



F4 FM
OP3ABD

BUS. Stats
March 2016

Time: 2:30hrs

Max.Marks:75

Instructions:

- (1) All questions are compulsory.
- (2) Each question carries the same marks.
- (3) Only simple calculators are allowed.

Q1 (A) Attempt any eight sub-questions out of ten. (8)

- (i) Intersection point of both ogive curve gives _____.
- (ii) Write the formula of lower Quartile for continuous data.
- (iii) $Q_2 = M_d$, True or False.
- (iv) If r is negative then b_{yx} will be _____.
- (v) Write the formula of S.D. for continuous data.
- (vi) Write the formula of coefficient of Q.D.
- (vii) $r = -1$, indicates _____.
- (viii) Write the formula of rank correlation (non-repeated)
- (ix) Shade the line $3x + 12y \geq 36$.
- (x) Write the range of correlation coefficient

Q1 (B) Attempt any seven sub-questions out of ten. (7)

- (i) Write the formula of combined S.D.
- (ii) Write the normal equations of line y on x .
- (iii) $Q_1 = 10$, $Q_2 = 50$, $Q_3 = 90$, Q.D.
- (iv) If $n = 10$, $\sum fx = 40$, find mean.
- (v) Write the formula of C.V.
- (vi) Ogive curve is also called as _____.
- (vii) Write the three steps of formulation in LPP.
- (viii) Write the formula of b_{xy} .
- (ix) Modal class has maximum frequency (T/F).
- (x) Write the formula of r (any one).

Q2 (A) Draw an ogive for the following data. (5)

Age in years	10-14	14-18	18-22	22-26	26-30
No. of insurance policyholders	12	24	15	30	20

Hence locate: Median and the two quartiles.

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(B) The mean wage of 200 workers working in three shifts in a factory is Rs.520. The average of 90 workers working in the first shift is Rs. 500. The average of 60 workers working in the second shift is Rs. 450. What is the average of workers working in the third shift? (5)

(C) Find the coefficient of rank correlation from the following data giving the number of hours of daily practice and the number of minutes taken to run a track by 8 runners. (5)

No. of hours	3.5	1.7	2.4	2.5	1.5	3	2	2.25
No. of minutes	7	9.5	8	8.9	10	6	7.5	6.5

OR

Q2 (A) The arithmetic mean and the standard deviation of the values of 100 items in a group are 80 and 5 respectively. In a second group of 25 items, each item has a value equal to 60. Find the arithmetic mean and the standard deviation of the values of the 125 items of the two groups taken together. (7)

(B) The regression of y on x for certain bivariate data was found to be $10y=3x+155$ and that of x on y was $10x=7y+10$. Find x, y and r. (8)

Q3 (A) $\text{Min}(Z)=12x+42y$

Subject to: $x+2y \geq 3$

$x+4y \geq 4$

$3x+y \geq 3$

$x \geq 0, y \geq 0$

(5)

(B) Find Q.D. for the given data. (5)

C.I	10-12	12-14	14-16	16-18	18-20	20-22
F	3	6	9	12	4	3

(C) Calculate median and upper quartile for the given data: (5)

Income in Rs	500-1000	1000-1500	1500-2000	2000-2500	2500-3000
No. of persons	30	50	100	40	30

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OR

Q3 (A) Find the missing frequency if mean is 1.46 (5)

X	0	1	2	3	4	5
F	46	76	---	25	10	5

(B) Calculate mode for the given data: (5)

Amt. in Rs	400-600	600-800	800-1000	1000-1200	1200-1400	1400-1600
No. Of customer	5	10	30	25	20	10

(C) Following data gives the import and export of india, draw the multiple bar diagram. (5)

Year	Rs. In crores	
	Import	Export
1994-95	171	118
1995-96	197	110
1996-97	200	125
1997-98	223	157

Q4(A) Find both regression line for the given data, using least square method. (7)

X	0	1	2	3	4
Y	1	1.8	3.3	4.5	6.3

(B) A toy manufacturer produces scooters and bicycles, each of which must be processed through two machines A and B. machine A has a maximum of 120 hours available and machine B has a maximum of 180 hours available. Manufacturing a scooter requires 4 hours on machine A and 10 hours on machine B. Manufacturing a bicycle requires 6 hours on machine A and 3 hours on machine B. If profits are Rs. 700 for a bicycle and Rs. 800 for a scooter, formulate the L.P.P. to maximize the profit. (8)

OR

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Q4(A) Find coefficient of correlation given the following data. (5)

$$\sum x = 20, \sum y = 11.58, \sum x^2 = 90, \sum y^2 = 27.03, \sum xy = 47.13, n = 5.$$

(B) Find r. (5)

X	101	108	115	125	130
Y	110	115	120	120	125

(C) Find regression line Y on X. (5)

$$\sum(x - \bar{x})(y - \bar{y}) = 135, \sum(x - \bar{x})^2 = 96, \sum(y - \bar{y})^2 = 206, \sum x = 120, \sum y = 180, n = 5$$

Q5 (A) Write properties of Arithmetic mean. (7)

(B) Write the functions and limitations of statistics. (8)

OR

Q5 Attempt any three out of five. (15)

(A) Write in short on quartiles.

(B) Write in short on the properties of regression coefficient.

(C) Write in short on primary and secondary data.

(D) The sum of the upper and the lower quartiles is found to be 160 and their difference is 80. What is the value of the two quartiles?

(E) Write in short on stratified sampling and systematic sampling.