

Chapter # 5:**Index Number****1. Define price index number.**

Ans: Price index number is a number that measures overall relative change in price of one or more commodities at a current period with respect to a standard base period. Consumer price index is an example of price index.

2. Define index number.

Ans: It is statistical tool which measures the relative change in a commodity or in a group of commodities with respect to time or locations

3. Give any two uses of index numbers.

Ans:

- 1- Index numbers are used for the comparison of prices.
- 2- Index numbers are used for forecasting.
- 3- Index numbers are used to measure the buying power of the money.

4. Define base period.

Ans: The period in which prices are compared with other period's price is called base period or reference period. Base period must be normal period without any irregular events like floods, strikes and wars etc.

There are two methods of selecting the base period:

- 1- Fixed base method
- 2- Chain base method

5. Define link relative.

Ans: Link relative is the percentage of ratio of the current year price and the preceding year price. In this case the base is not fixed. It is given by;

$$\text{Link Relative} = \frac{P_n}{P_{n-1}} \times 100$$

Where P_n is the price in a given year and P_{n-1} is the price in the preceding year.

6. Define composite index number

Ans: **Composite Index numbers:** An index number is called a composite (aggregate) index number when it measures a relative change in two or more variables with respect to a base year.

For example index numbers for comparing two sets of prices from a wide variety of commodities, index numbers for comparing two sets of quantities from a wide variety of commodities.

7. Define price relative.

Ans: Price relative is the percentage of ratio of the current year price and the base year price.

8. Define un-weighted index number.

Ans: An index number that measures the change in prices of a group of commodities when the relative importance of commodities is not taken into account is called un-weighted index number.

9. What is the relationship between Laspeyre's, Paasche's and Fisher's ideal index number?

Ans: Fisher's ideal index number is the geometric mean of Laspeyre's and Paasche's index number.

10. Given $\sum P_0 = 2550$ and $\sum P_n = 2590$. Find price index number using simple aggregative method.

Ans: By formula;

Simple aggregate price index number:



$$P_{on} = \frac{\sum p_n}{\sum p_o} \times 100$$

$$P_{on} = 101.5686 \quad \text{Ans.}$$

11. Given $\sum p_0 q_n = 1000$ and $\sum p_n q_n = 1360$, find current year weighted index.

Ans: By formula Paasche's index number (Current year weighted index):

Paasche's Index Number:

$$P_{on} = \frac{\sum P_n q_n}{\sum P_o q_n} \times 100$$

$$P_{on} = 136 \quad \text{Ans.}$$

12. Given $\sum p_0 q_0 = 850$, $\sum p_n q_0 = 1170$. Find Laspeyre's price index number.

Ans: By formula Laspeyre's index number (base year weighted index):

Laspeyre's index number (Aggregative Expenditure Method):

$$P_{on} = \frac{\sum P_n q_0}{\sum P_o q_0} \times 100$$

$$P_{on} = 137.65 \quad \text{Ans.}$$

13. If $\sum p_1 q_1 = 480$, $\sum p_0 q_1 = 410$, find current year weighted index number?

Ans: By formula Paasche's index number (Current year weighted index):

Paasche's Index Number:

$$P_{on} = \frac{\sum P_1 q_1}{\sum P_o q_1} \times 100$$

$$P_{on} = 117.07 \quad \text{Ans.}$$

14. If $\sum p_0 q_0 = 322$; $\sum p_1 q_0 = 340$; $\sum p_1 q_1 = 362$ and $\sum p_0 q_1 = 326$, find Fisher's price index number?

Ans: By the given formula;

Fisher's Index Number:

$$P_{on} = \sqrt{\text{Laspeyre} \times \text{Paasche}}$$

$$P_{on} = \sqrt{\left(\frac{\sum P_1 q_0}{\sum P_0 q_0} \times 100\right) \left(\frac{\sum P_1 q_1}{\sum P_0 q_1} \times 100\right)}$$

$$P_{on} = 114.104 \quad \text{Ans.}$$

15. Which averages are used in index numbers? Name any two.

Ans: Mean and Median

16. Define consumer price index number.

Ans: This index number measures the changes in the cost of living. By cost of living, we mean the cost of goods and services like food, rent, clothing, fuel and light, education, washing, etc. which are used and purchased by particular class of people.

