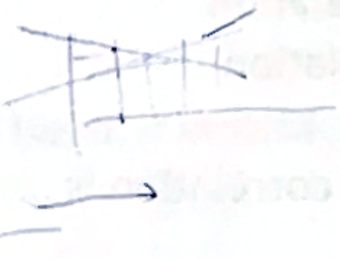
Practice questions on Correlation and Regression

1. Correlation analysis is a .....
   a. Univariate analysis
   b. Bivariate analysis
   c. Multivariate analysis
   d. Both b and c

2. If change in one variable results a corresponding change in the other variable, then the variables are.....
   a. Correlated
   b. Not correlated
   c. Any of the above
   d. None of the above

3. When the values of two variables move in the same direction, correlation is said to be .....
   a. Linear
   b. Non-linear
   c. Positive
   d. Negative

4. When the values of two variables move in the opposite directions, correlation is said to be .....
   a. Linear
   b. Non-linear
   c. Positive
   d. Negative



5. When the amount of change in one variable leads to a constant ratio of change in the other variable, then correlation is said to be .....
   a. Linear
   b. Non-linear
   c. Positive
   d. Negative

6. .....attempts to determine the degree of relationship between variables.
   a. Regression analysis
   b. Correlation analysis
   c. Inferential analysis
   d. None of these

7. Non-linear correlation is also called.....
   a. Non-curvy linear correlation
   b. Curvy linear correlation
   c. Zero correlation
   d. None of these

8. Scatter diagram is also called .....
   a. Dot chart
   b. Correlation graph
   c. Both a and b
   d. None of these

9. If all the points of a scatter diagram lie on a straight line falling from left upper corner to the right bottom corner, the correlation is called.....
   a. Zero correlation
   b. High degree of positive correlation
   c. Perfect negative correlation
   d. Perfect positive correlation

10. If all the dots of a scatter diagram lie on a straight line falling from left bottom corner to the right upper corner, the correlation is called.....
   a. Zero correlation
   b. High degree of positive correlation
   c. Perfect negative correlation
   d. Perfect positive correlation

11. The unit of Coefficient of correlation is .....
   a. Percentage
   b. Ratio
   c. Same unit of the data
   d. No unit

12. Numerical measure of correlation is called .....
   a. Coefficient of correlation
   b. Coefficient of determination
   c. Coefficient of non-determination
   d. Coefficient of regression

13. Coefficient of correlation explains:
   a. Concentration
   b. Relation
   c. Dispersion
   d. Asymmetry

14. Coefficient of correlation lies between:
    a. 0 and +1
    b. 0 and –1
    c. –1 and +1
    d. – 3 and +3

15. If the ratio of change in one variable is equal to the ratio of change in the other variable, then the correlation is said to be .....
    a. Linear
    b. Non-linear
    c. Curvilinear
    d. None of these

16. Pearson correlation coefficient is denoted by the symbol .....
    a. K
    b. r
    c. R
    d. None of these

17. If r= +1, the correlation is said to be .....
    a. High degree of +ve correlation
    b. High degree of –ve correlation
    c. Perfect +ve correlation
    d. Perfect –ve correlation

18. If the dots in a scatter diagram fall on a narrow band, it indicates a ..... degree of correlation.
    a. Zero
    b. High
    c. Low
    d. None of these

$$r = \frac{S_{xy}}{S_x \cdot S_y}$$

19. If all the points of a dot chart lie on a straight line vertical to the X-axis, then coefficient of correlation is .....
    a. 0
    b. +1
    c. –1
    d. None of these

20. The –ve sign of correlation coefficient between X and Y indicates.....
    a. X decreasing, Y increasing
    b. X increasing, Y decreasing
    c. Any of the above
    d. There is no change in X and Y

21. Coefficient of correlation explains .....of the relationship between two variables.

a. Degree
b. Direction
c. Both of the above
d. None of the above

22. For perfect correlation, the coefficient of correlation should be .....

a. ± 1
b. + 1
c. – 1
d. 0

23. If r = 0.8, coefficient of determination is.....

a. 80%
b. 8%
c. 64%
d. 0.8%

r = correction of coefficient
r^2 = Coefficient of determination

24. If r is the simple correlation coefficient, the quantity r^2 is known as .....

a. Coefficient of determination
b. Coefficient of non-determination
c. Coefficient of alienation
d. None of these

25. If the regression line is X on Y, then the variable X is known as.....

a. Dependent variable
b. Independent variable
c. Bothe a and b
d. None of the above

26. If the regression line is Y on X, then the variable X is known as.....

a. Dependent variable
b. Independent variable
c. Both a and b
d. None of the above

27. If the correlation coefficient between two variables, X and Y, is negative, then the regression coefficient of Y on X is.....

a. Positive
b. Negative
c. Not certain
d. None of these

28. A regression analysis between weight (y in pounds) and height (x in inches) resulted in the following least squares line: $\hat{y} = 120 + 5x$. This implies that if the height is increased by 1 inch, the weight is expected to:

a) increase by 1 pound
b) decrease by 1 pound
c) increase by 5 pounds
d) decrease by 24 pounds

29. A regression analysis between sales (in $1000) and advertising (in $) resulted in the following least squares line: $\hat{y} = 80{,}000 + 5x$. This implies that an:

a) increase of $1 in advertising is expected to result in an increase of $5 in sales
b) increase $5 in advertising is expected to result in an increase of $5,000 in sales
c) increase of $1 in advertising is expected to result in an increase of $80,005 in sales
d) increase of $1 in advertising is expected to result in an increase of $5,000 in sales

30. In a regression problem, if the coefficient of determination is 0.90, this means that:

a) 90% of the y values are positive
b) 90% of the variation in y can be explained by the regression line
c) 90% of the x values are equal
d) 90% of the variation in x can be explained by regression line

31. A regression analysis between weight (y in pounds) and height (x in inches) resulted in the following least squares line: $\hat{y} = 120 - 5x$. This implies that if the height is increased by 2 inch, the weight is expected to:

a) increase by 10 pound
b) decrease by 10 pound
c) increase by 5 pounds
d) decrease by 5 pounds

32. The relationship between number of beers consumed (x) and blood alcohol content (y) was studied in 16 male college students by using least squares regression. The following regression equation was obtained from this study: $\hat{y} = -0.0127 + 0.0180x$
Suppose that the legal limit to drive is a blood alcohol content of 0.08. If Ricky consumed 5 beers the model would predict that he would be:

a) 0.09 above the legal limit
b) 0.0027 below the legal limit
c) 0.0027 above the legal limit
d) 0.0733 above the legal limit