

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034
B.Sc. DEGREE EXAMINATION – STATISTICS

FIFTH SEMESTER – JUNE 2015

ST 5508/ST 5506/ST 3502 - APPLIED STATISTICS

Date : 01/07/2015

Dept. No.

Max. : 100 Marks

Time : 10:00-01:00

PART A

Answer ALL the questions.

(10 X 2 =20 Marks)

1. Define Index numbers.
2. What do you understand by base shifting?
3. Define reliability.
4. What is standard scores ?
5. Mention any two uses of vital statistics.
6. Define stationary population.
7. What do you mean by trend in time series analysis?
8. How you can express a time series according to additive model in time series analysis?
9. Mention any two uses of method of semi-averages.
10. what do you understand by deseasonalisation of data.

PART B

Answer any FIVE questions.

(5 X 8 = 40 MARKS)

11. From the following data calculate price index numbers for 2005 with 1995 as base by (i) Laspeyre's (ii) Paasche's formulae.

Commodities	1995		2005	
	Price	Quantity	Price	Quantity
A	20	8	40	6
B	50	10	60	5
C	40	15	50	15
D	20	20	20	25

12. The price quotations of four different commodities for 2000 and 2005 are given below. Calculate the index number for 2005 with 2000 as base by using:
 (i) the simple average of price relatives, and (ii) the weighted average of price relatives.

Commodity	Unit	Weight	Price (in Rs.)	
			2000	2005
A	Kg	5	20	45
B	Quintal	7	25	32
C	Dozen	6	30	45
D	Kg	2	10	18

13. Explain the methods of estimating validity.
14. Find the standardised death rate by direct method and indirect methods for the data given below.

Age	Standard Population		Population A	
	population (in '000)	Specific Death Rate	Population (in '000)	Specific Death Rate
0 -5	8	50	12	48
5-15	10	15	13	14
15-50	27	10	15	9
50 and above	5	60	10	59

15. Prove $nP_x = P_x P_{x+1} \dots P_{x+n-1}$
16. Explain measurement of trend using Graphic method.
17. Below are given the figures of production (in thousand tonnes) of a fertiliser factory:

Year	1995	1997	1998	1999	2000	2001	2004
Production ('000 tonnes)	77	88	94	85	91	98	90

Fit a straight line by the Least Squares Method and tabulate the trend values.

18. A firm estimates its sales for a particular year to be Rs.24,00,000. The seasonal indices for sales are as given below in the following table. Using this information, calculate estimates of monthly sales of the firm. (Assume that there is no trend.)

Month	Seasonal Index	Month	Seasonal Index
January	75	July	102
February	80	August	104
March	98	September	100
April	128	October	102
May	137	November	82
June	119	December	73

PART C

Answer any TWO questions.

(2 x 20 =40 Marks)

19. (a) Explain the components of errors in the construction of index numbers. (5 Marks)

(b) For the following data, compute the chain-base price index series with base 2002=100:

		Year			
		2002	2003	2004	2005
Jute	Quantity (in 100 kg.)	871	706	724	627
	Price (Rs. per 100 Kg.)	202	320	311	302
Tea	Quantity (in 100 Kg.)	199	179	214	288
	Price (Rs. per 100 Kg.)	577	767	884	799

(15 Marks)

20. (a) State the assumptions of Life tables. (5 Marks)

(5 Marks)

(b) Explain: Description and construction of Life Tables. (10 Marks)

(10 Marks)

(c) Under what conditions stable population becomes stationary population. (5 Marks)

(5 Marks)

21. (a) State the uses of Time Series.

(5 Marks)

(b) Compute the seasonal indices by the Link Relatives method for the data given below relating to the average quarterly prices (Rs. per Kg.) of a commodity for five years.

Year Quarter	1996	1997	1998	1999	2000
I	30	35	31	31	34
II	26	28	29	31	36
III	22	22	28	25	26
IV	36	36	32	35	33

(15 marks)

22. a) Explain Ratio to Trend method of time series.

b) Explain the uses of Reliability in psychological statistics.

(10 +10)

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