MCQ on Correlation and Regression

1. Correlation is a statistical technique to study the relation between two or more------
   a. Variables  b. attributes  c. qualitative data  d. None of the above

2. Correlation coefficient is always lies between------
   a. -1 to +1  b. 0 to 1  c. -1 to 0  d. -2 to +2

3. Correlation coefficient is independent of change of------and --------
   a. Origin and Scale  b. linear and non-linear  c. parameter and scale  
   d. None of the above

4. Correlation is --------
   a. Symmetric  b. Non-symmetric  c. dependent  d. None of the above

5. If X=Y then corr (X,Y)= ----
   a. 1  b. 0  c. -1  d. None of the above

6. If \( \frac{X}{Y} = 1 \) then corr(X,Y)= ----
   a. 1  b. 0  c. -1  d. None of the above

7. If Corr (X,Y)=±1 then-------
   a. Two regression lines co-inside
   b. two regression lines parallel to each other
   c. two regression lines are perpendicular to each other
   d. None

8. If Corr (X,Y)=0 then-------
   a. Two regression lines co-inside
   b. two regression lines parallel to each other
   c. two regression lines are perpendicular to each other
   d. None

9. Corr (X,\_X) =--------
   a. 0  b. -1  c. +1  d. None of the above

10. The correlation coefficient and regression coefficients have ------algebraic sign
    a. Opposite  b. same  c. linear  d. non-linear

11. Correlation coefficient is --------
    a. A.M. of two regression coefficient  
    b. G.M. of two regression coefficient  
    c. H.M. two regression coefficient  d. None of the above

12. The point of intersection of regression lines is ------
    a. (\( \bar{x}, \bar{y} \))  b. (0,0)  c. (-1,+1)  d. None of the above

13. Regression coefficient remains unchanged due to ------
    a. change of origin  b. change of scale  c. Change of origin and scale  d. None of the above.
14. Regression coefficients are reciprocal of each other if \( r = - - - - \)
   a. 0  b. 1  c. -1  d. None of the other

15. If \( r = +1 \) then there is------
   a. Perfect positive correlation  b. positive correlation  c. Perfect negative correlation  d. Negative correlation

16. If \( r = -1 \) then there is------
   a. Perfect positive correlation  b. positive correlation  c. Perfect negative correlation  d. Negative correlation

17. If \( r > 0 \) then there is------
   a. Perfect positive correlation  b. positive correlation  c. Perfect negative correlation  d. Negative correlation

18. If \( r < 0 \) then there is------
   a. Perfect positive correlation  b. positive correlation  c. Perfect negative correlation  d. Negative correlation

19. \( \text{corr}(ax, by) = \text{--------. Here, a and b have same algebraic sign} \)
   a. \( \text{corr}(x, y) \)  b. \( ab \text{ corr}(x, y) \)  c. \( \frac{\text{corr}(x, y)}{ab} \)  d. None of the above

20. The independent variable is also called:

21. The dependent variable is also called:
   a. Regressand  b. Predictand  c. Explained  d. All of these

22. The dependent variable is also called:
   a. Regression  b. Regressand  c. Continuous variable  d. Independent

23. To determine the height of a person when his weight is given is:

24. If one regression coefficient is greater than one, then other will he:
   a. More than one  b. Equal to one  c. Less than one  d. Equal to minus one

25. If \( Y = 2 - 0.2X \), then the value of \( Y \) intercept is equal to:
   a. -0.2  b. 2  c. 0.2X  d. All of the above

26. If regression line of \( Y \) on \( X = 5 \), then value of regression coefficient of \( Y \) on \( X \) is:
   a. 0  b. 0.5  c. 1  d. None of these

27. The straight line graph of the linear equation \( Y = a + bX \), slope is horizontal if:
   a. \( b = 0 \)  b. \( b \neq 0 \)  c. \( b = 1 \)  d. \( a = b \)

28. The straight line graph of the linear equation \( Y = a + bX \), slope will be downward If:
   a. \( b > 0 \)  b. \( b < 0 \)  c. \( b = 0 \)  d. \( b \neq 0 \)
29. If the value of any regression coefficient is zero, then two variables are:
   a. Qualitative  b. Correlation  c. Dependent  d. Independent

