23P362 (Pages: 2) Name……..

Reg. No……..

THIRD SEMESTER M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

(CBCSS-PG)

(Regular/Supplementary/Improvement)

CC19P MST3 E02 / CC22P MST3 E02 – TIME SERIES ANALYSIS

(Statistics)

(2019 Admission onwards)

Time : Three Hours Maximum : 30 Weightage

PART A

Answer any ***four*** questions. Each question carries 2 weightage.

1. Define auto covariance function and auto correlation function.
2. What is meant by simple exponential smoothing?
3. Explain stationarity of a time series. what are its required conditions?
4. State the invertibility condition for a linear process.
5. Define MA(1) and MA(2) process.
6. Explain periodogram and Correlogram.
7. Derive the spectrum of ARMA (1,1) process.

(4 × 2 = 8 weightage)

PART B

Answer any ***four*** questions. Each question carries 3 weightage.

8. Explain forecasting by methods of smoothing.
9. A shop has recorded the demand for a particular flavour candy during the first 7 days of august. Day 1, 2, 3, 4, 5, 6, 7 and Sales 56, 64, 63, 56, 68, 59, 64. Predict the sales for the 8th day of august a) 3 period MA. b) weighted 3 period MA with weights 0.5, 0.4 and 0.1.
10. Explain the methods for the estimation and elimination of both trend and seasonality.
11. Derive the ACF of AR (2) process.
12. Derive the auto regressive parameters in terms of Yule- Walker equations.
13. Explain the unit root test.
14. Explain the ARCH and GARCH model.

(4 × 3 = 12 weightage)

PART C

Answer any ***two*** questions. Each question carries 5 weightage.

15. Explain Holt's two parameter exponential smoothing

16. Explain the method of estimation of trend and seasonality using differencing.
17. Explain the tests for stationarity
18. Explain Spectral analysis of a time series. Derive the spectrum of AR (1) process.

(2 × 5 = 10 weightage)

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