22STU102N/22STU102/18STU02

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2024
(First Semester)

Branch- **STATISTICS**

TIME SERIES AND INDEX NUMBERS

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	In time series forecasting, what is the primary goal when using past data to predict future values? (a) Identifying outliers in the past data (b) Replicating past data exactly (c) Minimizing the error in predictions (d)Maximizing the complexity of the model	K1	CO1
	2	What is the seasonality in time series? (a) The trend component of the time series (b) The random fluctuations in the time series (c) A pattern that repeats at regular intervals within a year or other fixed period (d)The average values of the time series.	K2	CO2
2	3	In a seasonal decomposition of time series data, what component represents the underlying long-term trend in the data? (a) Seasonal component (b) Irregular component (c)Trend component (d)Cyclical component	K1	CO2
	4	How is seasonality different from cyclical patterns in time series data? (a) Seasonality has regular and fixed intervals, while cyclical patterns do not (b) (Seasonality represents long-term trends, while cyclical patterns are short-term. (c) Seasonality is random, while cyclical patterns are deterministic. (d) Seasonality and cyclical patterns are the same thing	K2	CO2
3	5	What is the formula for calculating the percentage change in an index number? (a) (New Index - Old Index) / Old Index (b) (New Index + Old Index) / Old Index (c) (New Index - Old Index) / New Index (d)(New Index + Old Index) / New Index	K1	CO3
	6	What is the primary purpose of performing regression analysis? (a) The year in which the index was first introduced (b) The year with the highest index value (c) The year to which all other years are compared for comparison purposes (d) The most recent year in the dataset	K2	CO3
4	7	What is the purpose of using the Fisher's Ideal Index? (a) To calculate the GDP of a nation (b) To measure changes in the prices of a fixed basket of goods and services (c) To determine the weightage of different items in an index (d) To account for substitution effects when calculating price changes	K1	CO4

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	8	What is the primary limitation of using a Laspeyres Price Index for measuring price changes over time? (a) It does not account for changes in the quantities of goods consumed (b) It requires a new base year to be selected every year (c) It cannot handle substitution effects in consumer behavior. (d) It is highly sensitive to outliers in the data	K2	CO4
5	9	In national income accounting, what does "Net" mean when calculating net income or net exports? (a)It represents the total income before deductions. (b) It signifies the total income after deductions. (c) It is unrelated to income calculations. (d) It represents the total exports before imports are considered.	K1	CO5
	10	What is the formula for calculating Gross National Income (GNI)? (a) GNI = GDP - Net exports (b) GNI = GDP + Net income earned from abroad (Net factor income from abroad) (c) GNI = Consumption + Investment (d) GNI = Total government expenditure	K2	CO5

SECTION - B (35 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Describe the basics of time series analysis.	K2	CO1
		(OR)		
	11.b.	What are the main components of time series?	K1	
2	12.a.	Define Simple average in seasonal variations with examples.	K2	CO2
		(OR)		
	12.b.	Describe the cyclical fluctuations.		
3	13.a.	Describe the concept of basic index numbers.	K2	CO3
		(OR)		
	13.b.	What are the uses of wholesale price numbers?	K1	
4	14.a.	Describe the Marshall Edge worth Index numbers.	K3	CO4
		(OR)		
	14.b.	Write a short note on the ideal index numbers.		
5	15.a.	Define the term national income.	K2	CO5
		(OR)		
	15.b.	Describe the estimation methods of national income.	K3	

SECTION -C (30 Marks)

Answer **ANY THREE** questions

ALL questions carry **EQUAL** Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Explain in detail about the Additive and Multiplicative models	K2	CO1
2	17	Discuss the link relative method with examples.	K2	CO2
3	18	Describe in detail the chain base index numbers.	K3	CO3
4	19	Explain the tests of ideal index numbers.	K3	CO4
5	20	Write a detailed note on about the estimation methods of national income.	K4	CO5

Z-Z-Z END