

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034



B.Sc. DEGREE EXAMINATION – STATISTICS

FIFTH SEMESTER – NOVEMBER 2019

16/17UST5MC03 / ST 5508 / ST 5506 / ST 5502 – APPLIED STATISTICS

Date: 02-11-2019

Dept. No.

Max. : 100 Marks

Time: 09:00-12:00

SECTION-A

ANSWER ALL QUESTIONS:

(10 x 2=20)

1. Define index number.
2. Name the components of errors in construction of index numbers.
3. What do you mean by psychological scale?
4. Define Z scores.
5. Define vital statistics.
6. Write the formula for sex ratio.
7. What are the components of time series ?
8. Give the equation for Grompertz curve.
9. What are the various methods of measuring seasonal variations?
10. Write any two merits of ratio to moving average method.

SECTION B

ANSWER ANY FIVE QUESTIONS:

(5 X 8 = 40)

11. From the chain base index numbers given below, Obtain the fixed base index numbers:

Year :	2010	2011	2012	2013	2014	2015
Chain indices:	105	75	71	105	95	90

12. In the construction of certain cost of living index number, the following group index numbers were found.

Calculate the cost of living index number by the weighted arithmetic mean.

Group	Food	Fuel & lighting	clothing	House rent	Miscellaneous
Index No.	352	200	230	160	190
Weights	48	10	8	12	15

13. Write short notes on scaling individual test items in terms of difficulty.
14. State the assumptions in construction of life table.
15. What do you mean by the fertility of a population? Define birth rate, general fertility rate and total fertility rate.
16. Explain the method of ratio-to-trend in measuring seasonal variation.
17. Fit a trend line to the following data by the method of semi-averages.

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Production	53	79	76	66	69	94	105	87	79	104	97	92	101

18. Prove: ${}_n q_x = \frac{d_{x+n-1}}{l_x}$

SECTION C

ANSWER ANY **TWO** QUESTIONS:

(2X 20 = 40)

19. Construct price and quantity index numbers for the year 2005 with 2000 as base year using (i) Laspeyres (ii) Paasche and (iii) Fishers Ideal methods.

Commodity	Quantity		Expenditure(Rs.)	
	2000	2005	2000	2005
A	500	150	500	900
B	80	100	320	500
C	60	72	150	360
D	30	33	360	297

20. Fill in the blanks in the portion of life table given below:

Age in Years :	l_x	d_x	q_x	p_x	L_x	T_x	e_x^0
20	6,93,435	?	?	?	?	35,081,126	?
21	6,90,673	-	-	-	-	?	?

21. Explain the methods of determining test reliability?

22. Fit a straight line trend to the following data by the method of least squares and obtain the trend values for 2005 and 2006

Year	:	1996	1997	1998	1999	2000	2001	2002	2003	2004
Average monthly Profit(Crores Rs.)	:	12.6	14.8	18.6	14.8	16.6	21.2	18.0	17.4	15.8
