

**EASTERN UNIVERSITY, SRI LANKA**

**FIRST EXAMINATION IN SCIENCE - 2005/2006 & 2006/2007**

**FIRST SEMESTER(March/April, 2008)**

**ST 102 - DESCRIPTIVE STATISTICS**

**(PROPER & REPEAT)**

Answer all Questions

Time: One hour

Q1. (a) The following table gives the height of trees in a garden.

Height(Feet)	Number of trees
Below 7	26
Below 14	57
Below 21	92
Below 28	134
Below 35	216
Below 42	287
Below 49	341
Below 56	360

- (i) Draw a histogram and cumulative frequency curve. Use your diagrams to estimate the mode, median and quartiles.
- (ii) Find the mean height of trees.
- (iii) Calculate the mode, median and quartiles using formulae. Check the answers with part(i).
- (iv) Compute the standard deviation of the height of trees. [60 marks]

- (b) In two factories *A* and *B* engaged in the same industry in an area, the average weekly wages (in Rupees) and the standard deviations are as follows:

Factory	Average	Standard Deviation	Number of Employees
<i>A</i>	34.5	5	476
<i>B</i>	28.5	4.5	524

- (i) Which factory *A* or *B* pays out a larger amount as weekly wages?  
 (ii) Which factory *A* or *B* has greater variability in industrial wages?

[40 marks]

- Q2. (a) (i) Explain with formula, the construction of the following Index Numbers  
 Price:

- *Laspeyres's* Index;
- *Paasche's* Index;
- *Fisher's* Ideal Index.

[30 marks]

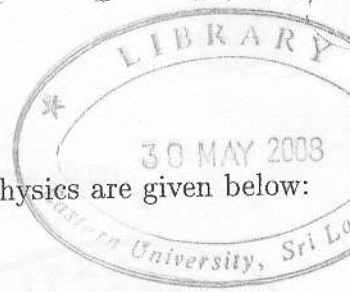
- (ii) Using the data given below calculate price index number for the year 2003 by

- *Laspeyres's* formula,
- *Paasche's* formula,
- *Fisher's* formula with year 1995 as base.

	Item	A	B	C	D	E
Price	1995	8	2	1	2	1
	2003	20	6	2	5	5
Quantity	1995	50	15	20	10	40
	2003	60	10	25	8	30

Show that *Fisher's* Ideal Index satisfies Time Reversal and Factor Price Reversal Tests.

[50 marks]



(b) The marks obtained by 8 pupils in Mathematics and Physics are given below:

Mathematics	67	42	85	51	39	97	81	70
Physics	70	59	71	38	55	62	80	76

Calculate the *Spearman's Rank Correlation* and comment on the significance of the result. [20 marks]