17. Differentiate between fixed base and chain base method.

Ans:

Fixed base method: In fixed base method, the average price of a particular year or the average of the prices of a number of years is used as base.

Chain base method: In chain base method, the price of preceding year is taken as base.

18. Given Laspayre's price index number = 120 and Paasche's price index number = 119.6, then find Fisher's index number.

Ans: By formula;

Fisher's Index Number:

$$P_{on} = \sqrt{\text{Laspeyre} \times \text{Paasche}}$$

$$P_{on} = 119.78 \quad \text{Ans.}$$

19. If Paasche's index number is 105.72 and Laspeyre's index number is 107.22, then find Fisher's index number?

Ans: By formula;

Fisher's Index Number:

$$P_{on} = \sqrt{\text{Laspeyre} \times \text{Paasche}}$$

$$P_{on} = 106.47 \quad \text{Ans.}$$

20. Given $\sum w = 20$, $\sum wI = 1800$. Find the cost of living index number by weighted average of relatives method.

Ans: By using weighted index number;

$$P_{on} = \frac{\sum WI}{\sum W}$$

$$P_{on} = 90 \quad \text{Ans.}$$

21. Define simple and composite index numbers.

Ans: **Simple Index Number:** Simple index number measures relative change in price or quantity or volume of one commodity at a current period or place with respect to base period.

For example: An index studying change in price of wheat over the last five years.

Composite Index numbers: An index number is called a composite (aggregate) index number when it measures a relative change in two or more variables with respect to a base year.

For example index numbers for comparing two sets of prices from a wide variety of commodities, index numbers for comparing two sets of quantities from a wide variety of commodities.

22. Define paasche's index numbers.

Ans: The index uses the current or given year quantities as weights. For this reason it is called current year weighted index. It is defined as mathematically:

$$P_{on} = \frac{\sum P_n q_n}{\sum P_o q_n} \times 100$$

23. Given $\sum p_0 = 660$, $\sum p_1 = 924$ and $\sum p_2 = 1056$, then compute simple aggregative price index number.

Ans: By using simple aggregative price index;

$$P_{o1} = \frac{\sum P_1}{\sum P_o} \times 100$$

$$P_{o1} = 140 \quad \text{Ans.}$$

$$P_{o2} = \frac{\sum P_2}{\sum P_o} \times 100$$

$$P_{o2} = 160 \quad \text{Ans.}$$

24. Given $\sum p_1 q_o = 1250$ and $\sum p_o q_o = 1200$, find base year weighted index number.

Ans: By using Laspayre's index number;

$$P_{o1} = \frac{\sum P_1 q_o}{\sum P_o q_o} \times 100$$

$$P_{o1} = 104.167 \quad \text{Ans.}$$

25. Define weighted index number.

Ans: An index number that measures the change in prices of a group of commodities when the relative importance of commodities has been taken into account is called weighted index number.

26. Write down two advantages of chain base method.

Ans:

Advantages of chain base method:

- 1- Link relative are useful to make year to year comparison.
- 2- Changes in the geographical coverage can be accommodating.
- 3- New items can be substitute for old items provided the number of items remains the same.

27. Find C.P.I. if $\sum w = 70$, $\sum wI = 800$

Ans: By family budget:

$$P_{on} = \frac{\sum WI}{\sum W}$$

$$P_{on} = 11.42857 \quad \text{Ans.}$$

28. Why fisher index number is called ideal?

Ans: Fisher's ideal index satisfies both the time reversal and factor reversal tests.

29. What are limitations of index numbers?

Ans:

Limitations of index number:

- 1- It is not possible to take into account all changes in product.
- 2- There may be errors in the choice of base periods.
- 3- These are simply rough indications of the relative changes.

30. Define whole price index.

Ans: An index number that is designed to measure changes in the goods and services produced in different sectors of the economy and traded in wholesale markets is called the wholesale price index number.

31. Write down some names of consumer items, considered in CPI?

Ans:

- a) Wheat
- b) Rice Basmati
- c) Sugar
- d) Gram pulse
- e) Cooling Oil
- f) Potatoes
- g) Bath soap
- h) Electricity charges

32. What is a market basket?

Ans: The goods and the services are called the market basket. It consists of food, house rent, clothing, fuel and light, education and miscellaneous items.

