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Instructions :   1)   All questions are compulsory
　　　　　　　　　2)   Simple calculators are allowed
　　　　　　　　　3)   Figures to the right indicate full marks.

Q.1　**a)**　**Define :-**　i)　Median for raw data, when total no.of observations, n, are even and when n is odd

　　　　　　　　ii)　Geometric mean for grouped data

　　　　　　　　iii)　Mode for grouped data.　　　　　　　　　　　　　**6**

　　b)　The following table gives the marks of students in two tests. Prepare bivariate frequency distribution table taking class intervals 5-10, 10-15,15-20,.... for both the variables　　　　　　　　　　　　　　　**6**

Marks in test I (X)				Marks in test II (Y)			
5,	15,	16,	14	17,	9,	24,	8·
14,	8,	14,	22 .	16,	13,	28,	9
9,	9,	27,	22	18,	27,	7,	6
22,	27,	6,	11	21,	14,	9,	21
6,	23,	12,	12	23,	6,	11,	18
7,	13,	13,	27	8,	7,	11,	16

Also write marginal frequency distributions of both the variables
Write conditional frequency distribution of X when Y lies between 10-15

　　c)　Consider following information　　　　　　　　　　　　　　**3**

Group I	Group II	Group III
$\bar{x}_1 = 170,$	$\bar{x}_2 = 190,$	$\bar{x}_3 = ?$
$n_1 = 10,$	$n_2 = 25,$	$n_3 = 15$

Combined mean is 189.

OR

Q.1　**a)**　If $Q_1 = 8.2,$　　　$Q_2 = 14.5,$　　　$Q_3 = 16$　　　　　　**4**
　　　　Find　i)　Inter quartile range
　　　　　　　ii)　Coefficient of quartile deviation

　　b)　Marks scored by 30 students are given below prepare frequency distribution table using stug's formula　　　　　　　　　　　**5**

55,	56,	62,	60,	50
54,	56,	61,	55,	55
60,	67,	61,	55,	56
62,	65,	63,	54,	66
51,	52,	68,	68,	66
53,	53,	70,	67,	70

c) Five candidates selected for final interview had the following Scores in written test, group discussion & Final selection. Find the best two candidates to be appointed   **6**

Candidate	Marks		
	Written test	G.D.	Final interview
A	80	90	60
B	75	70	65
C	72	70	55
D	73	60	50
E	85	65	70

Use weighted average given that weights for written test, G.D. and final interview are 4, 3, 2 respectively.

Q.2 a) Give merits and demerits of median   **4**

b) Find the missing frequency in the following distribution if median of the distribution is 44.   **6**

Age in years	No. of persons
25 - 30	8
30 - 35	10
35 - 40	24
40 - 45	30
45 - 50	--
50 - 55	20
55 - 60	14

c) The following data gives the time spent in travelling to work and back by 75 employees of a firm in Mumbai. Find the mode of the distribution.   **5**

Time (in hours)	No. of employees
2 - 4	15
4 - 6	30
6 - 8	25
8 - 10	5

OR

Q.2 a) **Define :**   **4**
  i)   Weighted mean
  ii) Mean deviation about 'a'

b) The following data gives the distribution of marks of some students.   **6**

Marks	No. of students
10 - 30	5
30 - 50	10
50 - 70	25
70 - 90	30
90 - 110	15
110-130	5

Find   (i) First quartile Q1
  (ii) Plot less than ogive curve
  (iii) Find Q1 graphically.

c) The age distribution of 50 persons is given below :-   **5**

Age in years	No. of persons
60-64	30
64-68	40
68-72	45
72-76	20
76-80	20
80-84	10

Find mean deviation about '70'.

Q.3 **a)** There are 6 books on statistics, 4 books on Economics & 5 books on Maths.   3
The books are to be arranged on a shelf so that the books on the same subject
should be togetier. Find the probability of this arrangement.

b) Consider following frequency distn.
Find variance & standard deviation   6

C - 7	Frequency.
20 - 24	3
24 - 28	5
28 - 32	10
32 - 36	4
36 - 40	3

c) Heights & weight of 10 children are given below-   6

Height (in cm) X :	120	125	127	130	134	144
Weight (in kg) Y :	42	45	48	45	50	49

Find pearson's correlation coefficient between X & Y.

OR

Q.3 **a)** A committee of 6 is to be formed from 8 boys and 7 girls. Find the probability
that the committee contains   6
i) 2 girls & 4 boys
ii) No boys
iii) One perticular boy

b) Calculate Pearson's correlation coefficient for the following   5

X :	5	7	11	15
Y :	12	18	20	28

c) Given the following regression equations, find $\bar{x}$, $\bar{y}$ & r_{xy}
$100y - 45x = 1400$
$4y - 5x = -200$ 4

Q.4 **a)** Find two regression lines equations given the following-   6
i) $n = 12$, $\sum X = 150$, $\sum Y = 100$,
$\sum X^2 = 1200$, $\sum Y^2 = 1400$, $\sum XY = 500$

b)   Calculate Pearson's coefficient of correlation for the following.   5

x :	10	11	15	12	14
y :	6	7	8	7	8

c)   The two regression lines between X and Y are given below.   4

Find $\bar{x}, \bar{y}$ and r_{xy}

$45y = 14x + 90$

$18y = 35x - 2744$

OR

Q.4 **a)**   Consider information regarding 2 groups of students as-   5

	Group I	Group II
No. of students	60	50
Average height (in cm)	135	150
Variance	25	16

Obtain i)   Combined average of the 2 groups
        ii)   Combined variance of the two groups taken together

b)   Find regression of y on x given the following data   6

$n = 12$, $\sum x = 12$, $\sum y = 180$

$\sum xy = 2400$

$\sum x^2 = 3600$

Estimate y when x = 11

c)   **Fill in the blanks**   4
i)   Slope of a line is _____
ii)   The equation of y-axis is_____
iii) Maximum value of correlation coefficient r_{xy} is _____
iv) Q2 is same as _____

✥✥