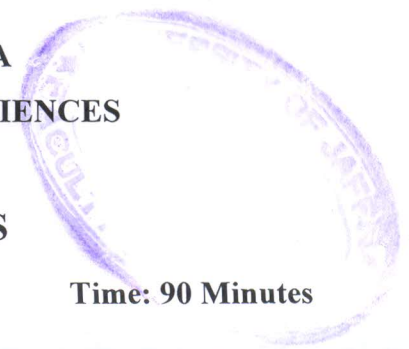


UNIVERSITY OF JAFFNA, SRI LANKA
FIRST YEAR SECOND SEMESTER BASIC SCIENCES
EXAMINATION – JULY – 2015
AHSBS1211– BASIC STATISTICS



Date: 23.07.2015

Time: 90 Minutes

Answer for any TWO questions
You may use scientific calculator

1. The below table brings the distribution of ages in the Jaffna Health Club in a particular year.

Age (y-years)	No of members
$00 \leq y < 15$	75
$15 \leq y < 30$	350
$30 \leq y < 45$	425
45 $45 \leq y < 60$	750
$60 \leq y < 90$	825

- a. Represent the above data into a frequency table. (10 Marks)
- b. Draw a histogram to illustrate the data and find the mode graphically. (20 Marks)
- c. Draw a frequency curve and conclude about the skewness of the data. (10 Marks)
- d. Find the Mode, Mean and Median mathematically. (20 Marks)
- e. Find the coefficient of skewness of the data with the obtained results in (d). (10 Marks)
- f. Justify your results on skewness obtained from both (c) and (d) (10 Marks)
- g. Members over the age of 70 will be paid an extra allowance. Estimate how many of them will get the extra allowance. (20 Marks)

2. (A) A Stem and Leaf display is given below.

Stem	Leaf
3	0 1 2
4	4 5 X 8
5	6 Y 8
6	8 Z 8
7	5 9 W

The IQR for the data is found to be 24. Find the values of X, Y, Z and W.
 (or if not possible, give the range for X, Y, Z and W). (40 Marks)

(B) Luxchi made a survey in a clinical centre from a sample of 500 patients and had a mean of 75 beats per minute (bpm) and the standard deviation of 23bpm. Luxchi has got the following distribution with only the 300 patients. The median of this distribution was found to be 73bpm.

Pulse Rate Range	No. of Patients
40-50	10
50-60	a
60-70	75
70-80	100
80-90	b
90-100	35
100-110	05

- Calculate the missing values of a and b (10 Marks)
- To illustrate the above data, construct a cumulate frequency curve (Ogive) so as to find out the total number of patients for each above and below pulse rate level (20 Marks)
- Find out the middle 50% of the total patients pulse rate range using the above curve. (10 Marks)
- If the patients' pulse rates are in an increasing order, point out the 150th patient's pulse rate using the above Ogive curve. (10 Marks)
- Find the mean and the variance for the remaining 200 patients. (10 Marks)

3.

(A) The Crude Birth Rate (CBR) and the Crude Death Rate (CDR) per thousand persons in Sri Lanka from 1950 to 2010 are given below.

Period	1950–1955	1955–1960	1960–1965	1965–1970	1970–1975	1975–1980
CBR	37.4	38.6	35.5	32.9	29.1	27.8
CDR	19.8	15.1	12.1	9.7	7.8	6.9
Period	1980–1985	1985–1990	1990–1995	1995–2000	2000–2005	2005–2010
CBR	25.6	21.6	19.6	17.8	18.7	19
CDR	6.1	6.5	6.7	7.9	6.3	6.5

(Source: https://en.wikipedia.org/wiki/Demographics_of_Sri_Lanka)

Find the coefficient of Rank Correlation between CBR and CDR and write down the conclusion.

(30 Marks)

(B) The mean and the standard deviation of 200 tablets weight are found to be 60mg and 20mg, respectively. The chemist has wrongly entered two tablets weights as 3mg and 67mg instead of 13mg and 17mg. Find the correct mean and the standard deviation. Also find the correct coefficient of variation.

(40 Marks)

(C) The IQR of the sample data set is 20 and the median is 200. Classify the following data values as wild-outliers extreme outliers or non-outliers. Assume that the distribution segment is symmetric. 161, 279, 155, 127, 225, 238

(30 Marks)