Directions: The quiz will be worth 16 total points. There is only one correct answer per question. The quiz consists of both sides of this paper (front and back). The quiz will be broken into two main parts (part I is on the front and part II is on the back).

Part I: There are five questions. Answer four of the five questions. Each question is worth two points. The total points possible in part I is eight. Enter your answer in the blank on the right or in the space below where applicable. If you answer more than four questions I will only grade the first four.

The contingency table above contains data from a survey examining employees' yearly income and their highest educational degree obtained. Note that our two categorical variables are income and education level. Here income is a categorical variable due to how it is defined. Use the table above to answer the following questions as per the directions in part I.

(1) What percent of employees surveyed obtained a bachelor's degree?
   a) 35.37%  b) 10.20%  c) 29.93%  d) 23.81%  
   Answer (1): 52/147

(2) What percent of employees surveyed with a master's degree earn less than $50,000?
   a) 17.14%  b) 13.64%  c) 47.73%  d) 4.08%  
   Answer (2): 6/44

(3) What percent of employees surveyed making below $50,000 have a master's degree?
   a) 4.08%  b) 23.81%  c) 38.67%  d) 17.14%  
   Answer (3): 6/35

(4) Find the marginal distribution (in percentages) for education level. Provide your answer in the space below.

   High School  Bachelor's  Master's  Doctorate
   (22/147) x 100  (52/147) x 100  (44/147) x 100  (29/147) x 100
   14.97%  35.37%  29.93%  15.72%

(5) Find the conditional distribution of income (in percentages) for employees with a doctorate degree. Provide your answer in the space below.

   Doctorate
   < $50,000  $50,000 - $100,000  > $100,000
   (12/29) x 100  (6/29) x 100  (22/29) x 100
Part II: There are two parts. Complete both parts, A and B, and all the corresponding questions. Each part is worth four points. The total points possible in part II is eight. Enter your answer in the space provided.

A. Use the stem-and-leaf plot below to answer the following questions. Note: \(-2|1\) represents the number \(-21\).

\[
\begin{align*}
&\text{Data:} \\
&-2|1 \\
&-1|2 2 2 \\
&0|2 4 6 \\
&1|1 4 \\
\end{align*}
\]

(1) Find the median and the mode.

\[
\begin{align*}
\text{median} &= \frac{5}{2} \text{th obs} \\
2 &= \text{median} \\
\text{mode} &= 2
\end{align*}
\]

(2) Find the mean.

\[
\text{mean} = -2.22
\]

(3) Find the range. \[
\text{Max} - \text{Min} = 14 - (-21) = 35
\]

B. Suppose we have the following computed values from a data set:

Minimum=43; Maximum=120; Median=65; \(Q_1 = 52\); \(Q_3 = 82\); Mean=80

(1) Find the interquartile range.

\[
IQR = Q_3 - Q_1 = 82 - 52 = 30
\]

(2) Determine the approximate shape of the distribution.

Mean > Median = skewed to the right

(3) Draw the corresponding box plot.

[Box plot diagram]

\[
\begin{align*}
\text{Lower inner fence} &= Q_1 - 1.5 \times IQR = 52 - 1.5 \times 30 = 7 \\
\text{Upper inner fence} &= Q_3 + 1.5 \times IQR = 82 + 1.5 \times 30 = 127
\end{align*}
\]