MCQs on Unit 2 (set 1)
Correlation and regression

Which of the following is correct for Karl Pearson's coefficient of correlation $r(X,Y)$?

(a) $0 \leq r(X,Y) \leq 1$ (b) $-1 \leq r(X,Y) \leq 1$

(c) $-1 \leq r(X,Y) \leq 0$ (d) $r(X,Y) \geq 1$

A

If the for Karl Pearson's coefficient of correlation $r(X,Y) = 1$,then which of the following is true?

(a)Correlation is perfect and positive (b) Correlation is perfect and negative

(c)There is no correlation between $X and\ Y$ (d)None of these

A

Which of the following is true in context of the given statements A and B?

Statement A: Correlation coefficient is independent of change of origin.

Statement B: Correlation coefficient is independent of change of scale.

(a)Only A is correct (b) Only B is correct.

(c)Both A and B are correct (d) Both A and B are false.

C

The term regression was first used in year 1877 by?

a) Karl Pearson
b) RA fisher
c) Sir Francis Galton
d) Al Bowley

In regression analysis the variable to be estimated (predicted) is called

a) Independent
b) Dependent
c) Known variable
d) None of these

Correlation coefficient r is …….. of regression coefficients (b_{xy} , b_{yx}) .

a) Arithmetic mean
b) Geometric mean
c) Harmonic mean
d) None

If X and Y are two random variables, then there can be at most

a) one regression line
b) two regression lines
c) three regression lines
d) an infinite number of regression lines

Regression coefficient (b_{xy} , b_{yx}) independent of

a) scale
b) origin
c) both origin and scale
d) neither origin nor scale
e)

The regression coefficients are zero if r is equal to

a) 1 b) -1 c) 0 d) 0.5

b_{yx} is called regression coefficient of regression line of

a) X on Y
b) Y on X
c) Both
d) None

b_{xy} , b_{yx} r all have …….. sign?

a) Different
b) Same
c) Both
d) None

Regression lines are identical (coincides) if r is equal to

a) -1 b) -1 c) + 1 or - 1 d) 0

Regression lines are perpendicular if r is equal to

a) -1 b) -1 c) + 1 or - 1 d) 0

The point at which regression lines intersects each other is called

a) mean
b) median
c) variance
d) mode

In linear equation y= a+bx a is the

a) slope
b) intercept
c) both
d) none

In linear equation y= a+bx b is the

a) slope
b) intercept
c) both
d) none

For the regression equation of Y on X , 2x+3y+50=0, the value of regression coefficient b_{yx} =

a)2/3

b) -2 /3

c)-3/2

d) 3/2

ans b

. If regression coefficient of Y on X is $-4/5$ and regression coefficient of X on Y is $-9/20$, then what is the correlation coefficient between X and Y?

(a)-0.6 (b) 0.6 (c)0.8 (d)0.4

A

If two regression lines are x+3y=7 and 2x+5y=12 then $\bar{x}$ and $\bar{y}$ are respectively

a) 1 , 2 b) 2, 1 c) 2, 3 d) 2, 4

Ans a

Out of regression lines x+2y=4 and 2x+3y=5 , is the regression line of x on y is

a) x+2y=4
b) 2x+3y=5
c) X+2y=0
d) none of these

Ans b

Find the correlation coefficient when the probable error is 0.2 and the number of pairs of the items is 9

a) 0.505
b) 0.332
c) 0.414
d) 0.313

Note: Formula Probable error of correlation coefficient is

$$\text{P.E.} = 0.6745\frac{(1-r^2)}{\sqrt{n}}$$

Ans b

If one of the regression coefficient is greater than unity then other will be

a) greater than unity
b) lesser than unity
c) equal to unity
d) none

The regresson equations Y=a+bX and X=a+by are based on the method of

a) greatest square
b) least square
c) both a and b
d) none

If slope of two regression lines are equal then r is equal to

a) 1 b) 0 c) ± 1 d) none

The arithmetic mean of both regression coefficients [i.e. $(b_{xy} + b_{yx})/2$] Is ---------- the correlation coefficient r.

a) equal to
b) greater than
c) greater than or equal to
d) none
e)

If a constant 5 is subtracted from each of the variables X and Y then the regression coefficient is

a) reduced by 5
b) increased by 5
c) not changed
d) increased by 25

Given the following data

Variable	X	Y
Mean:	80	8
Variance:	4	9

Coefficient of correlation =0.6

What is the most likely value of y when x=90?

[Or Estimate the value of y when x=90]

a) 90 b) 103 c) 104 d) 17