

5 MARKS

INDEX NUMBERS

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INDEX NUMBERS

- **Index numbers are convenient devices for measuring relative changes of differences from time to time or from place to place**
- **An index number is a ratio of two or more time periods , one of which is the base time period. The value at the base time period serves as the standard point of comparison.**
- **Example:** NSE, BSE, WPI, CPI etc.

IMPORTANT ISSUES IN INDEX CREATION

- ***Selection of data:*** It is important to understand the purpose for which the index is used. If it is used for purposes of knowing the cost of living, there is no need of including the prices of capital goods which do not directly influence the living.
- Index numbers are often constructed from the sample. It is necessary to ensure that it is representative. Random sampling, and if need be, a stratified random sampling can ensure this.
- It is also necessary to ensure comparability of data.

IMPORTANT ISSUES IN INDEX CREATION

- ***Base Period:*** It is a point of reference in comparing various data.
- The period should be normal i.e., one of the relative stability, not affected by extraordinary events like war, famine, etc.
- It should be relatively recent because we are more concerned with the changes with reference to the present and not with the distant past.

IMPORTANT ISSUES IN INDEX CREATION

- ***Selection of Weights:*** It is necessary to point out that each variable involved in composite index should have a reasonable influence on the index, i.e., due consideration should be given to the relative importance of each variable which relates to the purpose for which the index is to be used.
- For example, in the computation of cost of living index, sugar cannot be given the same importance as the cereals.

IMPORTANT ISSUES IN INDEX CREATION

- ***Use of Averages:*** Since we have to arrive at a single index number summarising a large amount of information, it is easy to realise that average plays an important role in computing index numbers.
- The geometric mean is better in averaging relatives, but for most of the indices arithmetic mean is used because of its simplicity.

TYPES OF Index Numbers

Price Index Numbers

**Quantity Index
Numbers**

**Value Index
Numbers**



INDEX NUMBERS



INDEX TIME SERIES

- **An index time series is a list of index numbers for two or more periods of time, where each index number employs the same base year.**

- **Relatives are derived because absolute numbers measured in some appropriate unit, are often of little importance and meaningless in themselves.**

RELATIVES

PRICE RELATIVES

$$\text{Price relative} = \frac{P_n}{P_o}$$

QUANTITY RELATIVES

$$\text{Quantity relative} = \frac{Q_n}{Q_o}$$

VALUE RELATIVES

$$\text{Value relative} = \frac{V_n}{V_o} = \frac{P_n Q_n}{P_o Q_o} = \left(\frac{P_n}{P_o} \times \frac{Q_n}{Q_o} \right)$$

For individual commodity

Que. 15 If the prices of all commodities in a place have increased 1.25 times in comparison to the base period, the index number of prices of that place now is

- (a) 125
- (b) 150
- (c) 225
- (d) None of these.

Que. 16 If the index number of prices at a place in 1994 is 250 with 1984 as base year, then the prices have increased on average by

(a) 250%

(b) 150%

(c) 350%

(d) None of these.

Que. 17 If the prices of all commodities in a place have decreased 35% over the base period prices, then the index number of prices of that place is now

(a) 35

(b) 135

(c) 65

(d) None of these.

Que. 42 The index number in whole sale prices is 152 for August 1999 compared to August 1998.

During the year there is net increase in prices of whole sale commodities to the extent of

- (a) 45%
- (b) 35%
- (c) 52%
- (d) 48%

Que. 45 The price level of a country in a certain year has increased 25% over the base period. The index number is

(a) 25

(b) 125

(c) 225

(d) 2500

Que. 46 The index number of prices at a place in 1998 is 355 with 1991 as base. This means

- (a) There has been on the average a 255% increase in prices.**
- (b) There has been on the average a 355% increase in price.**
- (c) There has been on the average a 250% increase in price.**
- (d) None of these.**

Que. 48 The wholesale price index number of agricultural commodities in a given region at a given date is 280. The percentage increase in prices of agricultural commodities over the base year is :

- (a) 380
- (b) 280
- (c) 180
- (d) 80

Que. 86 The prices of a commodity in the years 1975 and 1980 were 25 and 30 respectively, taking 1975 as base year the price relative is :

(a) 120

(b) 135

(c) 122

(d) None of these.

