35154

M.Sc. DEGREE EXAMINATION, NOVEMBER 2017.

THIRD SEMESTER

Statistics

Paper IV — TIME SERIES ANALYSIS

Time : Three hours | Maximum : 75 marks

(No additional sheet will be supplied)

PART A — (5 × 3 = 15 marks)

Answer any FIVE questions.

Each question carries 3 marks.

Each answer should not exceed 1 page.

1. Define a time series. What are its main components?

2. Explain in detail about moving average smoothing method.

3. Define moving average process and explain how it is considered as a stationary process.

4. Discuss the applications of ARMA process.

5. Explain auto-covariance and auto-correlation functions and mention its properties.

6. Explain the concept of Residual Analysis.

7. What is correlogram? Explain how correlogram can be used to discriminate between various types of time series.

8. Explain in brief about spectral analysis of weakly stationary process.

PART B — (4 × 15 = 60 marks)

Answer ALL questions.

Each question carries 15 marks.

Each answer should not exceed 6 pages.

9. Discuss the Exploratory time series analysis with suitable examples.

Or

10. Explain in detail about Holt and winters smoothing methods.

11. Explain in detail about Auto Regressive Moving Average (ARMA) model.

Or

12. What do you mean by stationary process? Distinguish between ARMA and ARIMA models.

13. Explain various Box-jenkins models with suitable examples.

Or

14. Explain in detail about AR and MA periods.

15. What is a Periodogram? Explain the relationship between Periodogram and Correlogram.

Or

16. What are Fourier Transformations? Give their features and applications in Time series and Forecasting.