$\frac{}{4}$ $\frac{}{4}$ $= -0.094.$

2·5·4. Link Relative Method. This method, also known as Pearson's method, is based on averaging the link relatives. Link relative is the value of one season expressed as a percentage of the value of the preceding season. Here, the word 'season' refers to time period; it would mean month for monthly data, quarter for quarterly data, etc. Thus, for monthly data :

$$\text{Link relative for any month} = \frac{\text{Current month's value}}{\text{Previous month's value}} \times 100 \qquad \ldots(2\cdot40)$$

The steps involved in this method may be summed up as follows :

(*i*) Convert the original data into link relatives (L.R.) by the formula in (2·40).

(*ii*) As in the case of 'ratio to trend' method, average the link relatives for each month (quarter) of the data are monthly (quarterly). Mean or median may be used for averaging.

(*iii*) Convert the average (Mean or Medan) link relatives into chain relatives on the base of the first season. Chain relative (*C.R.*) for any season is obtained on multiplying the link relative of that season by the chain relative of the preceding season and dividing by 100, *i.e.*,

$$\text{C.R. for any season} = \frac{(\text{L.R. of that season}) \times (\text{C. R. of preceding season})}{100} \quad \ldots (2\cdot40_a)$$

C.R. for first season is taken as 100.

Thus for monthly data, the chain relative for first season (month), *i.e.*, for January, is taken to be 100.

$$C.R. \text{ for February} = \frac{L.R. \text{ of Feb.} \times C.R. \text{ of Jan.}}{100} = L.R. \text{ of Feb.} \qquad (\because C.R. \text{ of Jan} = 100)$$

$$C.R. \text{ for March} = \frac{L.R. \text{ of March} \times C.R. \text{ for Feb.}}{100}$$

$$C.R. \text{ for December} = \frac{L.R. \text{ of Dec.} \times C.R. \text{ for Nov.}}{100}$$

Now, by taking this December value as a base, a new chain relative for January can be obtained as :

$$\text{New C.R. for January} = \frac{L.R. \text{ of January} \times C.R. \text{ for December}}{100} \quad \ldots (2\cdot40_b)$$

Usually, this will not be 100 due to trend and so we have to adjust the chain relatives for trend.

(*iv*) This adjustment is done by substracting a '*correction factor*' from each chain relative If we write :

$$d = \frac{1}{12}[\text{Second (New) } C.R. \text{ for January} - 100] \quad \ldots (2\cdot41)$$

then, assuming linear trend, the correction factor for February, March, ..., December is d, $2d$, ..., $11d$ respectively.

(*v*) Finally, adjust the corrected chain relatives to total 1,200 by expressing the corrected chain relatives as percentages of their arithmetic mean. The resultant gives the adjusted monthly indices of seasonal variations.

Merits and Demerits. (*i*) The link relatives averaged together contain both the trend and cyclic components. Although the trend is subsequently eliminated by applying correction, the method is effective only if the growth is of constant amount or constant rate, *i.e.*, if the assumption of linear trend is valid.

(*ii*) Though not so simple as the moving average method, or so readily adaptable as others to the construction of some or more complex types of seasonal movements, the actual computations of the link relative method are much less extensive.

(*iii*) This method utilises data more completely than moving average method as there is loss of only one link relative, *i.e.*, for the first season, while in case of moving average method, we are deprived of some of the values (trend and seasonal) in the beginning and at the end

Example 2·19. *Compute the seasonal indices by the 'Link Relatives' method for the adjoining data relating to the average quarterly prices (Rs. per kg.) of a commodity for five years :*

Year / Quarter	1996	1997	1998	1999	2000
I	30	35	31	31	34
II	26	28	29	31	36
III	22	22	28	25	26
IV	36	36	32	35	33