Chapter 8: Index numbers

1. **Meaning**: Index numbers is a statistical tool for measuring relative change in a group of related variables over two or more different times.
2. **Features of an Index Number**
   a. They are expressed in percentages.
   b. They are special types of averages.
   c. They measure the effect of change over a period of time.
3. **Problems in construction of Index Numbers**
   a. Defining the purpose of index numbers
   b. Selection of items
   c. Selection of base period
   d. Selection of prices
   e. Selection of weights
   f. Choice of an average
   g. Choice of the formulae
4. **Price index are of two types**
   a. Simple Index Number
   b. Weighted price Index numbers
5. **Construction of simple Index Numbers:-**
   There are two methods
   a. Simple aggregate Method

$$P_{01} = \frac{\sum P_1}{\sum P_0} \times 100$$

   b. Simple Average of price relative method

$$P_{01} = \frac{\sum (P_1 / P_0 \times 100)}{N}$$

6. **Weighted Index Numbers**
   There are two methods:-
   a. Weighted Aggregate method:- In this method commodities are assigned weights on the basis of quantities purchased.

$$P_{01} = \frac{\sum P_1 Q_0}{\sum P_0 Q_0}$$ (Base year quantities as weight)

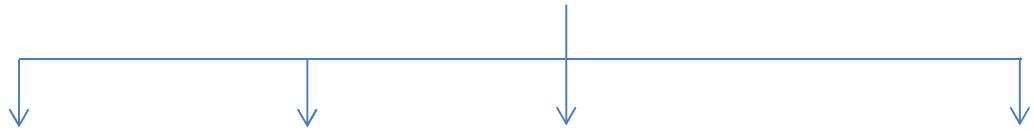
   b. Weighted Average of Price Relative Method:-
   Under this method commodities are assigned weight or the basis of base's year value ($W = P_0 Q_0$) or fixed weights (W) are used.

$$P_{01} = \frac{\sum RW}{\sum W}$$

Where $R = \frac{P_1}{P_0} \times 100$

W = value in the base year ($P_0 Q_0$) or fixed weights

7. Types of Index Numbers



Consumer Price Index (CPI) | Whole Sale Price Index (WPI) | Index of Industrial Production (IIP) | SENSEX

a. **Consumer Price Index:- (CPI)** The methods of constructing CPI are

- **Aggregate Expenditure Method** = $P_{01} = \frac{\sum P_1 Q_0}{\sum P_0 Q_0} \times 100$

- **Family Budget Method** $P_{01} = \frac{\sum RW}{\sum W}$

Where $R = \frac{P_1}{P_0} \times 100$

$W = P_0 Q_0$ or fixed weights

8. Uses of Consumer Price Index:- (CPI)

a. It is used in calculating purchasing power of money
b. It is used for grant of Dearness Allowance.
c. It is used by government for framing wage policy, price policy etc.
d. CPI is used as price deflator of income
e. CPI is used as indicator of price movements in retail market.

9. Wholesale Price Index (WPI):-

a. It measures the relative change in the price of commodities traded in wholesale market.
b. It indicates the change in the general price level.
c. It does not include services

Uses of WPI

a. Basis of Dearness Allowance
b. Indicator of changes in economy
c. Measures the rate of inflation

10. Index Number of Industrial Production (IIP)

It indicates the changes in level of Industrial production or a percentage change in physical volume of output of commodities in following industries

a. Mining
b. Quarrying
c. Manufacturing
d. Electricity etc.,

Formula IIP= $\sum (q_1/q_0) \cdot W$

$$\frac{\sum W}{}$$

W = relative importance of different output.

q_0 = Base year quantity.

q_1= Current Year Quantity.

11. Uses of Index Numbers.

a. Helps us to measure changes in price level
b. Help us to know changes in cost of living
c. Help government in adjustment of salaries and allowances
d. Useful to Business Community
e. Information to Politicians
f. Information regarding foreign trade

12. SENSEX

SENSEX is the short form of Stock Exchange Sensitive Index with 1978-79 as base. It is a useful guide for the investors in the stock market. It deals with 30 stocks represented by 13 sectors of the economy.

Questions:-

1. What is an Index Number?
2. What is a Base Year?
3. What is SENSEX?
4. Mention any three problems in the construction of Index Numbers
5. Calculate weighted average of price relative index from the following data

Items	Weight in % (Rs.)	Base year price (Rs.)	Current year Price (Rs.)
A	40	2	4
B	30	5	6
C	20	4	5
D	10	2	3