



EASTERN UNIVERSITY, SRI LANKA

DEPARTMENT OF MATHEMATICS

FIRST EXAMINATION IN SCIENCE - 2008/2009

SECOND SEMESTER (Sep./Nov., 2010)

ST 102 - DESCRIPTIVE STATISTICS

(RE-REPEAT)

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Answer all questions

Time : One hour

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1. (a) Number of employees, average wages of employees and variances of the wages for two factories are given as below:

	Factory A	Factory B
No of employees	50	100
Average wages	120	85
Variance of wages	9	16

In which factory is there a greater variation in the distribution of wages? Suppose that in factory B, the wage of an employee was wrongly entered as 120 instead of 100. What would be the correct variance of wages for the factory B?

- (b) Customer's waiting times (in minutes) in a queue were found to be as follows:

Duration of waiting:	0 - 10	10 - 20	20 - 40	40 - 50	50 - 70
Number of customers:	10	15	40	32	28

- i. Calculate the mean waiting time.
- ii. Proving any formula that are used, determine the median and mode waiting times for the above data.
- iii. How long do the middle 50% of the customers have to wait?
- iv. What would be the standard deviation of waiting times?

2. (a) Define the term "Index Number".

- (b) i. Show that Fishers ideal index satisfy both time reversal test and factor reversal test.
- ii. Calculate the appropriate price index number for year 1999 using 1998 as the base year.

Item	1998		1999	
	Quantity (lbs)	Price per (lbs)	Quantity (lbs)	Price per (lbs)
Bread	6	Rs. 40	7	Rs. 30
Meat	4	Rs. 45	5	Rs. 50
Tea	0.5	Rs. 90	1.5	Rs. 40

(c) For the following data, calculate two un-weighted price index numbers.

Commodities	Price in 1984	Price in 1985
A	Rs. 50	Rs. 70
B	Rs. 40	Rs. 60
C	Rs. 80	Rs. 90
D	Rs. 110	Rs. 120
E	Rs. 20	Rs. 20