LINK RELATIVES

When successive prices or quantities are taken, the relatives are called the link relative,

$$\frac{P_1}{P_0}, \frac{P_2}{P_1}, \frac{P_3}{P_2}, \frac{P_n}{P_{n-1}}$$

CHAIN RELATIVES

When the above relatives are in respect to a fixed base period these are also called the chain relatives with respect to this base or the relatives chained to the fixed base

$$\frac{P_1}{P_0}, \frac{P_2}{P_0}, \frac{P_3}{P_0}, \frac{P_n}{P_0}$$

METHODS

SIMPLE

WEIGHTED

AGGREGATIVE

RELATIVE

AGGREGATIVE

RELATIVE

**LASPEYRES'
INDEX**

**PASSCHES'
INDEX**

**EDGEWORTH
INDEX**

FISHERS' INDEX

SIMPLE AGGREGATIVE METHOD

- **In this method of computing a price index, we express the total of commodity prices in a given year as a percentage of total commodity price in the base year. In symbols, we have**

$$\text{Simple aggregative price index} = \frac{\sum P_n}{\sum P_o} \times 100$$

- **where P_n is the sum of all commodity prices in the current year and P_o is the sum of all commodity prices in the base year.**

SIMPLE AGGREGATIVE METHOD

<i>Commodities</i>	1998	1999	2000
Cheese (per 100 gms)	12.00	15.00	15.60
Egg (per piece)	3.00	3.60	3.30
Potato (per kg)	5.00	6.00	5.70
Aggregate	20.00	24.60	24.60
Index	100	123	123

$$\text{Simple Aggregative Index for 1999 over 1998} = \frac{\sum P_n}{\sum P_o} = \frac{24.60}{20.00} \times 100 = 123$$

$$\text{and for 2000 over 1998} = \frac{\sum P_n}{\sum P_o} \times 100 = \frac{24.60}{20.00} \times 100 = 123$$

SIMPLE AGGREGATIVE METHOD

MERITS: Easy to understand

DEMERITS:

- Commodity with higher price will have greater influence in index value.
- If units are changed then the Index numbers will also change.
- Price quotations become the concealed weights which have no logical significance.

Que. 52 From the following data

Commodity	Base Price	Current Price
Rice	35	42
Wheat	30	35
Pulse	40	38
Fish	107	120

The simple Aggregative Index is

- (a) 115.8**
- (b) 110.8**
- (c) 112.5**
- (d) 113.4**

Que. 67 From the following data

Commodities	Base Price 1964	Current Price 1968
Rice	36	54
Pulse	30	50
Fish	130	155
Potato	40	35
Oil	110	110

The index number by unweighted methods :

(a) 116.8

(b) 117.25

(c) 115.35

(d) 119.37

SIMPLE AVERAGE OF RELATIVES

- Under this method we invert the actual price for each variable into percentage of the base period. These percentages are called relatives . The index number is the average of all such relatives.

$$\frac{\sum \left(\frac{P_n}{P_o} \times 100 \right)}{N}$$

SIMPLE AVERAGE OF RELATIVES

<i>Commodities</i>	1998	1999	2000
Cheese (per 100 gms)	12.00	15.00	15.60
Egg (per piece)	3.00	3.60	3.30
Potato (per kg)	5.00	6.00	5.70
Aggregate	20.00	24.60	24.60
Index	100	123	123

Commodities	1998	1999	2000
A	100.0	125.0	130.0
B	100.0	120.0	110.0
C	100.0	120.0	114.0
Aggregate	300.0	365.0	354.0
Index	100.0	121.67	118.0

SIMPLE AVERAGE OF RELATIVES

MERITS:

- One big advantage of price relatives is that they are pure numbers.
- Price index number computed from relatives will remain the same regardless of the units by which the prices are quoted

DEMERITS:

- In Spite of some improvement, the above method has a flaw that it gives equal importance to each of the relatives
- This defect can be remedied by the introduction of an appropriate weighing system.

Que. 25 From the following table by the method of relatives using Arithmetic mean the price Index number is

Commodity	Wheat	Milk	Fish	Sugar
Base Price	5	8	25	6
Current Price	7	10	32	12

- (a) 140.35
- (b) 148.25
- (c) 140.75
- (d) None of these.

WEIGHTED AGGREGATIVE INDEX

Under this method we weigh the price of each commodity by a suitable factor often taken as the quantity or value weight sold during the base year or the given year or an average of some years.

WEIGHTED AGGREGATIVE INDEX

- a. **Laspeyres' Index:** In this Index base year quantities are used as weights:

$$\text{Laspeyres Index} = \frac{\sum P_n Q_0}{\sum P_0 Q_0} \times 100$$

- b. **Paasche's Index:** In this Index current year quantities are used as weights:

$$\text{Paasche's Index} = \frac{\sum P_n Q_n}{\sum P_0 Q_n} \times 100$$

WEIGHTED AGGREGATIVE INDEX

- c **The Marshall-Edgeworth index** uses this method by taking the **average** of the base year and the current year

$$\text{Marshall-Edgeworth Index} = \frac{\sum P_n (Q_o + Q_n)}{\sum P_o (Q_o + Q_n)} \times 100$$

