LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – STATISTICS

FIFTH SEMESTER – NOVEMBER 2007

ST 5502 - APPLIED STATISTICS

BB 14

Date : 29/10/2007   Dept. No.   Max. : 100 Marks
Time : 9:00 - 12:00

PART – A

(10 x 2 = 20 marks)

Answer ALL the questions.

1. Define index number.
2. The price and quantity of video recorder in the year 2004 are Rs. 438 and 37 respectively. The corresponding values for the year 2005 are Rs. 462 and 18. Find the price relative and quantity relative for 2005.
3. Write down the normal equations in fitting a second degree equation $y = a + b + ct^2$ by the method of least squares.
4. If trend equation of annual sales of a company is $y = 80 + 5.2t$, origin 1988, 't' unit = 1 year, find the quantity trend equation.
5. What is the difference between cowed death rate and specific death rate?
6. Fill in the blanks in a portion of life, table,

Age in years	lx	dx	px
4	95,000	500	____
5	____	400	____

7. Describe multiple corrections with an example.
8. Given $\eta_{12} = 0.98$; $\eta_{13} = 0.44$; $\eta_{23} = 0.54$, determine $\eta_{13.2}$
9. Explain the term labour statistics.
10. What are the uses of official statistics?

PART – B

Answer any FOUR questions.   (5 x 8 = 40 marks)

11. Discuss the uses of index numbers.
12. Explain clearly (a) the chain base and
    b) the fixed base methods in constructing an index number. Which method is more frequently used and why?
13. Construct a four-yearly centered moving average from the following data

Year :	1940	'50	'60	'70	'80	'90	2000
Cotton : Consumption ('000 bales)	129	131	106	91	95	84	93

14. Assuming the trend is absent, determine if there is any seasonality in the data given below.

Year	1st Qr	2nd Qr	3rd Qr	4th Qr
2000	3.7	4.1	3.3	3.5
2001	3.7	3.9	3.6	3.6
2002	4.0	4.1	3.3	3.1
2003	3.3	4.4	4.0	4.0

15. Discuss the uses of vital statistics.
16. Mention the assumptions used in the construction of the life tables.
17. Given that $\eta_{12} = 0.82$; $\eta_{13} = 0.77$; $\eta_{23} = 0.80$,

    determine $\eta_{23.1}$ and $R_{1 \cdot 23}$
18. Explain the role of NSSO and WHO.

PART – C

(2 x 20 = 40 marks)

Answer any TWO questions.

19. With the help of the following data construct Fisher's Index number and prove that it satisfied both the time reversal test and factor reversal test.

Commodity	Base Year		Current Year	
	Price	Value	Price	Value
A	5	50	6	72
B	7	84	10	80
C	10	80	12	96
D	4	20	5	30
E	8	56	8	64

20. What is a cost of living index number? Describe briefly the main steps to be followed in their construction.
21. Calculate trend values from the data given below by applying the method of least squares.

Year:	1996	'97	'98	'99	2000	'01	'02
Sales:	20	23	22	25	26	29	30

    (Rs Crores)

    Estimate the likely Sales for the year 2005.
22. a) What is a life table? Explain the various column entries in a life table.
    b) Discuss any two methods of national income estimation.

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