



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – STATISTICS

FIFTH SEMESTER – APRIL 2017

ST 5506 / ST 5508 - APPLIED STATISTICS

Date: 20-04-2017
01:00-04:00

Dept. No.

Max. : 100 Marks

Part A (10 x 2 = 20) Answer ALL the questions.

1. Define index numbers.
2. What do you mean by base shifting?
3. What are scaling of scores on a test?
4. A given test has a reliability coefficient of 0.8 and standard deviation of 20. What is the standard error of a score obtained on this test?
5. Give any two uses of vital statistics.
6. Define crude death rate.
7. What are the components of time series.
8. Give the equation of Gompertz curve.
9. What is deseasonalisation?
10. Define cyclic fluctuations.

Part B (5 x 8 = 40) Answer any FIVE questions.

11. From the following data, calculate price index numbers for 2005 with 1995 as base by Laspeyre's formula.

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. Write short notes on index of industrial production.
13. Explain parallel tests.
14. State the uses of vital statistics.
15. What are the assumptions of life tables?
16. Explain the method of semi-averages.
17. Write the merits of the method of moving averages.
18. Explain the problem involved in the construction of Index Numbers.

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

19. (a) Calculate Fisher's ideal index from the following data and prove that it satisfies both the time reversal and factor reversal tests.

Commodity	2010		2011	
	Price	Expenditure	Price	Expenditure
A	8	80	10	120
B	10	120	12	96
C	5	40	5	50
D	4	56	3	60
E	20	100	25	150

(b) From the chain base index numbers given below, prepare fixed base index numbers.

2007	2008	2009	2010	2011
80	110	120	105	95

(15 +5)

20. Compute the seasonal indices by the link relative method for the adjoining data 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

21(a) A test is administered on 400 pupils. It gave mean 60 and standard deviation 12.

Complete the following table of equivalent rawscores.

Raw score : 84 78 72 66 60 54 48 42 36

σ score: - - 1 - 0 - - - -

Standard score:- - - - - 45 - - -

(b) A given test has reliability coefficient of 0.8 and standard deviation of 20.

(i) What is the maximum correlation which this test is capable of yielding as it stands?

(ii) What is the standard error of a score obtained on this test?

(14+6)

22. Fill in the blanks of the following table which are marked with question mark.

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