

Time: 2:30hrs

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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 questions out of ten. (8)

- (i) If two variables move in opposite direction then it shows _____ correlation.
- (ii) b_{xy} called as _____.
- (iii) If sign of b_{xy} is negative then sign of r will be _____.
- (iv) Geometric mean of $P_{01}(L)$ and $P_{01}(P)$ called as _____.
- (v) Write formula of upper quartile for group data with denotions.
- (vi) Vital statistics is very useful for insurance companies(TRUE/FALSE)
- (vii) For impossible event probability will be _____.
- (viii) Write the formula of expectation(probability distribution)
- (ix) Premium calculated per thousand(TRUE/FALSE)
- (x) Write the sample space if three coins are tossed.

Q1 (B) Attempt any seven question out of ten. (7)

- (i) Find the value of 7C_6 .
- (ii) In vital statistics rates represented by _____.
- (iii) Normal distribution is a _____ curve.
- (iv) If two events are mutually exclusive, $P(A \cap B)$ will be _____.
- (v) Intersection point of less than and more than ogive curve gives _____.
- (vi) A.M. of $P_{01}(L)$ and $P_{01}(P)$ called as _____.
- (vii) Write the formula of weighted price relative.
- (viii) Write the formula of coefficient of quartile deviation.
- (ix) Write the relationship between regression coeffi and correlation coeffi.
- (x) Write the formula of $P_{01}(M-E)$

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Q2 (A) The following data gives the distribution of wages of 70 workers. Draw a less than curve and locate median and the quartiles graphically. (5)

Weekly wages in Rs.	40-45	45-50	50-55	55-60	60-65	65-70	70-75
No. of workers (f)	5	9	15	13	11	12	5

(B) Find the missing frequency for the following data given that the mode of the distribution is 44. (5)

Age in years	0-20	20-30	30-40	40-50
No. of persons	10	10	-	50
Age in years	50-60	60-70	70-80	80-90
No. of persons	29	15	10	10

(C) Find the quartile deviation for the following data. (5)

Length of life in hours	No. of bulbs
500-700	5
700-900	15
900-1100	22
1100-1300	10
1300-1500	8

OR

Q2 (A) Find the missing frequency from the following data when arithmetic mean is given to be 38. (5)

Marks	10	20	30	40	50	60	70
No. of students	8	11	20	25	-	10	3

(B) 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. (5)

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(C) Average prices of rice and wheat per quintal for 5 years are given below. Find the coefficient of correlation. (5)

Price of rice (100 Rs.)	15	18	20	19	22
Price of wheat (100 Rs.)	9	10	11	11	12

Q3 (A)) The following table gives the prices of certain commodities in two different cities. Using the index number technique find which city is costlier.(5)

Commodity	Weight	Price per unit Rs.	
		City E	City F
A	5	15	18
B	8	20	25
C	10	8	12
D	12	10	13

(B) Mrs. shalini has taken an insurance policy of Rs. 100000 for which the tabulated premium rate is Rs.66.80 per thousand. The mode of payment chosen by the person is half-yearly, for which the company offer 1.5% reduction on the tabulated premium. The company also offers a reduction of Rs.2 in the premium per Rs.1000 sum assured, when the sum assured is Rs.50000 or more. Find the half-yearly premium amount. (5)

(C) For the following data Laspeyre's index number and paasche's index number are equal. Find x. (5)

Commodity	Price in Rs.		Quantity	
	Base year	Current year	Base year	Current year
	p_0	P_1	q_0	q_1
A	4	6	6	5
B	6	x	4	4

OR

Q3 (A) A box contains 4 blue, 5 black and 9 green marbles. If 3 marbles are drawn at random what is the probability that (i) two are blue & 1 black (ii) two are green & 1 black (iii) all the three are black (iv) 1 of each colour. (8)

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(B) A random variable x has following probability distribution. (7)

X	0	1	2	3	4	5
P(x)	k^2	K	2k	K	$3k^2$	K^2

Find k . hence find $E(x)$ and $V(x)$.

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

$\sum x=96, \sum y=84, \sum x^2=1128, \sum y^2=1380, \sum xy=312, n=12$

(B) Following data give time spent in studies everyday and percentage marks in an examination for 15 students. Find the regression line y on x . (5)

Average time in hours = 4, Average percentage = 80, standard deviation of time spent = 0.5, standard deviation of percentage = 7, coefficient of correlation = 0.55.

(C) Fill in the blanks in the following portion taken from a life table (5)

X	l_x	d_x	p_x	q_x	L_x	T_x	e_x^0
8	90,000	500	---	---	---	48,50,000	---
9	---	400	---	---	---	---	---

OR

Q4 (A) The two regression lines are given by the equation. (7)

$5x-6y+90=0$ and $15x-8y-130=0$.

Find the values of \bar{x}, \bar{y} and r .

(B) From the given information about l_x , the number of rabbits living at age x , Write down the life table. (8)

X	0	1	2	3	4	5	6
l_x	100	90	80	70	55	35	0

Q5 (A) Explain how statistics plays crucial role in business development. (8)

(B) Discuss the types of sampling. (7)

OR

Q5 Attempt any three question out of five. (15)

- (i) Write short note on index Nos.
- (ii) Define union of sets and intersection of sets with example.
- (iii) Write limitations of statistics.
- (iv) What is sampling? State the reasons for sampling.
- (v) Write in short on insurance.