

Name:

IDNo.:

✓ Lab 4: Time Series Forecasting

✓ Use the provided data EnergyProduction.csv to answer all the questions in this Notebook

```
#import the necessary libraries
```

```
#import the your data here with date as index and properly formatted data type as below:
```

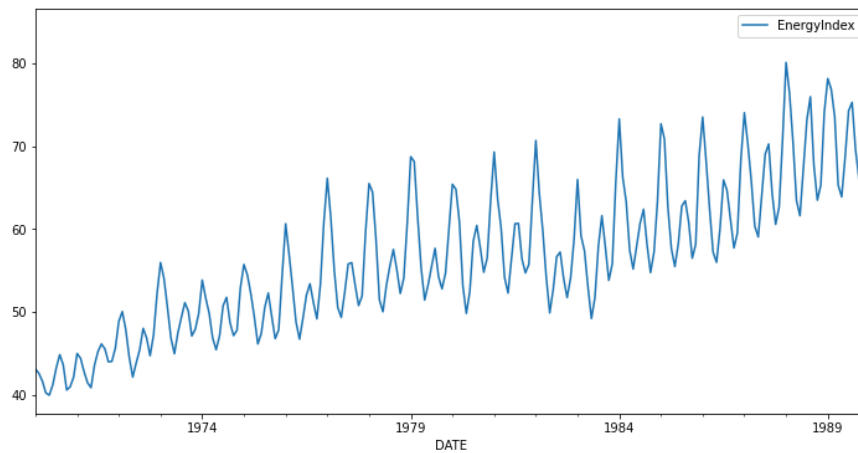


EnergyIndex

DATE

1970-01-01	43.0869
1970-02-01	42.5577
1970-03-01	41.6215
1970-04-01	40.1982
1970-05-01	39.9321

```
# plot the below plot using the dataset
```

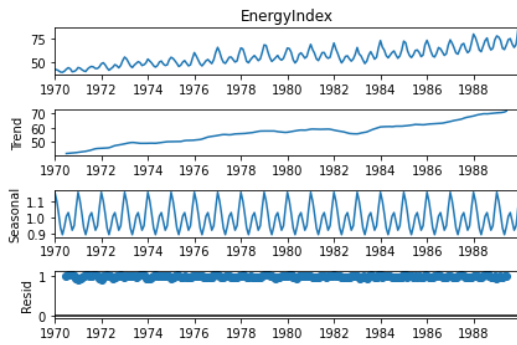


```
# Assign a frequency of 'MS' to the DatetimeIndex as below
```



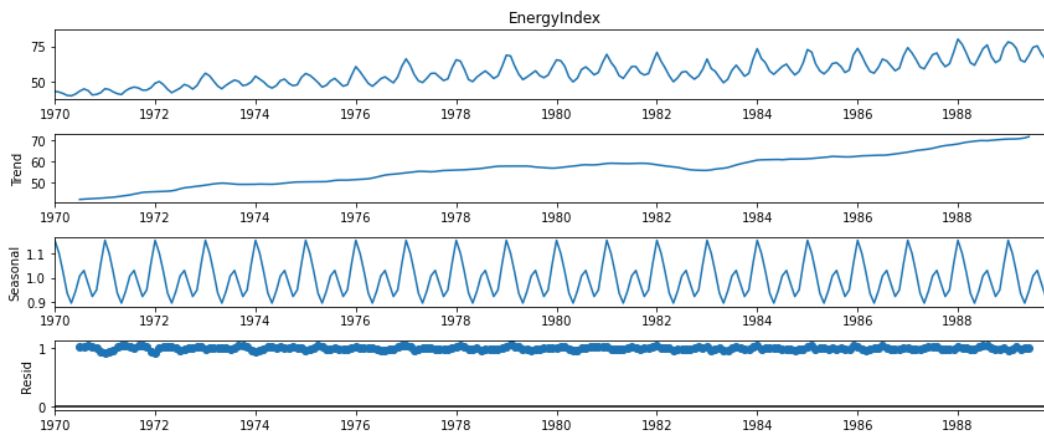
```
DatetimeIndex(['1970-01-01', '1970-02-01', '1970-03-01', '1970-04-01',  
               '1970-05-01', '1970-06-01', '1970-07-01', '1970-08-01',  
               '1970-09-01', '1970-10-01',  
               ...  
               '1989-03-01', '1989-04-01', '1989-05-01', '1989-06-01',  
               '1989-07-01', '1989-08-01', '1989-09-01', '1989-10-01',  
               '1989-11-01', '1989-12-01'],  
              dtype='datetime64[ns]', name='DATE', length=240, freq='MS')
```

```
# Decompose Trend, Cyclic and Error as shown below
```



