XS-118

April-2013

B.Sc.(Sem.-II)

Statistics

Time : 3 Hours] **[Max. Marks : 100**

Instructions : (1) Attempt **all** questions.

(2) Each question carries equal marks.

(3) Figures on right hand indicate marks of questions.

1. (a) Define Index Number. Describe briefly steps involved in the construction of General Price Index Number. **10**

OR

What is cost of living index number ? Explain different steps in its construction. State its uses.

(b) Discuss various tests of reversibility in Index Number. **10**

OR

What are Marshall-Edgeworth, Laspeyer's and Paasche's Index Numbers ? Prove that Marshall-Edgeworth Index Number lies between Laspeyer's and Paasche's Index Number.

2. (a) What is vital statistics ? Explain the methods of collecting vital statistics with their merits and demerits. **10**

OR

Explain various measures of population growth. Describe the best measure in detail.

(b) What are the measures of fertility ? Describe any two of them in detail. **10**

OR

Describe various measurements of mortality with their merits and demerits.

3. (a) Define income distribution. State Pareto law and its form. What are the characteristics of Pareto law ? **10**

OR

Describe Pareto-Levy law in detail.

(b) What is income inequality ? Discuss Gini's coefficient for measuring inequality. State the advantages and disadvantages of this measurement. **10**

OR

Write a brief note on Lorenz Curve.

4. (a) What is a Life Table ? Explain the assumptions and construction of a Life Table. **10**

 OR

 Explain the uses of Life Table in detail.

 (b) Write a short note on application of utility theory in insurance. **10**

 OR

 A decision maker's utility function is $u(w) = \sqrt{W}$. The decision maker has wealth $w = 10$ and faces a random loss X with uniform distribution on (0, 10). What is the maximum amount this decision maker will pay for complete insurance against the random loss ?

5. Answer the following objectives : (**one** mark each) **20**

 (1) State any two uses of Index Number.

 (2) State any two limitations of Index Number.

 (3) Give formulae of Laspeyre's and Marshall-Edgeworth's price index number.

 (4) The price relative for the commodities are 125, 120 and 130 with their respective weights as 5, W and 8. If the price index for the set is 125.25 then what will be the value of w ?

 (5) Give any two merits of chain base method.

 (6) What is income distribution function ?

 (7) State any two properties of log-normal distribution.

 (8) What is an equal distribution line ?

 (9) When would we get twisted or bent Lorenz curve ?

 (10) What is the range of Lorenz curve ?

 (11) What is force of Mortality ?

 (12) Define Central Mortality.

 (13) Define Utility Wealth Function.

 (14) Define Pure Premium.

 (15) Define complete expectation of life.

 (16) Define rate of vital events.

 (17) State relation between central mortality and force of mortality.

 (18) Is the utility function an increasing or decreasing ?

 (19) What is the interpretation of NRR = 1.78 ?

 (20) State two uses of vital statistics.

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