

Chapter - 23

Data handling - I

(Classification and tabulation of data)

Exercise 23.1

Q.1 Define the following terms:

- (i) observations
- (ii) Raw data
- (iii) Frequency of an observation
- (iv) Frequency distribution.
- (v) Discrete frequency distribution.
- (vi) Grouped frequency distribution.
- (vii) class - Interval
- (viii) class - size
- (ix) class limits
- (x) True class limits.

Sol (i) Observations: observation is the value at a particular period of a particular variable.

(ii) Raw data: Raw data means unarranged data.

(iii) Frequency of an observation: Number of times a particular value occurs in a data.

(iv) Frequency distribution: Frequency distribution is the arrangement of raw data in table form with class and frequencies.

(v) Discrete frequency distribution: It is a freq. ⁽²⁾ distribution where sufficiently great numbers are grouped into one class.

(vi) Grouped frequency distribution: It is a frequency distribution where several numbers are grouped into one class.

(vii) Class-Interval: It is a group under which large numbers of data is grouped to analyse its range and distribution.

(viii) Class-Size: difference between upper and lower class limits.

(ix) Class limits: Class limits are the smallest and the largest observations in a class.

(x) True class limits: These are actual class limits.

Q.2 The final marks in mathematics of 30 students are as follows:

53, 61, 48, 60, 78, 68, 55, 100, 67, 90, 75, 88, 77, 37, 84,
58, 60, 48, 62, 56, 44, 58, 52, 64, 98, 59, 70, 39, 50, 60

(i) Arrange these marks in ascending order, 30 to 39 one group, 40 to 49 second group etc.

Now answer the following

- (i) What is highest score?
- (ii) What is lowest score?
- (iv) What is the range?
- (v) If 40 is the pass mark how many have failed?
- (vi) How many have scored 75 or more?
- (vi) Which observation between 50 and 60 have not actually appeared?
- (vii) Which observations between 50 and 60 have not actually appeared?
- (viii) How many have scored less than 50?

Solution:

(i)	Groups	Marks in ascending order
	30-39	37, 39
	40-49	44, 48, 48
	50-59	50, 52, 53, 55, 56, 58, 58, 59
	60-69	60, 60, 60, 61, 62, 64, 67, 68
	70-79	70, 75, 77, 78
	80-89	84, 88
	90-99	90, 98
	100-109	100

- (ii) The highest score is 100
- (iii) The lowest score is 37.
- (iv) Range = $100 - 37 = 63$
- (v) If 40 is passing mark, then number of students who failed 2 (i.e. 37, 39)
- (vi) The no. of students scoring 75 and above is 8
- (vii) Marks 51, 54 and 57 do not actually appear between 50 and 60
- (viii) No. of students scoring less than 50 is 5.

Q.3 The weights of new born babies (in kg) in a hospital on a particular day are as follows:

2.3, 2.2, 2.1, 2.7, 2.6, 3.0, 2.5, 2.9, 2.8, 3.1, 2.5, 2.8, 2.7, 2.9
2.4

- (i) Rearrange the weights in descending order
- (ii) Determine the highest weight.
- (iii) Determine the lowest weight.
- (iv) Determine the range.
- (v) How many babies were born on that day?
- (vi) How many babies weigh below 2.5 kg?
- (vii) How many babies weigh more than 2.8 kg?
- (viii) How many babies weigh 2.8 kg?

Sol: (i) descending order of weight:

3.1, 3.0, 2.9, 2.9, 2.8, 2.8, 2.7, 2.7, 2.6, 2.5, 2.4, 2.4, 2.3, 2.2, 2.1

(ii) highest weight = 3.1 kg

(iii) The lowest weight = 2.1 kg

(iv) The range = $3.1 - 2.1 = 1$ kg

(v) The number of babies born on that day = 15

(vi) No. of babies whose weights are below 2.5 kg is 4
(i.e. 2.4, 2.3, 2.2, 2.1)

(vii) The number of babies whose weights are more than 2.8 kg is 4.

