1- The electrical power demond growth is given by the equation below:

$$P = P_0 e^{a(t-t_0)}$$

Where a is the average per unit growth, P is the demond per year t and P_0 is the given demond at year t_0. Assume that P_0 is 480 GW at year 1984 and a is 3.4 percent. Using matlab, plot the predicted peak demond in GW from1984 to 1999. And estimate the peak demond in 1999.

2- The annual load of substation is given in the following table. During each month, the power is assumed constant at an average value. Using Matlab and barcycle function, obtain a plot of the annual load curve. Write the necessary statements to find the average load and annual load factor.

Annual System Load	
Interval (Month)	*Load (MW)*
January	8
February	6
March	4
April	2
May	6
June	12
July	16
August	14
September	10
October	4
November	6
December	8

3- Three loads are connected in parallel across a 1400-V, 60 Hz single-phase supply. Given that load 1 is inductive, 125 kVA at 0.28 power factor, load 2 is capacitive, 10 kW and 40 kVAR, and load 3 is resistive at 15 kW. Write Matlab script to :
   (a) Find the total kW, kVA and the supply power factor.
   (b) A capacitor is connected in parallel with the loads to improve the power factor to 0.8 lagging. Find the kVAR rating of the capacitor and its capacitance in µ F.

4- *For V₁*=120 ∠ 5º and *V₂* =100 ∠0 º. Let *Z*=1+*j*7. Write Matlab script to determine the real and reactive power supplied or received by each source and the power loss in the line.

5- Repeat problem 4 using a Matlab program such that the angle of source 1 is changed from -30 to 60 degrees in steps of 5 degrees each.