30. In simple regression equation, the numbers of variables involved are:
   a 0  b. 1  c. 2  d. 3

31. In simple linear regression, the numbers of unknown constants are:
   a. One  b. Two  c. Three  d. Four

32. The slope of the regression line of Y on X is also called the:
   a. Correlation coefficient of X on Y
   b. Correlation coefficient of Y on X
   c. Regression coefficient of X on Y
   d. Regression coefficient of Y on X

33. The range of the correlation coefficient is?
   a. -1 to 0.  b. 0 to 1.  c. -1 to 1.  d. None of the above.

34. Which of the following values could not represent a correlation coefficient?
   a. r = 0.99  b. r = 1.09  c. r = -0.73  d. r = -1.0

35. Which of the following indicates a strong positive correlation?
   a. r = 0  b. r = -0.793  c. r = 0.913  d. r = 0.45

36. A relationship where the flow of data points is best represented by a curve is called as:
   a. Linear relationship  b. Non-linear relationship  c. Linear positive  d. Linear negative

37. All data points falling along a straight line is called as:

38. If the value of the regression coefficient is zero then two variables are:
   a. Qualitative  b. dependent  c. independent  d. correlation

39. The correlation coefficient is used to determine:
   a. A specific value of the y-variable given a specific value of the x-variable
   b. A specific value of the x-variable given a specific value of the y-variable
   c. The strength of the relationship between the x and y variables
   d. None of these

40. If there is a very strong correlation between two variables then the correlation coefficient
    must be
   a. any value larger than 1
   b. much smaller than 0, if the correlation is negative
   c. much larger than 0, regardless of whether the correlation is negative or positive
   d. None of these alternatives is correct.

41. In regression, the equation that describes how the response variable (y) is related to the
   explanatory variable (x) is:
   a. the correlation model
   b. the regression model
c. used to compute the correlation coefficient
d. None of these alternatives is correct.

42. In regression analysis, the variable that is being predicted is the
   a. response, or dependent, variable
   b. independent variable
c. intervening variable
d. is usually x

43. If two variables, x and y, have a very strong linear relationship, then
   a. there is evidence that x causes a change in y
   b. there is evidence that y causes a change in x
   c. there might not be any causal relationship between x and y
d. None of the above

44. In regression analysis, if the independent variable is measured in kilograms, the dependent variable
   a. must also be in kilograms
   b. must be in some unit of weight
c. cannot be in kilograms
d. can be any unit

45. Suppose you use regression to predict the height of a woman’s current boyfriend by using her own height as the explanatory variable. Height was measured in feet from a sample of 100 women undergraduates, and their boyfriends, at Dalhousie University. Now, suppose that the height of both the women and the men are converted to centimeters. The impact of this conversion on the slope is:
   a. the sign of the slope will change
   b. the magnitude of the slope will change
   c. both a and b are correct
   d. neither a nor b are correct

46. If correlation coefficient between two variable is perfect positive correlation then regression coefficient of y on x is:
   a. \( \frac{\sigma_x}{\sigma_y} \)
   b. \( \frac{\sigma_y}{\sigma_x} \)
c. 1
d. 0

47. If correlation coefficient between two variables is perfect positive correlation then regression coefficient of x on y is:
   a. \( \frac{\sigma_x}{\sigma_y} \)
   b. \( \frac{\sigma_y}{\sigma_x} \)
c. 1
d. 0

48. If \( \sigma_x = \sigma_y \) then regression coefficients are-----
49. Which one of the following example is the positive correlation between two variables?
   a. **Income and Expenditure**
   b. Colour of the dress wears by the students and their intelligence.
   c. Rainfall in Pune city and attendance in the class.
   d. None of the above.

50. Scatter diagram is--------
   a. **Graphical representation of relation between only two variables.**
   b. Graphical representation of relation between more than two variables.
   c. Empirical relation between variables.
   d. None of the above.