- d. **Fisher's ideal Price Index:** This index is the **geometric mean** of Laspeyres' and Paasche's.

$$\text{Fisher's Index} = \sqrt{\frac{\sum P_n Q_o}{\sum P_o Q_o} \times \frac{\sum P_n Q_n}{\sum P_o Q_n}} \times 100$$

WEIGHTED AGGREGATIVE INDEX

BOWLEY INDEX:

Laspeyres' Index + Paasche's Index

2

WEIGHTED AVERAGE OF RELATIVE METHOD

- To overcome the disadvantage of a simple average of relative method, we can use weighted average of relative method.
- Generally weighted arithmetic mean is used although the weighted geometric mean can also be used.
- The weighted arithmetic mean of price relatives using base year value weights is represented by

$$\frac{\sum \frac{P_n}{P_o} \times (P_o Q_o)}{\sum P_o Q_o} \times 100 = \frac{\sum P_n Q_o}{\sum P_o Q_o} \times 100$$

Same as Laspeyres' Index

Que. 14 If $\sum P_o q_o = 3500$, $\sum P_n q_o = 3850$, then the Cost of living Index (C.L.I.) for 1950 w.r. to base 1960 is

(a) 110

(b) 90

(c) 100

(d) None of these.

Que. 80 From the following data

Commodities		A	B	C	D
1992 Base	Price	3	5	4	1
	Quantity	18	6	20	14
1993 Current Year	Price	4	5	6	3
	Quantity	15	9	26	15

The Passche price Index number is :

(a) 146.41

(b) 148.25

(c) 144.25

(d) None of these.

Que. 99 Using the following data

Commodity	Base Year		Current Year	
	Price	Quantity	Price	Quantity
X	4	10	6	15
Y	6	15	4	20
Z	8	5	10	4

the Paasche's formula for index is :

- (a) 125.38
- (b) 147.25
- (c) 129.8
- (d) 99.06

Que. 14 If the ratio between Laspeyre's index number and Paasche's Index number is 28 : 27. Then the missing figure in the following table P is :

Commodity	Base Year		Current Year	
	Price	Quantity	Price	Quantity
X	L	10	2	5
Y	L	5	P	2

- (a) 7
- (b) 4
- (c) 3
- (d) 9

Que. 18 Bowley's Index number is expressed in the form of :

- (a) $\frac{\text{Laspeyre's index} + \text{Paasche's index}}{2}$ (b) $\frac{\text{Laspeyre's index} \times \text{Paasche's index}}{2}$
- (c) $\frac{\text{Laspeyre's index} - \text{Paasche's index}}{2}$ (d) None of these.

Que. 68 The Bowley's Price index number is represented in terms of :

- (a) A.M. of Laspeyre's and Paasche's Price index number.**
- (b) G.M. of Laspeyre's and Paasche's Price index number.**
- (c) A.M. of Laspeyre's and Walsh's price index number.**
- (d) None of these.**

Que. 36 From the following data base year :-

Commodity	Base Year		Current Year	
	Price	Quantity	Price	Quantity
A	4	3	6	2
B	5	4	6	4
C	7	2	9	2
D	2	3	1	5

Fisher's Ideal Index is

- (a) 117.3**
- (b) 115.43**
- (c) 118.35**
- (d) 116.48**

Que. 22 If $\sum P_n q_n = 249$, $\sum P_o q_o = 150$, Paasche's Index Number = 150 and Drobiseh and Bowely's Index number = 145, then the Fisher's Ideal Index Number is

- (a) 75
- (b) 60
- (c) 145.97
- (d) None of these.

Que. 34 Bowley's index number is 150. Fisher's index number is 149.95. Paasche's index number is

(a) 146.13

(b) 154

(c) 148

(d) 156

CHAIN INDEX NUMBERS

Year (1)	Price (2)	Link Relatives (3)	Chain Indices (4)
1991	50	100	100
1992	60	$\frac{60}{50} \times 100 = 120.0$	$\frac{120}{100} \times 100 = 120.0$
1993	62	$\frac{62}{60} \times 100 = 103.3$	$\frac{103.3}{100} \times 120 = 124.0$
1994	65	$\frac{65}{62} \times 100 = 104.8$	$\frac{104.8}{100} \times 124 = 129.9$
1995	70	$\frac{70}{65} \times 100 = 107.7$	$\frac{107.7}{100} \times 129.9 = 139.9$
1996	78	$\frac{78}{70} \times 100 = 111.4$	$\frac{111.4}{100} \times 139.9 = 155.8$
1997	82	$\frac{82}{78} \times 100 = 105.1$	$\frac{105.1}{100} \times 155.8 = 163.7$
1998	84	$\frac{84}{82} \times 100 = 102.4$	$\frac{102.4}{100} \times 163.7 = 167.7$
1999	88	$\frac{88}{84} \times 100 = 104.8$	$\frac{104.8}{100} \times 167.7 = 175.7$
2000	90	$\frac{90}{88} \times 100 = 102.3$	$\frac{102.3}{100} \times 175.7 = 179.7$

