

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 2062

L

Unique Paper Code : 2372011202

Name of the Paper : DSC: Applied Statistics (NEP)

Name of the Course : **B.Sc. (Hons.) Statistics**

Semester : II

Duration : 3 Hours

Maximum Marks : 90

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Question No. 1 is compulsory.
3. Attempt **six** questions in all.
4. Use of non-programmable scientific calculator is allowed.

1. (a) Fill in the blanks

- (i) Marshall–Edgeworth index number uses both base and current year _____.
- (ii) Generally the child bearing age for women is assumed in between _____ years.
- (iii) The weight that is used in the construction of Paasche's price index number is _____.
- (iv) Fertility is measured by _____
- (v) Fisher's index number is the _____ mean of Laspeyres and Paasche indices.
- (vi) Chain index number uses previous year as _____.
- (vii) Zero growth means _____

P.T.O.

- (viii) Splicing adjusts the new series to the _____ series.
- (ix) A complete life table uses _____ interval.
- (b) It is said that index numbers are a specialized type of averages. How far do you agree with this statement?
- (c) Write a short note on abridged life table.
- (9x1, 2x3)
2. (a) Discuss the functions and responsibilities of the Central Statistical Organization in India.
- (b) Prove that Marshall Edgeworth Index number lies between Laspeyre's and Paasche's index numbers.
- (8,7)
3. (a) What do you understand by Curate and Complete expectation of life? Show that (in the usual notations)
- $$e_x^0 = \frac{T_x}{l_x}$$
- (b) Given the following table:
- | | | | | | | | |
|-------|-------|-------|------|------|------|------|------|
| Age x | 90 | 91 | 92 | 93 | 94 | 95 | 96 |
| l_x | 16090 | 11490 | 8012 | 5448 | 3607 | 2320 | 1447 |
- The ages of three men A, B and C are 90, 91 and 92 respectively. Find the Probabilities:
- (i) that A, B and C will be alive for two more years.
- (ii) that exactly one of them will be alive for two years.
- (7,8)
4. (a) Calculate the crude and standardized death rates for the local population from the following data and compare them with crude death rate of the standard Population.

Age (Years)	Standard Population		Population A	
	Population (,000)	Specific death Rate	Population (,000)	Specific death Rate
0-5	8	50	12	48
5-15	10	15	13	14
15-50	27	10	15	9
More than and equal to 50	5	60	10	59

- (b) Define vital statistics, rates and ratios of vital events. What is the significance of the sex-ratio? Also explain why C.D.R. is not suitable for comparing the mortality rates of two places? (8,7)
- 5 (a) What is an index number? Discuss its importance and uses. Explain (i) time reversal test, and (ii) factor reversal test as applied to index numbers
- (b) In a budget study, it was found that the average percentage expenditure on various commodity groups was: Food – 55, Housing – 12, Clothing – 20, Fuel and Light – 5, and Miscellaneous – 8. The group index numbers for the current year, with a fixed base year, were: Food – 214, Housing – 210, Clothing – 195, Fuel and Light – 187, and Miscellaneous – 120.
- (i) Compute the Consumer Price Index (CPI) for the current year.
- (ii) If a person earned ₹30,000 per month in the base year and ₹56,000 per month in the current year, determine the additional allowance he should have received in order to maintain the same standard of living as in the base year. (8,7)
6. (a) Analyze the organizational framework and responsibilities of the Ministry of Statistics and Programme Implementation, and assess its impact on enhancing the quality of official statistics in India.

- (b) Define Infant Mortality Rate and Age-Specific Death Rate. What is the difference between them?
- (c) Fill in the blanks in a portion of life table given below:

Age (in years)	l_x	d_x	p_x	q_x	L_x	T_x	e_x^0
4	95,000	500	?	?	?	4,850,300	?
5	?	400	?	?	?	?	?

(5,5,5)

7. (a) Discuss the formation and functions of the National Statistical Office and analyze its significance in conducting surveys.
- (b) Calculate price index numbers for 2005 with 2002 as base year from the following data by using : (i) Laspeyre's, (ii) Paasche's and (iii) Fisher's formula.

Year	Article I		Article II		Article III		Article IV	
	Price	Qty.	Price	Qty.	Price	Qty.	Price	Qty.
2002	5.00	5	7.75	6	9.63	4	12.50	9
2005	6.50	7	8.80	10	7.75	6	12.75	9

(7,8)