Assignment 8

Q.   Three medicines are being tested to treat a type of cancer on 50 patients each. After a month of treatment the percentage of cancer cells cured are being recorded. The data on percentages for each patient is given as follows:

Medicine 1:
80, 74, 50, 33, 64, 75, 83, 86, 36, 31, 30, 73, 36, 62, 71, 60, 54, 49, 98, 61, 90, 77, 68, 82, 48, 39, 44, 91, 67, 43, 78, 85, 41, 38, 97, 95, 84, 42, 81, 87, 32, 66, 35, 79, 63, 58, 34, 46, 92, 40

Medicine 2:
79, 34, 36, 67, 37, 90, 81, 97, 72, 44, 84, 59, 74, 58, 30, 65, 64, 99, 56, 85, 33, 82, 53, 88, 50, 73, 48, 57, 43, 78, 86, 87, 62, 95, 46, 70, 76, 32, 54, 92, 39, 89, 93, 40, 35, 91, 60, 80, 98, 55

Medicine 3:
41, 44, 65, 96, 34, 32, 56, 39, 46, 53, 62, 31, 87, 84, 88, 69, 74, 98, 36, 51, 71, 48, 57, 86, 83, 67, 63, 54, 38, 97, 89, 73, 35, 40, 66, 49, 81, 47, 76, 43, 92, 60, 52, 45, 42, 79, 47, 90, 78, 94

1.   The sign of the rank correlation coefficient between the medicine 1 and 2 is

2.   The magnitude of the rank correlation coefficient between the medicine 1 and 2 is

3.   The sign of the rank correlation coefficient between the medicine 2 and 3 is

4.   The magnitude of the rank correlation coefficient between the medicine 2 and 3 is

5.   The sign of the rank correlation coefficient between the medicine 1 and 3 is

6.   The magnitude of the rank correlation coefficient between the medicine 1 and 3 is

Q.   A new unreleased song was played for 100 persons to observe likeability. The persons were divided based on their ages into following four categories – Child, Teen, Adult and Old. The quality was classified into following three categories- Okay, Good and Bad. Following are the observations obtained for each person and the response which are written in the same order. For example, first person is "Adult" and the corresponding response is "Good".

Person:

"Adult", "Child", "Child", "Old", "Child", "Child", "Teen", "Teen", "Old", "Child", "Old", "Teen", "Old", "Child", "Old", "Teen", "Old", "Adult", "Child", "Old", "Child", "Child", "Child", "Adult", "Teen", "Child", "Child", "Teen", "Teen", "Adult", "Child", "Teen", "Child", "Child", "Adult", "Adult", "Adult", "Adult", "Teen", "Teen", "Child", "Teen", "Adult", "Child", "Teen", "Adult", "Adult", "Teen", "Old", "Teen", "Child", "Teen", "Adult", "Child", "Child", "Child", "Old", "Old", "Old", "Child", "Adult", "Old", "Teen", "Old", "Child", "Child", "Teen", "Adult", "Old", "Old", "Old", "Old", "Old", "Adult", "Teen", "Teen", "Teen", "Child", "Child", "Adult", "Teen", "Adult", "Adult", "Old", "Child", "Adult", "Adult", "Old", "Teen", "Teen", "Old", "Old", "Old", "Adult", "Teen", "Teen", "Teen", "Old", "Teen", "Child"

Quality:

"Good", "Good", "Okay", "Okay", "Okay", "Good", "Bad", "Bad", "Good", "Okay", "Bad", "Good", "Good", "Bad", "Good", "Okay", "Good", "Bad", "Okay", "Good", "Okay", "Okay", "Okay", "Good", "Bad", "Bad", "Okay", "Good", "Bad", "Good", "Good", "Okay", "Bad", "Bad", "Good", "Okay", "Okay", "Good", "Good", "Okay", "Bad", "Okay", "Bad", "Okay", "Okay", "Good", "Okay", "Bad", "Bad", "Good", "Bad", "Okay", "Okay", "Good", "Okay", "Okay", "Okay", "Bad", "Good", "Okay", "Bad", "Okay", "Good", "Okay", "Bad", "Okay", "Good", "Okay", "Bad", "Bad", "Bad", "Good", "Bad", "Okay", "Bad", "Good", "Bad", "Bad", "Good", "Bad", "Good", "Okay", "Bad", "Bad", "Okay", "Okay", "Bad", "Bad", "Okay", "Bad", "Bad", "Good", "Okay", "Good", "Okay", "Good", "Bad", "Bad", "Okay", "Good"

1. What will be the correct R command to get a contingency table based on absolute frequency for this data?

2. What will be the correct R command to get a contingency table based on relative frequency for this data?

3. How many teenagers participated in this study?

4. How many old persons participated in the study?

5. How many persons reported the song to be Good?

6. How many persons reported the song to be Bad?

7. Which of the following statement is correct?
   a. Number of Adults who reported the song to be Okay is less than the number of Children who reported the song to be Bad.
   b. Number of Adults who reported the song to be Okay is more than the number of Children who reported the song to be Bad.
   c. Number of Teenagers who reported the song to be Okay is the same as the number of Children who reported the song to be Bad.
   d. Number of Adults who reported the song to be Okay is the same as the number of Children who reported the song to be Bad.

