UNIVERSITY OF NORTH BENGAL

B.Sc. Programme 6th Semester Examination, 2022

DSE1/2/3-P2-STATISTICS

TIME SERIES ANALYSIS

Time Allotted: 2 Hours   Full Marks: 60

The figures in the margin indicate full marks.
All symbols are of usual significance.

1. Answer any *four* questions from the following: 3×4 = 12

    (a) What do you mean by time series?

    (b) What are the two different relationships among different components of a time series?

    (c) What are the different components of a time series?

    (d) What do you mean by irregular fluctuation?

    (e) Write down the different measurement of trend.

    (f) Write down the uses of time series.

2. Answer any *four* questions from the following: 6×4 = 24

    (a) Compute the average seasonal movements by the method of quarterly total (average) for the following series of observations:

    Total production of Paper (tons)

    Quarters

Year	I	II	III	IV
1951	37	38	37	40
1952	41	34	25	31
1953	35	37	35	41

    (b) Explain the necessity of analyzing time series data.

    (c) Reduce the trend equation $Y_t = 144 + 8t$ (origin at 1995 and unit of t is 1 year) for yearly totals to quarterly trend equation.

    (d) Write down the merits and demerits of fitting mathematical curve.

    (e) Discuss the various uses of seasonal index in time series analysis.

(f) Fit a linear trend to the following data on annual sales (in Rs. crores) of a departmental store and estimate the sale for the year 2007.

Year	1999	2000	2001	2002	2003	2004	2005	2006
Sales	38	40	65	72	69	60	87	95

3. Answer any *two* questions from the following: $12 \times 2 = 24$

(a) Describe the ratio-to-moving average method for computing a seasonal index for time series data.

(b) Write a short note on the different components of a time series.

(c) Describe the various methods used in isolating secular trend in time series.

(d) Write a short note on methods of monthly averages and ratio-to-trend method.

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