✓ 4. Change the size of the figure to be more clear.

```
from pylab import rcParams
rcParams["figure.figsize"]= 12,5
result.plot();
```



✓ 5. Apply Forecasting on Energy Index

```
# Apply Forecasting on Energy Index using training data and testing data
```

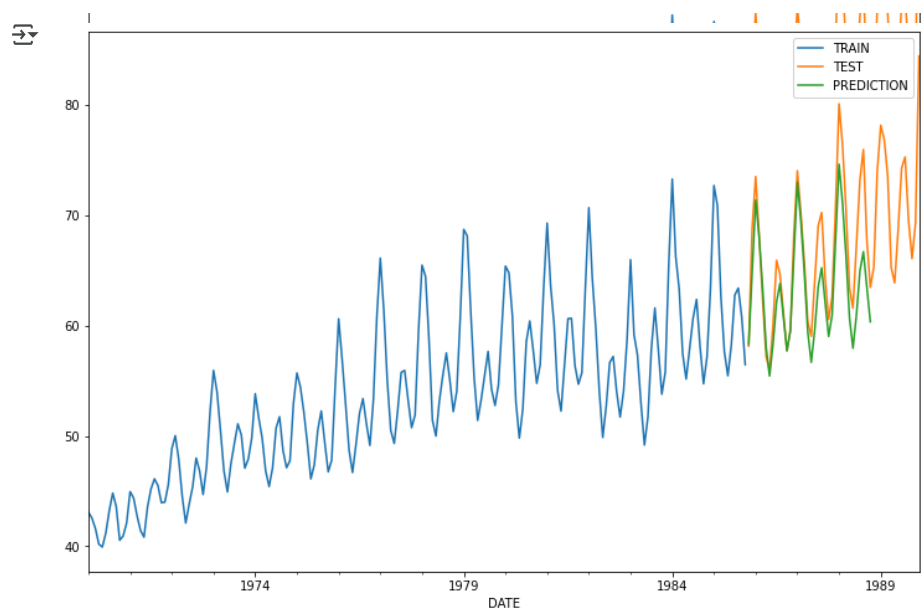
```
# fit the training model using exponentialSmoothing within a period of 12 months
```

```
# fit the testing data to 36 months period and rename it to "HW Forecast"
```

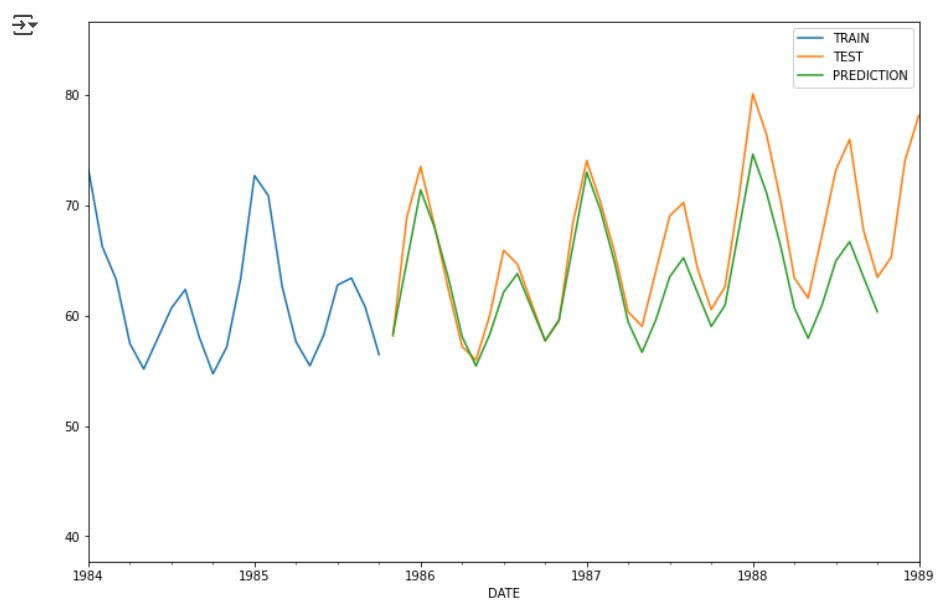
```
# produce the below plot as shown
```



produce the below plot as shown



produce the below plot as shown with specific period of between 1984-01-01 and 1989-01-01



Give your conclusion here