Chain Index =

$\frac{\text{Link relative of current year} \times \text{Chain Index of the previous year}}{100}$

100

CHAIN INDEX NUMBERS

From the following data

Year	1992	1993	1995	1996	1997
Link Index	100	103	105	112	108

(Base 1992 = 100) for the years 1993–97. The construction of chain index is :

- (a) 103, 100.94, 107, 118.72 (b) 103, 108.15, 121.3, 130.82
(c) 107, 100.25, 104, 118.72 (d) None of these.

QUANTITY INDEX NUMBERS

- **To measure and compare prices, we use price index numbers.**
- **When we want to measure and compare quantities, we resort to Quantity Index Numbers.**
- **Though price indices are widely used to measure the economic strength, Quantity indices are used as indicators of the level of output in economy.**
- **To construct Quantity indices, we measure changes in quantities and weight them using prices or values as weights.**

QUANTITY INDEX NUMBERS

1. Simple aggregate of quantities:

This has the formula $\frac{\sum Q_n}{\sum Q_o}$

2. The simple average of quantity relatives:

This can be expressed by the formula $\frac{\frac{\sum Q_n}{\sum Q_o}}{N}$

QUANTITY INDEX NUMBERS

3. Weighted aggregate Quantity indices:

(i) With base year weight : $\frac{\sum Q_n P_o}{\sum Q_o P_o}$ (Laspeyre's index)

(ii) With current year weight : $\frac{\sum Q_n P_n}{\sum Q_o P_n}$ (Paasche's index)

(iii) Geometric mean of (i) and (ii) : $\sqrt{\frac{\sum Q_n P_o}{\sum Q_o P_o} \times \frac{\sum Q_n P_n}{\sum Q_o P_n}}$ (Fisher's Ideal)

Que. 23 From the following data

Commodities	Q_0	P_0	Q_1	P_1
A	2	2	6	18
B	5	5	2	2
C	7	7	4	24

Then the fisher's quantity index number is

- (a) 87.34
- (b) 85.24
- (c) 87.25
- (d) 78.93

VALUE INDEX NUMBERS

- **Value equals price multiplied by quantity. Thus a value index equals the total sum of the values of a given year divided by the sum of the values of the base year, i.e.,**

$$\frac{\sum V_n}{\sum V_0} = \frac{\sum P_n Q_n}{\sum P_0 Q_0}$$

LIMITATIONS INDEX NUMBERS

- **As the indices are constructed mostly from deliberate samples, chances of errors creeping in cannot be always avoided.**
- **Since index numbers are based on some selected items, they simply depict the broad trend and not the real picture.**
- **Since many methods are employed for constructing index numbers, the result gives different values and this at times create confusion.**

USEFULNESS OF INDEX NUMBERS

- **Framing suitable policies in economics and business. They provide guidelines to make decisions in measuring intelligence quotients, research etc.**
- **They reveal trends and tendencies in making important conclusions in cyclical forces, irregular forces, etc.**
- **They are important in forecasting future economic activity. They are used in time series analysis to study long-term trend, seasonal variations and cyclical developments.**
- **Index numbers are very useful in deflating i.e., they are used to adjust the original data for price changes and thus transform nominal wages into real wages.**
- **Cost of living index numbers measure changes in the cost of living over a given period.**

DEFLATING TIME SERIES USING INDEX NUMBERS

$$\text{Deflated Value} = \frac{\text{Current Value}}{\text{Price Index of the current year}}$$

$$\text{or Current Value} \times \frac{\text{Base Price (P}_0\text{)}}{\text{Current Price (P}_n\text{)}}$$

$$\text{Real Wages} = \frac{\text{Actual wages}}{\text{Cost of living Index}} \times 100$$

Que. 30 In 1980, the net monthly income of the employee was ₹ 800/- p. m. The consumer price index number was 160 in 1980. It rises to 200 in 1984. If he has to be rightly compensated.

The additional D. A. to be paid to the employee is

- (a) ₹ 175/-
- (b) ₹ 185/-
- (c) ₹ 200/-
- (d) ₹ 125.

Que. 35 With the base year 1960 the C. L. I. in 1972 stood at 250. x was getting a monthly Salary of ₹ 500 in 1960 and ₹ 750 in 1972. In 1972 to maintain his standard of living in 1960 x has to receive as extra allowances of

(a) ₹ 600/-

(b) ₹ 500/-

(c) ₹ 300/-

(d) none of these.

