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EE361 HW#3

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Q.1.

The parameters that are used:

```
n = 10;
fs = 50;
R1 = 1.6;
R2 = 16e-3;
L1 = 7e-3;
X1 = L1*2*pi*fs;
L2 = 70e-6;
X2 = L2*2*pi*fs;
Rc = 32e3;
Lm = 14.6;
Xm = Lm*2*pi*fs;
```

Load current vector creation (magnitude)

```
%Insert your code here

%there will be equations as following
```

$$x^2 + e^{\pi i}$$

$$E_2 = V_2 + i_{load} * (R_2 + j * X_2)$$

```
%HINTS
% Irated = ?;
% Use "linspace"
% Use j variable to do complex math
% EXAMPLE: E2 = V2+iload*(R2+j*X2);
```

At unity pf

```
%Insert your code here

%HINTS
% E2 = ?;
% V1 = ?;
% use complete equivalent circuit
```

pf = 0.8 lagging

```
%Insert your code here
```

pf = 0.8 lagging

```
%Insert your code here
```

PART (a)

source voltages

```
%Insert your code here

% some useful functions
%plot(iload,eff1...
%hold on
%grid on
%set(gca,'FontSize....
%xlim([0 ...
%ylim([95 ....
%xlabel('Load Curr.....
%ylabel('Efficiency (Per....
%legend('pf = 1','pf = .....


% your graph will be here
% do not forget to plot on same figure
```

PART (b)

voltage regulations

```
%Insert your code here

% your graph will be here
% do not forget to plot on same figure
```

PART (c)

efficiency

```
%Insert your code here

% your graph will be here
% do not forget to plot on same figure
```

PART (d)

comment

```
%Insert
%your
%comment
%here
%and
%there
%...
```

PART (e)

comment

```
%Insert
%your
%comment
%here
%and
%there
%...
```

Q.2.

PART A

PART a

```
%Insert your code here
```

```
        % your graph will be here
        % do not forget to plot on same figure
        % two fundamental cycles is 40 msec
```

PART b

```
        %Define parameters
        %Zl1 = ...
        %Zl2 = ...
        %Zt = ...

        %Insert your code here (calculations)
        % IL1_mag = ?
        % IL1_phase = ?

        %Insert your code here (plot)

        % your graph will be here
        % do not forget to plot on same figure
```

PART c

```
        %Insert your code here

        % your graph will be here
```

PART d

```
        %Insert your code here (calculations)
        % Vload_mag = ?

        % your result will be here
```

PART e

```
        %Insert your code here (calculations)
        % IL1_phase = ?
        % pf_source = ?

        % your result will be here
```

PART B

Part a

Data import

```
data = xlsread('load_profile_METU.xlsx');
iload = data(2:25,2);
```

```matlab
hour = data(2:25,1);

%Insert your code here

% your graph will be here
```

Part b

```matlab
%load voltage vs hour

%Insert your code here (calculations)

%Insert your code here (plot)

% your graph will be here
```

Part c

```matlab
%regulation vs hour

%Insert your code here (calculations)

%Insert your code here (plot)

% your graph will be here
```

Part d

```matlab
%efficiency vs hour

%Insert your code here (calculations)

%Insert your code here (plot)

% your graph will be here
```

After you are finished

Run the following command from Matlab terminal generate a report of your .m file as pdf and ONLY upload the PDF file to ODTUClass.

```matlab
%publish('template_hw3.m', 'pdf')
```

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