

- 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 6
 (ii) Geometric mean for grouped data.
 (iii) Variance of grouped data.
- b) The following data gives weekly income x (in Rs.) and expenditure Y (in Rs.) of a group of 20 workers expressed as (x,y) 6
 (37,34), (47,39), (44,37), (39,31)
 (33,31), (31,34), (41,38), (38,30)
 (46,41), (43,43), (49,36),
 (36,46), (32, 36), (38,34)
 (36,34), (34,32), (34,32)
 (43,41), (37,35), (48,47)
 Prepare a bivariate frequency distribution table taking class intervals 30-35, 35-40,... for both x and y .
 Also write marginal distributions of x & y write conditional distribution of y when x lies between 35-40.
- c) If there are 35 students in one group with average weight 58 kg. and 46 students in another group with average weight 60 kg, what will be combined average weight of students of both the groups taken together. 3

OR

- Q.1 a) Define : i) Sample space 4
 ii) Certain event
- b) The following distribution gives monthly salaries of 50 employees. 6
- | Salaries
(in '000 Rs.) | No. of
employees |
|---------------------------|---------------------|
| 10-15 | 12 |
| 15-20 | 13 |
| 20-25 | 10 |
| 25-30 | 6 |
| 30-35 | 5 |
| 35-40 | 4 |
- i) Calculate simple arithmetic mean of the above distribution.
 ii) Draw Histogram for the above distribution.
 iii) Draw more than ogive curve.

- c) Find the missing frequency in the following data where mean is 17.8. 5
- | Class-intervals | Frequency |
|-----------------|-----------|
| 4-8 | 5 |
| 8-12 | 8 |
| 12-16 | 12 |
| 16-20 | 8 |
| 20-24 | x |
| 24-28 | 3 |

- Q.2** a) Consider following frequency distribution

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

Find (i) quartiles Q_1 & Q_2 for this distribution.

5

- b) Find value of upper quartile Q_3 for the above example in Q.2 (a). 6
Also present all Q_1 , Q_2 & Q_3 graphically & obtain their values from graph also.

- c) Find standard deviation of the following distribution : 4

Sales (in' 000 Rs.)	No. of shops
20-24	4
24-28	6
28-32	10
32-36	3
36-40	2

OR

- Q.2** a) Define : i) Merits & demerits of Median 6
ii) Mean deviation about 'a' for grouped data.

- b) Find Q_1 & Q_3 for the following data giving monthly expenditures of some families : 6

Expenditure (in' 000 Rs.)	No. of families
10-16	12
16-22	18
22-28	21
28-34	12
34-40	7

- c) Calculate : i) Quartile deviation 3

ii) Coefficient of quartile deviation for the above data in Q.2 (b)

Q. 3 a) A committee of 5 is to be formed from 7 boys and 6 girls. Find the probability that the committee contains. 6

- i) only girls
- ii) at least one boy

b) I.Q. of some students (x) and their average marks in a class test are given below. Obtain correlation coefficient between these x and y. 6

I. Q. (x) : 87 90 85 65 72

Marks (y) : 52 58 50 47 43

comment on the result.

c) The two regression lines between variables x and y are given below : 3

Find x, y

$$2y - 6x = 34$$

$$-4y + 7x = 8$$

OR

Q.3 a) 2 cards are drawn from a pack of 52 playing cards. Find probability that. 6

- i) Cards drawn are both black.
- ii) One ace and one king card.

b) Define : 5

- i) Correlation coefficient between two variables x & Y
- ii) Find correlation coefficient x & y between two variables x & y with the following information.

$$n = 20, \quad \sum x = 100, \quad \sum y = 150$$

$$\sum xy = 1400,$$

$$\delta x = 50, \quad \delta y = 300$$

c) There are two groups of teachers - Junior teachers and senior teachers. Their average monthly salaries and its variance values are given below 4

	Junior teacher	Senior teachers
No. of teachers	22	25
Average	11,000	16,000
variance	315	205

Find combined variance of salaries of both the groups of teachers taken together.

Q.4 a) Following data gives the profits of a company for last 10 years.

Calculate 2-yearly moving averages

5

Year	Profits
1991	1450
1992	1600
1993	1800
1994	1825
1995	1880
1996	1975
1997	2100
1998	2250
1999	2320
2000	2450

b) Find geometric mean of the following data

5

x_i :	21	25	32	40
f_i :	2	4	3	3

c) **Fill in the blanks :**

5

- If there are 3 observations 18, 14, 20 with the corresponding weights 2, 3, 1 then, their weighted average is _____.
- Mean deviation is minimum about _____.
- Maximum value of correlation coefficient between 2 variables x & y is _____.
- Range of any data is = _____.
- There is _____ % of data below Q_3 .

OR

Q.4 a) There are 20 tickets numbered from 1 to 20. One ticket is drawn of random from these 20 tickets. Write down sample points for the following events.

6

- A = Getting even number
- B = Getting multiple of 2 and 3.
- C = Getting multiple of 5
- $A \cup B$
- $A \cap B$
- $B \cap C$

b) Determine mode of the following distribution graphically.

4

Height (in cm)	No. of children
100-110	6
110-120	2
120-130	5
130-140	11
140-150	6
150-160	5

c) **Fill in the blanks :**

5

- Stug's formula is _____.
- If both the class-limits are included in the same class-interval, it is called as _____ class intervals.
- Quartiles are determined graphically from _____.
- If Arithmetic mean of 10 observations is 12.5 then total of all the observations is _____.
- Coefficient of variation is _____.