Que. 76 Consumer price index number goes up from 110 to 200 and the Salary of a worker is also raised from ₹ 325 to ₹ 500. Therefore, in real terms, to maintain his previous standard of living he should get an additional amount of :

(a) ₹ 85

(b) ₹ 90.91

(c) ₹ 98.25

(d) None of these.

Que. 89 Net monthly salary of an employee was ₹ 3000 in 1980. The consumer price index number in 1985 is 250 with 1980 as base year. If the has to be rightly compensated then, 7th dearness allowances to be paid to the employee is :

(a) ₹ 4,800.00

(b) ₹ 4,700.00

(c) ₹ 4,500.0

(d) None of these.

Que. 23 Consumer Price index number for the year 1957 was 313 with 1940 as the base year. The Average Monthly wages in 1957 of the workers into factory be ₹ 160/- their real wages is

(a) ₹ 48.40

(b) ₹ 51.12

(c) ₹ 40.30

(d) None of these.

Que. 96 During the certain period the C.L.I. goes up from 110 to 200 and the Salary of a worker is also raised from 330 to 500, then the real terms is

- (a) Loss by ₹ 50
- (b) Loss by 75
- (c) Loss by ₹ 90
- (d) None of these.

[**Hint** : Real Wage = (Actual wage/Cost of Living Index) * 100]

SHIFTING PRICE INDEX

$$\text{Shifted Price Index} = \frac{\text{Original Price Index}}{\text{Price Index of the year on which it has to be shifted}} \times 100$$

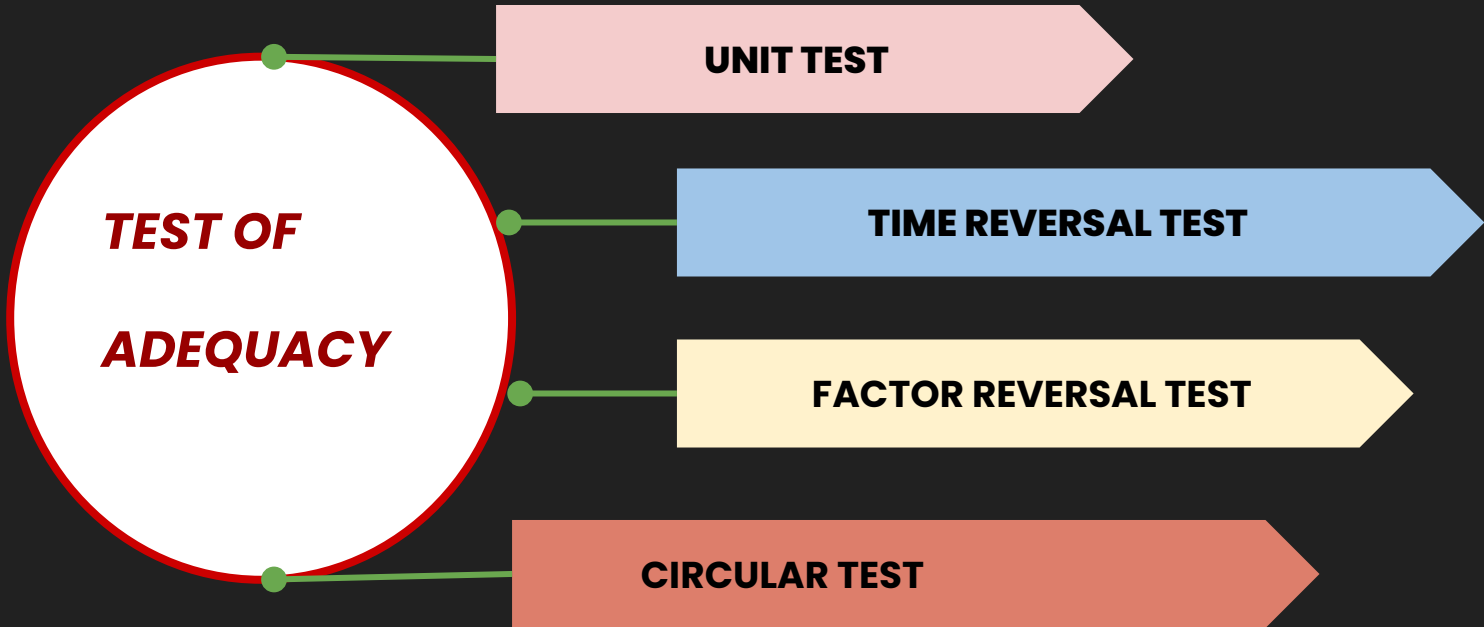
Shifted Price Index

<i>Year</i>	<i>Original Price Index</i>	<i>Shifted Price Index to base 1990</i>
1980	100	71.4
1981	104	74.3
1982	106	75.7
1983	107	76.4
1984	110	78.6
1985	112	80.0
1986	115	82.1
1987	117	83.6
1988	125	89.3
1989	131	93.6
1990	140	100.0
1991	147	105.0

SPLICING TWO INDEX SERIES

- two index covering different bases may be combined into single series by splicing.