8. Which of the following statement is correct?
   a. The total number of old and adult persons who reported the song to be Good is 17% of the total persons.
   b. The total number of old and adult persons who reported the song to be Good is 15% of the total persons.
   c. The total number of children and adult persons who reported the song to be Good is 15% of the total persons.
   d. The total number of teenagers and adult persons who reported the song to be Good is 15% of the total persons.

9. Which of the following statement is correct?
   a. Number of teenagers who reported the song to be Bad is less than the number of children who reported the song to be Okay.
   b. Number of teenagers who reported the song to be Bad is greater than the number of children who reported the song to be Okay.
   c. Number of teenagers who reported the song to be Bad is same as the number of children who reported the song to be Okay.
   d. Number of teenagers who reported the song to be Bad is same as the number of adults who reported the song to be Okay.

10. The value of Pearson's Chi squared statistic for association is

11. The range of the value of Pearson's Chi squared statistic for association is

12. The value of Cramer's V statistic for association for this data is

13. The value of the corrected version of Pearson's contingency coefficient of association is

Q. The following data is collected on the height, weight, age and Hemoglobin level of 30 persons.

Height (In centimeters):

136, 151, 171, 183, 147, 149, 174, 153, 175, 159, 164, 137, 145, 150, 143, 141, 140, 162, 176, 135, 157, 170, 182, 144, 130, 184, 154, 132, 181, 166

Weight (in kilogram):

54.3, 51.2, 75.5, 80.2, 52.6, 61.8, 74.6, 74.2, 71.3, 71.4, 65.7, 47.1, 51.3, 64.0, 54.3, 48.5, 66.3, 74.8, 60.1, 58.4, 76.9, 84.3, 65.5, 67.2, 49.8, 67.0, 70.7, 62.3, 82.1, 69.6

Age (in years):

44.8, 32.4, 28.8, 54.3, 26.4, 23.3, 61.3, 52.0, 68.5, 32.6, 28.4, 43.0, 21.2, 39.0, 30.7, 43.3, 60.5, 28.7, 53.8, 65.9, 25.2, 20.0, 22.8, 52.2, 35.3, 65.1, 62.9, 54.1, 21.7, 66.5

Hemoglobin level (Hb) (in grams per deciliter):

11.1, 8.3, 11.5, 10.8, 8.0, 9.9, 8.5, 11.9, 10.6, 10.3, 9.3, 8.5, 11.3, 10.1, 10.8, 9.2, 10.7, 11.7, 11.1, 12.0, 10.1, 8.4, 11.8, 8.2, 9.0, 11.5, 9.0, 11.6, 9.5, 8.9

1. What will be the correct R command for obtaining the following plot:

Matrix Plot of Haemoglobin level data
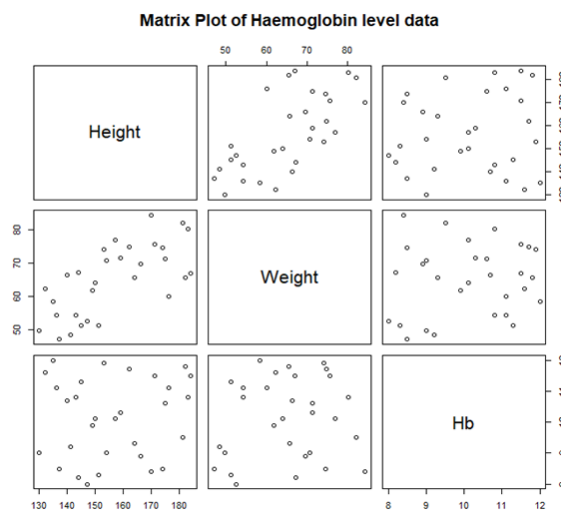
2. The values of the coefficients or slope parameters associated with the variables **Height** and **Age** in the model of **Hb** on **Height** and **Age** fitted by least squares are

3. The value of the intercept term in the model of **Hb** on **Height** and **Age** fitted by least squares is

4. The values of the coefficients or slope parameters associated with the variables **Height** and **Weight** in the model of **Hb** on **Height**, **Weight** and **Age** fitted by least squares are

5. The value of the intercept term in the model of **Hb** on **Height**, **Weight** and **Age** fitted by least squares is

6. The values of the coefficient or slope parameter associated with the variable **Age** in the model of **Hb** on **Height**, **Weight** and **Age** fitted by least squares is