

**UNIVERSITY OF JAFFNA, SRI LANKA**  
**ALLIED HEALTH SCIENCES**  
**FIRST YEAR SECOND SEMESTER EXAMINATION – 2013**  
**BASIC STATISTICS -AHSBS1201**  
**Answer any TWO questions and NO MORE**  
**Non-Programmable calculator may be used**

**Time: 1 Hour and 30 Minutes**

1. Define median and inter-quartile range for a set of data.

Two directors in different hospitals want to compare the lengths of time that nurses stay in their hospitals before leaving. They consulted their records on 31 March and looked at all the nurses who left the hospitals in the previous three months. The data are shown in the table.

**Number of nurses**

<i>Length of service (months)</i>	<i>Hospital A</i>	<i>Hospital B</i>
Less than 1	2	40
1 but less than 2	3	20
2 but less than 3	7	18
3 but less than 6	20	22
6 but less than 12	33	20
12 but less than 24	20	20
24 but less than 36	10	20
36 or more	5	40

- (i) Draw, on a single graph, cumulative *percentage* frequency polygons for the two distributions.
- (ii) From your graph, estimate
- (a) the median length of service in Hospital *A*,
  - (b) the median length of service in Hospital *B*,
  - (c) the inter-quartile range of length of service in Hospital *A*,
  - (d) the inter-quartile range of length of service in Hospital *B*.
- (iii) Write a brief report comparing the lengths of service at the two hospitals.

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2. Explain what the terms *quantitative* and *qualitative* mean when referring to variables in a set of data.

Corn is an important animal food. Normal corn lacks certain amino acids, which are building blocks for protein. Plant scientists have developed new corn varieties that have more of these amino acids. To test a new corn as animal food, a group of 20 one-day-old male chicks was fed a ration containing the new corn. A control group of another 20 chicks was fed a ration that was identical except that it contained normal corn. Here are the weight gains (in grams) after 21 days.

Normal Corn	New Corn
380, 321, 366, 356, 350, 272, 360, 283, 349, 402, 462, 384, 345, 431 356, 410, 329, 399, 316, 455	361, 447, 401, 375, 434, 403, 393, 426, 406, 318, 467, 407, 427, 420, 477, 392, 430, 339, 410, 326

- (i) Draw two stem and leaf diagrams, one for each group of chicks.
- (ii) Find the five number summaries for the weight gains in each group and use your results to draw two boxplots, one for each group of chicks.
- (iii) Use your results in (i) and (ii) to make a comparison of weight gains in the two Corn varieties.

Continued...

3.

- a) In a study of nursing home patients, the following data were obtained for each patient; age, gender, previous smoking status (smoker or nonsmoker), reason for admission, nursing wing housed in, length of stay, and four-point scale rating of health status. Classify each variable by whether it is nominal, ordinal, interval or ratio.
- b) The following data are ordered systolic blood pressures in millimeters of mercury (mmHg) from 48 young adult males:

87	106	114	120	129	140	155	183
93	107	116	122	133	141	155	194
101	107	117	122	133	146	162	197
104	109	118	125	134	146	167	204
105	110	118	125	135	148	173	212
105	114	119	128	138	152	176	230

- (i) Find the mean and standard deviation.
- (ii) Compute the median and quartiles.
- (iii) Form a grouped frequency distribution with classes (in mmHg) as follows.
- 80 but under 100
  - 100 but under 120
  - 120 but under 140
  - 140 but under 160
  - 160 but under 180
  - 180 but under 200
  - 200 but under 220
  - 220 but under 240
- (iv) Draw a histogram of the grouped frequency distribution.
- (v) State whether or not you think the data follow a symmetric distribution, and give the reason for your answer.

\*\*\*\*\*END\*\*\*\*\*