<i>Year</i>	<i>Old Price Index</i> <i>[1990 = 100]</i>	<i>Revised Price Index</i> <i>[1995 = 100]</i>	<i>Spliced Price Index</i> <i>[1995 = 100]</i>
1990	100.0		87.6
1991	102.3		89.6
1992	105.3		92.2
1993	107.6		94.2
1994	111.9		98.0
1995	114.2	100.0	100.0
1996		102.5	102.5
1997		106.4	106.4
1998		108.3	108.3
1999		111.7	111.7
2000		117.8	117.8



TEST OF ADEQUACY

UNIT TEST

- i. This test requires that the formula should be independent of the unit in which or for which prices and quantities are quoted.
- ii. Except for the simple (unweighted) aggregative index all other formulae satisfy this test.

TEST OF ADEQUACY

TIME REVERSAL TEST

- It is a test to determine whether a given method will work both ways in time, forward and backward.
- The test provides that the formula for calculating the index number should be such that two ratios, the current on the base and the base on the current should multiply into unity.
- In other words, the two indices should be reciprocals of each other.

Symbolically,

$$P_{01} \times P_{10} = 1$$

TEST OF ADEQUACY

TIME REVERSAL TEST

- where P_{01} is the index for time 1 on 0 and P_{10} is the index for time 0 on 1.
- Laspeyres' method and Paasche's method do not satisfy this test, but Fisher's Ideal Formula does.

TEST OF ADEQUACY

FACTOR REVERSAL TEST

- This holds when the product of price index and the quantity index should be equal to the corresponding value index,

$$P_{01} \times Q_{01} = V_{01}$$

- Fisher's Index satisfies Factor Reversal test

NOTE

- **While selecting an appropriate index formula, the Time Reversal Test and the Factor Reversal test are considered necessary in testing the consistency.**
- **Because Fisher's Index number satisfies both the tests in , it is called an Ideal Index Number.**

TEST OF ADEQUACY

CIRCULAR TEST

- As per this test , $P_{01} \times P_{12} \times P_{20} = 1$
- It is concerned with the measurement of price changes over a period of years, when it is desirable to shift the base.
- This property therefore enables us to adjust the index values from period to period without referring each time to the original base.
- **The test of this shiftability of base is called the circular test.**
- *This test is not met by Laspeyres, or Paasche's or the Fisher's ideal index.*
- *The simple geometric mean of price relatives and the weighted aggregative with fixed weights meet this test.*

STOCK EXCHANGE



STOCK MARKET INDICES



- **Stock Market Index:** It represents the entire stock market.
- It shows the changes taking place in the stock market.
- Movement of index is also an indication of average returns received by the investors. With the help of an index, it is easy for an investor to compare performance as it can be used as a benchmark, for e.g. a simple comparison of the stock and the index can be undertaken to find out the feasibility of holding a particular stock.
- Each stock exchange has an index



- For instance, in India, it is Sensex of BSE and Nifty of NSE.

- On the other hand, in outside India, popular indexes are Dow Jones, NASDAQ, FTSE etc.



BOMBAY STOCK EXCHANGE (BSE)



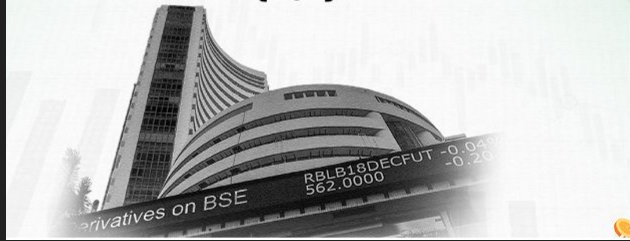
Bombay Stock Exchange Limited:

It is the oldest stock exchange in Asia and was established as “The Native Share & Stock Brokers Association” in 1875.

The Securities Contract (Regulation) Act, 1956 gives permanent recognition to Bombay Stock Exchange in 1956.

BSE became the first stock exchange in India to obtain such permission from the Government under the Act.

BOMBAY STOCK EXCHANGE (BSE)



Bombay Stock Exchange Limited:

One of the Index as BSE Sensex which is basket of 30 constituent stocks.

