Exam.Code:0005
Sub. Code: 17446

2124

B.A./B.Sc. (General) Fifth Semester
Statistics
Paper-301: Demography and Economic Statistics

Time allowed: 3 Hours **Max. Marks: 65**

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:-
   i) Write any three uses of life table.
   ii) What do you understand by Cause-Specific death rate?
   iii) Define the semi-average method to measure the trend in time series.
   iv) Explain static law of supply.
   v) State any two uses of index numbers.
   vi) What is base shifting? Why does it become necessary to shift the base of index numbers? (2,2,2,2,2,3)

Unit-I

2: (a) What are the various sources to collect demographic data? Discuss in details with their shortcomings.

(b) 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
20	95000	700	?	?	?	5850200	?
21	?	600	?	?	?	?	?

(9, 4)

3: (a) Compute GRR (Gross Reproduction Rate) and NRR (Net Reproduction Rate), 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
Female Births:	2600	3244	5894	4320	1916	480	140
Survival rate	0.914	0.899	0.844	0.868	0.852	0.834	0.819

(b) Write short notes on the following:

(i) Specific Death Rate (SDR),
(ii) General Fertility Rate (GFR),
(iii) Total Fertility Rate (TFR),
(iv) Gross Reproduction Rate (GRR). (5, 8)

4: a) What is a time series? Discuss its various components in detail.

b) The following are the annual profits, in thousands of rupees, in a certain business:

Year:	1995	1997	1998	1999	2000	2001	2004
Profit:	74	85	91	83	88	96	98

(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 2005. (7, 6)

5: a) Describe the moving average method for determining the trend. How is trend eliminated?

b) Discuss the link relative method to measure the seasonal variation index. (7, 6)

Unit-II

6: (a) Define index numbers. Discuss the various methods to construct price and quantity index numbers.

(b) From the following data calculate price index numbers from 2016 with 2010 as base by: (i) Laspeyre's, (ii) Paasche's, (iii) Marshall-Edgeworth and (iv) Fisher's formulae:

Commodities	2010		2016	
	Price	Quantity	Price	Quantity
I	40	12	60	10
II	70	14	90	8
III	60	17	70	15
IV	30	20	40	26

(7, 6)

7: a) Discuss the cost of living or consumer price index number? Describe its uses and construct the cost of living from the following data:

Item	Price (in Rs.)		Weights
	Base Year	Current Year	
Food	28	48	4
Fuel	10	14	1
Clothing	12	18	3
House rent	20	25	2
Miscellaneous	25	30	1

b) What are the errors in measurement of index numbers? (9, 4)

8. a) Explain Factor reversal test and Time reversal test of index number and show that Fisher's ideal index number formula satisfies both these tests.

(b) If the demand function is $p=4 - 5x^2$, for what value of x, the elasticity of demand will be unity? (x is the quantity demanded and p is the price).

c) From the index numbers given below, find out index numbers by shifting base from 2010 to 2014:

Year:	2010	2011	2012	2013	2014	2015	2016
Index No.	120	96	88	70	80	90	95

(5, 3, 5)

9. a) Exlain 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) Discuss the limitations of index numbers. (9,4)

x-x-x