LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **STATISTICS**

FIFTH SEMESTER – **NOVEMBER 2018**

16UST5MC03/ ST 5508 / ST 5506 – APPLIED STATISTICS

Date: 01-11-2018 Dept. No. Max. : 100 Marks

Time: 09:00-12:00

Part – A

Answer ALL questions: **(10 x 2 = 20)**

1. What are the types of index numbers?

2. Write any two uses of index numbers.

3. What are the scaling procedures used in psychology and education?

4. Define Reliability.

5. Define vital statistics.

6. Write the formula for crude birth rate.

7. Define time series.

8. Write any two uses of time series?

9. Write any two uses of studying seasonal variation.

10. What are the methods of studying seasonal variation?

Part – B

Answer any FIVE questions: **(5 x 8 = 40)**

11.From the chain base index number given below prepare a fixed base index numbers

Years	2007	2008	2009	2010	2011
Chain base index	80	110	120	90	140

12.Explain any four measurement of fertility.

13.Explain the components of time series.

14.Compute the seasonal index for the following data.

Quarter	2008	2009	2010	2011	2012	2013
I	3.5	3.5	3.5	4.0	4.1	4.2
II	3.9	4.1	3.9	4.6	4.4	4.6
III	3.4	3.7	3.7	3.8	4.2	4.3
IV	3.6	4.8	4.0	4.5	4.5	4.7

15. a) Prove that $np_X = p_X\, p_{X+1}.....p_{X+n-1}$

b) Prove that $T_x = \frac{1}{2}l_x + l_{x+1} + l_{x+2} + \cdots$

16.Fit a straight line by the method of least squares.

Year	1979	1980	1981	1982	1983
Sales in rupees	100	120	140	160	180

17.Write the merits and limitations of simple averages.

18.Construct the cost of living index number from the following group data

Sl.No	Group	Weights	Group Index no
1	Food	47	247
2	Fuel and Lighting	7	293
3	Clothing	8	289
4	House Rent	13	100
5	Miscellaneous	14	236

Part – C

Answer any TWO questions. **(2 x 20 = 40)**

19.Calculate Fisher's Ideal Index from the following data and show how it satisfies time reversal test and factor reversal test.

Commodity	2007		2008	
	Price	Quantity	Price	Quantity
A	10	10	12	8
B	8	12	8	13
C	12	12	15	8
D	20	15	25	10
E	5	8	8	8
F	2	10	4	6

20.Describe the measurement of mortality in detail.

21.Find the seasonal variations by the ratio-to –trend method from the data given below.

Year	Quarter I	Quarter II	Quarter III	Quarter IV
1972	39	20	60	85
1973	45	23	62	90
1974	44	25	69	92
1975	53	30	70	97
1976	60	32	76	100

22. a) For the following data find the 4-year centered moving average and 5-yearly moving average

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Sales('000Rs)	2	6	1	5	3	7	2	6	4	8	3

b) Explain the scaling of ratings in terms of normal probability curve.

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