The base year of BSE SENSEX is 1978-79 and the base value is 100 which has grown over the years and quoted at about 592 times of base index as on date.

As the oldest Index in the country, it provides the time series data over a fairly long period of time (from 1979 onward).



National Stock Exchange:

NSE was incorporated in 1992.

It was recognized as a stock exchange by SEBI in April 1993 and commenced operations in 1994.

NIFTY50 is a diversified 50 stocks Index of 13 sectors of the economy.

The base period of NIFTY 50 Index is 3 November 1995 and base value is 1000 which has grown over years and quoted at 177 times as on date.

Computation of Index

Following steps are involved in calculation of index on a particular date:

- Calculate market capitalization of each individual company comprising the index.
- Calculate the total market capitalization by adding the individual market capitalization of all companies in the index.
- Computing index of next day requires the index value and the total market capitalization of the previous day and is computed as follows:

$$\text{Index Value} = \text{Index on Previous Day} \times \frac{\text{Total market capitalisation for current day}}{\text{Total market capitalisation for previous day}}$$

- It should also be noted that Indices may also be calculated using the price weighted method. Here, the share price of the constituent companies forms the weight. However, almost all equity indices worldwide are calculated using the market capitalization weighted method.

- **CPI- Consumer Price Index/ Cost of living Index or Retail Price Index** is the Index which measures the effect of change in prices of basket of goods and services on the purchasing power of specific class of consumer during any current period w.r.t to some base period.



- **WPI- Wholesale Price Index** – The WPI measures the relative changes in prices of commodities traded in wholesale market.



EXERCISE- Set (A)

Choose the most appropriate option (a) (b) (c) or (d).

Que. 1 A series of numerical figures which show the relative position is called

- a) index number**
- b) relative number**
- c) absolute number**
- d) none**

a

Choose the most appropriate option (a) (b) (c) or (d).

Que. 2 Index number for the base period is always taken as

a) 200

b) 50

c) 1

d) 100

d

Choose the most appropriate option (a) (b) (c) or (d).

Que. 3 _____ play a very important part in the construction of index numbers.

- a) weights**
- b) classes**
- c) estimations**
- d) none**

a

Choose the most appropriate option (a) (b) (c) or (d).

Que. 4 _____ is particularly suitable for the construction of index numbers.

a) H.M.

b) A.M.

c) G.M.

d) none

Choose the most appropriate option (a) (b) (c) or (d).

Que. 5 Index numbers show _____ changes rather than absolute amounts of change.

a) relative

b) percentage

c) both

d) none

b

Choose the most appropriate option (a) (b) (c) or (d).

Que. 6 The _____ makes index numbers time-reversible.

a) A.M.

b) G.M.

c) H.M.

d) none

b

Choose the most appropriate option (a) (b) (c) or (d).

Que. 7 Price relative is equal to

a)
$$\frac{\text{Price in the given year} \times 100}{\text{Price in the base year}}$$

b)
$$\frac{\text{Price in the year base year} \times 100}{\text{Price in the given year}}$$

c) Price in the given year × 100

d) Price in the base year × 100

a

Choose the most appropriate option (a) (b) (c) or (d).

Que. 8 Index number is equal to

- a) sum of price relatives**
- b) average of the price relatives**
- c) product of price relative**
- d) none**

b

Choose the most appropriate option (a) (b) (c) or (d).

Que. 9 The _____ of group indices gives the General Index

a) H.M.

b) G.M.

c) A.M.

d) none

Choose the most appropriate option (a) (b) (c) or (d).

Que. 10 Circular Test is one of the tests of

- a) index numbers**
- b) hypothesis**
- c) both**
- d) none**

a

Choose the most appropriate option (a) (b) (c) or (d).

Que. 11 _____ is an extension of time reversal test

- a) Factor Reversal test**
- b) Circular test**
- c) both**
- d) none**

b

Choose the most appropriate option (a) (b) (c) or (d).

Que. 12 Weighted G.M. of relative formula satisfy _____ test

- a) Time Reversal Test**
- b) Circular test**
- c) Factor Reversal Test**
- d) none**

b

Choose the most appropriate option (a) (b) (c) or (d).

Que. 13 Factor Reversal test is satisfied by

- a) Fisher's Ideal Index**
- b) Laspeyres Index**
- c) Paasches Index**
- d) none**

a

Choose the most appropriate option (a) (b) (c) or (d).

Que. 14 Laspeyre's formula does not satisfy

- a) Factor Reversal Test**
- b) Time Reversal Test**
- c) Circular Test**
- d) all the above**

d

Choose the most appropriate option (a) (b) (c) or (d).