(viii) The no. of babies whose weight is 2.8 kg is 2.

Q.4 Following data gives the number of children in 40 families.

1, 2, 6, 5, 1, 5, 1, 3, 2, 6, 2, 3, 4, 2, 0, 0, 4, 4, 3, 2, 2, 0, 0, 1, 2, 2, 4, 3, 2, 1, 0, 5, 1, 2, 4, 3, 4, 1, 6, 2, 2.

Represent it in the form of frequency distribution.

Children	0	1	2	3	4	5	6
No. of families	5	7	12	5	6	3	3

Q.5 Prepare a frequency table of the following scores obtained by 50 students in a test. 6

42, 51, 21, 42, 37, 37, 42, 49, 38, 52, 7, 33, 17, 44, 39, 7, 14, 27, 39, 42, 42, 62, 37, 39, 67, 51, 53, 53, 59, 41, 29, 38, 27, 31, 54, 19, 53, 51, 22, 61, 42, 39, 59, 47, 33, 34, 16, 37, 57, 43.

Sol :

Marks	No. of Students	Marks	No. of Students
7	2	41	1
14	1	42	6
16	1	43	1
17	1	44	1
19	1	47	1
21	1	49	1
22	1	51	3
27	2	52	1
29	1	53	3
31	1	54	1
33	2	57	1
34	1	59	2
37	4	61	1
38	2	62	1
39	4	67	1

Q.6 A die was thrown 25 times and following ⑦
scores were obtained.

Sol: 1, 5, 2, 4, 3, 6, 1, 4, 2, 5, 1, 6, 2,
6, 3, 5, 4, 1, 3, 2, 3, 6, 1, 5, 2

Prepare a frequency table of the scores.

Sol:

Score	1	2	3	4	5	6
Number of times	5	5	4	3	4	4

Q.7 In a study of number of accidents per day, the observations for 30 days were obtained as follows:

6, 3, 5, 6, 4, 3, 2, 5, 4, 2, 4, 2, 1, 2, 2,
0, 5, 4, 6, 1, 6, 0, 5, 3, 6, 1, 5, 5, 2, 6

Prepare a frequency distribution table.

Sol:

Number of accidents	0	1	2	3	4	5	6
Number of days	2	3	6	3	4	6	6

Q.8 Prepare a frequency table of the following ages
(in years) of 30 students of class VIII in your school.

13, 14, 13, 12, 14, 13, 14, 15, 13, 14, 13, 14, 16, 12, 14, 13,
14, 15, 16, 13, 14, 13, 12, 17, 13, 12, 13, 13, 13, 14

(8)

<u>Sol:</u> Ages (yrs):	12	13	14	15	16	17
No. of students:	4	13	8	2	2	1

Q.9 Following figure relate to the weekly wages (in Rs) of 15 workers in a factory:
 300, 250, 200, 250, 200, 150, 350, 200, 250, 200, 150, 300, 150, 200, 250

Prepare a frequency table.

- (i) What is the range in wages
- (ii) How many workers are getting Rs 350?
- (iii) How many workers are getting the minimum wages.

Sol:

Weekly wages (Rs).	150	200	250	300	350
No. of workers:	3	5	4	2	1

- (i) Range = $350 - 150$
 $= \text{Rs } 200$
- (ii) only 1 worker getting Rs 350
- (iii) 3 workers getting minimum wages i.e Rs 150.

(9)

Q.10 Construct a frequency distribution table for the following marks obtained by 25 students in a history Test in class VIII of a school.

9, 17, 12, 20, 9, 18, 25, 17, 19, 9, 12, 9, 12, 18, 17, 19, 20, 25, 9, 12, 17, 19, 19, 20, 9

- (i) What is the range of marks?
(ii) What is the highest mark?
(iii) Which mark is occurring more frequently?

Sol:

Marks:	9	12	17	18	19	20	25
No. of students :	6	4	4	2	4	3	2

(i) Range : highest mark - lowest mark
$$= 25 - 9$$
$$= 16$$

(ii) highest mark = 25

(iii) 9 Marks.