School of Computer Science Engineering and Technology

Course- B. Tech
Course Code- CSET369
Year- 3rd Year
Date- Week 7

Type- Specialization Elective
Course Name- Time Series Analysis
Semester- V

Lab Assignment -7

Experiment	CO1	CO2	CO3
AR, MA		✓	

Objective: To apply autoregressive and moving average models for forecasting and analyze the concept of the long-run mean in time series data.

Download the following time series dataset and read them as a python dataframe and print the heads.

- ✓ **Dataset: Monthly Air Passenger dataset**

Perform all the following tasks on the above dataset.

Tasks

Task 1 — **Autoregressive (AR) Model**

- Fit an AR(p) model to the dataset.
- Select lag order using **PACF**.
- Report estimated AR coefficients and interpret their meaning.

Task 2 — **Moving Average (MA) Model (Forecasting)**

- Fit a Moving Average model of appropriate order (MA(q)) using **ACF**.
- Generate a **5-step ahead forecast**.
- Plot the forecast along with the actual series and interpret the results.

Task 3 — **Long-Run Mean Analysis**

- Derive the long-run mean implied by the AR/MA model.
- Compare the model-implied long-run mean with the actual series mean.
