DMM-3337
Second Year B. Sc. (Sem. IV) Examination
March/April - 2016
Statistics : Paper - VIII
(Old Course)

Time : 2 Hours
[Total Marks : 50]

Q-1

(1) If \( r_v = \frac{1}{4}, \mu(x) = 2,\mu(y) = 8 \) then \( COV(x,y) \) is.

(2) \( r = -1, 0, 1 \) are.

(3) \[
\begin{array}{c}
2 \\
6 \\
5 \\
\end{array}
\]

Q-2(a)

(i) \( K \) is.

(ii) \( V(x) = 3X + 4Y \) then \( V(x+ky) \) is.

(b) \( K \) is.

(i) \( V(U) = 3X + 4Y \) then \( V(V(U)) \) is.
ENGLISH VERSION

Instructions: (1) As per the Instruction No. 1 of Page No. 1.
(2) All questions are compulsory.
(3) Logarithmic tables and statistical tables will be supplied on request.
(4) Figures to the right indicate full marks of the question.
(5) Non programmable scientific calculator is allowed.

Q-1

Answer the following questions.

(1) If \( r_{xy} = \frac{1}{4}, \sigma(x) = 2, \sigma(y) = 8 \) then find \( COV(x, y) \).

(2) Define correlation coefficient.

(3)

\[
\begin{pmatrix}
2 & 1 \\
6 & 5 \\
\end{pmatrix}
\]

For this data find Yule’s coefficient of attributes.

(4) State characteristics of regression coefficient.
Q-2(a) Answer any one of the following questions.
   (i) Prove that value of correlation coefficient is not change when changing origin and scale.
   (ii) Interpret following values (i) r=1 (ii) r=-1 (iii) r=0 (iv) 0 < r < 1 (v) -1 < r < 0.

(b) Answer any two of the following.
   (i) If correlation coefficient is zero between U=3X+4Y and V=X+KY then find (i) value of k (ii) V(U) and (iii) V(V)
   (ii) If x and y are random variables with V(X)=V(Y)=\sigma^2 and \text{COV}(x,y)=\frac{\sigma^2}{2} then find r where U=2x+3 and V=2y-3
   (iii) If X_i and Y_i (i=1,2,......,n) are ranks between A and B if X_i= n+1 then find rank correlation coefficient.

Q-3(a) Answer any one of the following questions.
   (i) In usual notations obtain regression equation of y and x.
   (ii) Prove that regression coefficient are independent by changing origin but not independence by changing scale.

(b) Answer any two of the following.
   (i) Two regression lines are 8x-10y+66=0 and 40x-18y=214 then find r_o and \frac{\sigma_r}{\sigma_x}.
   (ii) If \tan \theta = 0.6 and \frac{\sigma_y}{\sigma_x} = 2 then find value of r
   (iii) Regression lines x + 2y = 5 and 2x + 3y = 8, if x=5 then find value of y and if y=2 then find value of x.

Q-4 Answer any two of the following.
   (i) Define attribute and explain the different type of association.
   (ii) Define Yule’s coefficient of association also state its characteristics and from following data find Yule’s coefficient of association
   \[ N = 200, (A) = 150, (AB) = 120, (A\bar{B}) = 10 \]
   (iii) Distinguish difference between correlations and association.