

2123

B.A./B.Sc. (General) Fifth Semester
Statistics

Paper-301: Demography and Economic Statistics

Max. Marks: 65

Time allowed: 3 Hours

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit. Use of electronic calculator with four basic mathematical operations and upto one memory is allowed. Various symbols used have their usual meaning.

x-x-x

1. Answer the following:-

- Define rate and ratio of vital events.
- What is the importance of weighting in the construction of index numbers?
- Define the Cause-Specific death rate?
- Define price elasticity of demand.
- What is base shifting? Why does it become necessary to shift the base of index numbers?
- What are the methods for the measurement of trend in time series?
- Give any two applications of index numbers.

(2,2,2,2,2,1,2)

Unit-I

2. What do you mean by Fertility? Discuss various measures of fertility in detail with their merits and demerits. (13)
- 3: a) What do you mean by the seasonal variation of a time series and discuss the ratio to moving average method for estimating the seasonal variations. Also discuss the merits and demerits of this method.
- b) Compute gross reproduction rate (GRR) from the data given below:

Age of women:	15-19	20-24	25-29	30-34	35-39	40-44	45-49
No. of women (in 000):	16.0	16.4	15.8	15.2	14.8	15.0	14.5
Total Births:	260	2244	1894	1320	916	280	145

Assume that the proportion of female births is 46.2 percent.

(9, 4)

(2)

- 4a) Below are given the figures of production (in thousand tonnes) of a fertilizer factory:

Year:	1995	1997	1998	1999	2000	2001	2004
Production (‘000 tonnes):	77	88	94	85	91	98	90

- (i) Fit a straight line by the Least Square Method and tabulate the trend values.
(ii) Eliminate the trend, assuming additive model.
(iii) Obtain the trend value for 2006.
- b) Describe the moving average method for determining the trend. How is trend eliminated?
(7, 6)
- 5a) Write the uses of time series data.
- b) Explain the net reproduction rate (NRR) as measure of population growth and how it is calculated?
- c) Fill in the blanks of the following table which are marked with question marks:

Age, x :	l_x	d_x	q_x	p_x	L_x	T_x	e_x^0
10	94000	600	?	?	?	4850400	?
11	?	500	?	?	?	?	?

(3, 6, 4)

Unit-II

- 6a) What is an index number? Discuss the uses and limitations of an index number.
- b) From the index numbers given below, find out index numbers by shifting base from 2000 to 2004:

Year:	2000	2001	2002	2003	2004	2005	2006
Index No.	120	96	88	70	80	90	95

(9, 4)

- 7a) From the following data calculate price index numbers from 2019 with 2014 as base by: (i) Laspeyre's, (ii) Paasche's, (iii) Marshall-Edgeworth and (iv) Fisher's formulae. Also, show that Fisher price index satisfies both the time reversal and factor reversal test.

Commodities	2014		2019	
	Price	Quantity	Price	Quantity
A	5	100	6	150
B	4	80	5	100
C	2.5	60	5	72
D	12	30	9	33

- b) The demand curve and the supply curve of a commodity are given by $d = 19 - 3p - p^2$ and $s = 5p - 1$. Find the equilibrium price and quantity exchanged.

(10, 3)

- 8: (a) What is meant by cost of living or consumer price index number? Describe the uses of cost of living index number and construct the cost of living from the following data:

Item	Price (in Rs.)		Weights
	Base Year	Current Year	
Food	30	47	4
Fuel	8	12	1
Clothing	14	18	3
House rent	22	15	2
Miscellaneous	25	30	1

- b) Describe the demand and supply curves and mentioning the uses of these curves.

(9, 4)

- 9a) Explain chain base method of constructing index number and discuss various steps in the construction of chain base method. Also give its relative merits and demerits as compared with fixed base method.

- b) Explain Time reversal and Factor reversal test of index numbers.

(8,5)