is given in Figure 5 and the output for problem 3 is given in Figure 6.’

This is a band pass filter.

%James Davis, EGN3204, Fall 2014

% MATLAB m file for problem 3, Project 13

clear all

clear console

%define circuit component values

R1 = 1300;

R2 = 2000;

C1 = 0.2e-6;

C2 = 0.4e-6;

num = [-C1\*R2 0];

den = [R1\*R2\*C1\*C2 R1\*C1+R2\*C2 1];

system = tf(num,den);

figure(1)

set(cstprefs.tbxprefs,'FrequencyUnits','Hz')

bode(system,'k-')

grid on

title('Bode plot for question 3 by James Davis')

**Figure 5.** The matlab m file for problem 3



**Figure 6.** The matlab graph for problem 3.

4. The matlab code for problem 4 is given in Figure 7 and the output for problem 4 is given in Figure 8.

This is a high pass filter.

%James Davis, EGN3204, Fall 2014

% MATLAB m file for problem 3, Project 13

clear all

clear console

%define circuit component values

R1 = 20000;

R2 = 200000;

C1 = 0.1e-6;

num = [-C1\*R2 0];

den = [C1\*R1 1];

system = tf(num,den);

figure(1)

set(cstprefs.tbxprefs,'FrequencyUnits','Hz')

bode(system,'k-')

grid on

title('Bode plot for question 4 by James Davis')

**Figure 7.** The matlab m file for problem 4.



**Figure 8.** The matlab graph for problem 4.