

1)

Q.1 A)

- 1) False, Column headings are called as captions.
- 2) False, A and B are independent if  $(AB) = (A)(B)/N$ .
- 3) False, Median can be determined graphically using ogives.
- 4) False,  $b = 1 + 3.332 \log N$ .
- 5) False, Range is affected by the extreme values.

B)

1) Availability, Accuracy, Relevance, Sufficiency, May be outdated etc.

~~Classification leads to tabulation~~

~~Merits (Any One) - Simplification of data, easy to detect vital omissions, easy to present in the form of graphs, locating a particular information is easy etc.~~

~~Demerits (Any One) - Time consuming, Needs expertise, lack of description etc.~~

~~Relationship between  $(AB)$  and  $(AB)/N$  : positive & negative association~~

~~$R = \frac{2xy}{x^2 + y^2}$~~

2)  $(AB) = (A)(B)/N$ .

3) Merits of Median

Demerits of Median

4) Freq. polygon

- 1) joined by straight lines
- 2) starts and ends on points on x-axis  
(endpoints are added with y co-ord. rate 0)

Freq. Curve

- 1) joined using smooth curve
- 2) Need not start or end on x-axis.

5) Skewness is deviation from symmetry.

$S_{kp} = \frac{3(\text{Mean} - \text{Median})}{\sigma}$

Q.2-1) Methods of Primary data collection:

- i) Direct personal observations
- ii) Indirect oral interviews
- iii) Mailed questionnaire
- iv) scheduled method
- v) From local agents etc.

2) Classification leads to tabulation

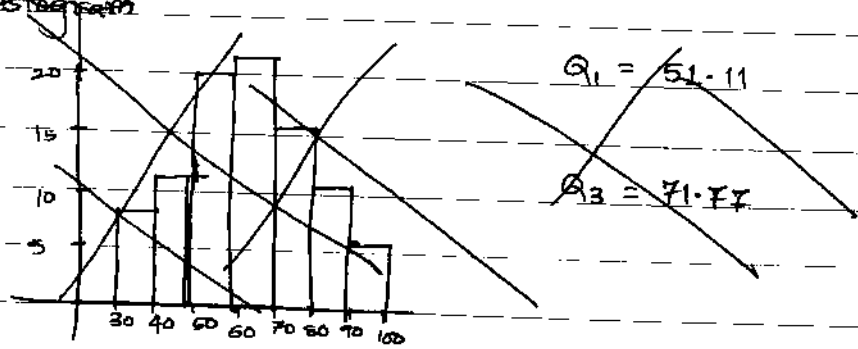
Merits of tabulation - simplification of data, easy to detect vital omissions, helpful in graphical presentation, locating particular info. is easy etc.

Demerits - Time consuming, Needs expertise, lack of description etc.

3) Association of attributes: Relationship between (AB) and (A)(B)/N.

Derive  $Q = \frac{2y}{1+y^2}$

1) Histogram



4) consistent & negatively associated.

3.3

1) Bivariate freq. distribution - When two attributes to be studied simultaneously.

Two way table, ~~consisting of~~

if  $x$  is in rows &  $y$  is in columns then

total col<sup>n</sup> to extreme right is marginal freq. for  $x$

& total ~~row~~ row to the bottom is marginal freq. for  $y$ .

Example.

2) Calculation of Mode for grouped data:

Formula: 
$$\text{Mode} = l_1 + (l_2 - l_1) \left( \frac{d_1}{d_1 + d_2} \right)$$

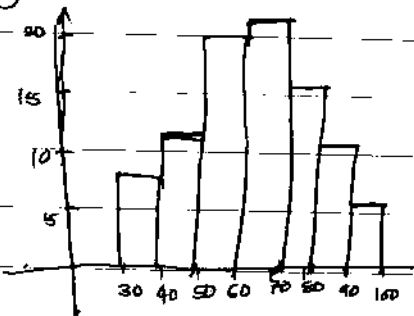
Example.

3) Harmonic mean:

Merits: Rigidly defined, based upon all the values, capable of further mathematical treatment, not much affected by sampling fluctuations etc.

Demerits: Not easy to understand & calculate, cannot be calculated if any obs. is missing, affected by extreme values, cannot be located graphically etc.

4) Histogram



$$Q_1 = 51.11$$

$$Q_3 = 71.77$$



5

5

Q.5 1) Secondary data:

parameters of evaluation: Accuracy, Relevance, Availability & sufficiency

2)  $183 \leq (BC) \leq 1300$

3) A.M. =  $\frac{\sum_{i=1}^n x_i}{n}$  (for ungrouped)

=  $\frac{\sum_{i=1}^n f_i x_i}{N}$  (for grouped)

combined mean ( $\bar{x}$ ) =  $\frac{n_1 \bar{x}_1 + n_2 \bar{x}_2}{n_1 + n_2}$  (derivation)

4) Ogives - Procedure

<cf - Plot (upper class boundary, cf <)

≥cf - Plot (lower class boundary, cf ≥)

Join by smooth curve. X-co-ordinate of point of intersection is median

5) ~~Q<sub>1</sub> = 30.6863~~  $Q_1 = 30.6863$ ,  $Q_3 = 40.0952$

$P_{59} = 30.9867$ .

6) Coeff. of Range =  $\frac{UL - LL}{UL + LL}$

Merits:

Demerits:

7) 5-point summary, IQR, whiskers etc. Outliers, Hinges etc.

