Exam.Code:0005
Sub. Code: 0446

2122

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. I 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

Question 1. Answer the following:-

a) Define specific death rate. (2)

b) Define infant mortality rate. (2)

c) Define the additive model of time series? (2)

d) Comment upon uses of time series. (2)

e) Define the index number. (3)

f) Define the price elasticity of demand. (2)

Unit-I

Question 2. a) Define general fertility rate with its merit and demerit. (5)

b) Calculate the gross and net reproduction rate assuming that sex ratio at birth was 105 males 100 females. (8)

Age	Number of women (in thousands)	Number of births	Years lived by 1000 female births
15-19	152.7	2971	4813
20-24	164.2	22773	4790
25-29	176.1	28245	4761
30-34	177.1	19548	4726
35-39	185.2	11462	4685
40-44	167.1	3235	4632
45-49	150.3	217	4552

Question 3. a) Prove that $n^q x = \frac{d_{x+n-1}}{l_x}$. (5)

b) A part of a life table is given below with most of the entries missing. On the basis of the available figures, supply the missing once and complete the table. (8)

x	l_x	d_x	$1000\, q_x$	L_x	T_x	e_x^0
10	90102	-	0.62	-	-	-
11	-	-	0.66	-	-	-
12	-	-	0.72	-	-	-
13	-	-	0.80	-	-	-
14	-	-	0.90	-	-	-
15	-	-	1.00	-	-	-
16	-	-	1.12	-	-	-
17	-	-	1.23	-	-	-
18	-	-	1.33	-	-	-
19	-	-	1.40	-	4842446	-

P.T.O.

Question 4. a) Explain the method of moving averages. (6)

b) Below are given the figures of production (in thousand tons) of a sugar factory. (7)

Year (t)	1999	2000	2001	2002	2003	2004	2005
Production (y_t)	77	88	95	85	92	99	92

Question 5. a) Write a note on link relative method. (6)

b) Using ratio to trend method, determine the quarterly seasonal indices: (7)

Years/Quarters	I	II	III	IV
1	65	60	61	63
2	70	58	56	60
3	68	63	68	67
4	65	59	56	62
5	60	55	51	58

Unit-II

Question 6. Explain the criteria of a good index number. (13)

Question 7. a) Discuss the basic problems involved in the construction of index numbers. (5)

b) From the following data calculate price index numbers for 2000 with 1990 as base by (i) Laspeyre's (ii) Paasche's (iii) Marshall-Edgeworth and (iv) Fisher's formulae: (8)

Commodities	1990		2000	
	Price	Quantity	Price	Quantity
A	50	350	60	430
B	120	600	140	700
C	30	330	20	200
D	20	360	15	300
E	10	40	10	50

Question 8.

a) Write a note on time reversal test. (5)

b) Write a note on factor reversal test and prove that Fisher ideal satisfy the factor reversal test. (8)

Question 9.

a) Explain the static law of demand and supply. (6)

b) For demand curve $d = 250 - 3p^2$ and supply curve $s = p^2 + 2p^4$, find the equilibrium price and the quantity exchanged. (7)