Que. 15 A ratio or an average of ratios expressed as a percentage is called

- a) a relative number**
- b) an absolute number**
- c) an index number**
- d) none**

C

Choose the most appropriate option (a) (b) (c) or (d).

Que. 16 The value at the base time period serves as the standard point of comparison

a) false

b) true

c) both

d) none

b

Choose the most appropriate option (a) (b) (c) or (d).

Que. 17 An index time series is a list of _____ numbers for two or more periods of time

- a) index
- b) absolute
- c) relative
- d) none

a

Choose the most appropriate option (a) (b) (c) or (d).

Que. 18 Index numbers are often constructed from the

a) frequency

b) class

c) sample

d) none

Choose the most appropriate option (a) (b) (c) or (d).

Que. 19 _____ is a point of reference in comparing various data describing individual behaviour.

- a) Sample**
- b) Base period**
- c) Estimation**
- d) none**

b

Choose the most appropriate option (a) (b) (c) or (d).

Que. 20 The ratio of price of single commodity in a given period to its price in the preceding year price is called the

- (a) base period**
- (b) price ratio**
- (c) relative price**
- (d) none**

C

Choose the most appropriate option (a) (b) (c) or (d).

Que. 21
$$\frac{\text{Sum of all commodity prices in the current year} \times 100}{\text{Sum of all commodity prices in the base year}}$$
 is

- (a) Relative Price Index**
- (b) Simple Aggregative Price Index**
- (c) both**
- (d) none**

b

Choose the most appropriate option (a) (b) (c) or (d).

Que. 22 Chain index is equal to

(a)
$$\frac{\text{link relative of current year} \times \text{chain index of the current year}}{100}$$

(b)
$$\frac{\text{link relative of previous year} \times \text{chain index of the current year}}{100}$$

(c)
$$\frac{\text{link relative of current year} \times \text{chain index of the previous year}}{100}$$

(d)
$$\frac{\text{link relative of previous year} \times \text{chain index of the previous year}}{100}$$

Choose the most appropriate option (a) (b) (c) or (d).

Que. 23 P_{01} is the index for time

(a) 1 on 0

(b) 0 on 1

(c) 1 on 1

(d) 0 on 0

a

Choose the most appropriate option (a) (b) (c) or (d).

Que. 24 P_{10} is the index for time

(a) 1 on 0

(b) 0 on 1

(c) 1 on 1

(d) 0 on 0

b

Choose the most appropriate option (a) (b) (c) or (d).

Que. 25 When the product of price index and the quantity index is equal to the corresponding value index then the test that holds is

- (a) Unit Test**
- (b) Time Reversal Test**
- (c) Factor Reversal Test**
- (d) none holds**

Choose the most appropriate option (a) (b) (c) or (d).

Que. 26 The formula should be independent of the unit in which or for which price and quantities are quoted in

- (a) Unit Test**
- (b) Time Reversal Test**
- (c) Factor Reversal Test**
- (d) none**

a

Choose the most appropriate option (a) (b) (c) or (d).

Que. 27 Laspeyre's method and Paasche's method do not satisfy

- (a) Unit Test**
- (b) Time Reversal Test**
- (c) Factor Reversal Test**
- (d) b & c**

d

Choose the most appropriate option (a) (b) (c) or (d).

Que. 28 The purpose determines the type of index number to use

(a) yes

(b) no

(c) may be

(d) may not be

a

Choose the most appropriate option (a) (b) (c) or (d).

Que. 29 The index number is a special type of average

(a) false

(b) true

(c) both

(d) none

b

Choose the most appropriate option (a) (b) (c) or (d).

Que. 30 The choice of suitable base period is at best temporary solution

(a) true

(b) false

(c) both

(d) none

a

Choose the most appropriate option (a) (b) (c) or (d).

Que. 31 Fisher's Ideal Formula for calculating index numbers satisfies the _____ tests

- (a) Unit Test**
- (b) Factor Reversal Test**
- (c) both**
- (d) none**

C

Choose the most appropriate option (a) (b) (c) or (d).

Que. 32 Fisher's Ideal Formula dose not satisfy _____ test

- (a) Unit Test**
- (b) Circular Test**
- (c) Time Reversal Test**
- (d) none**

b

Choose the most appropriate option (a) (b) (c) or (d).

Que. 33 _____ satisfies circular test

- a) G.M. of price relatives or the weighted aggregate with fixed weights**
- b) A.M. of price relatives or the weighted aggregate with fixed weights**
- c) H.M. of price relatives or the weighted aggregate with fixed weights**
- d) none**

a

Choose the most appropriate option (a) (b) (c) or (d).

Que. 34 Laspeyre's and Paasche's method _____ time reversal test

(a) satisfy

(b) do not satisfy

(c) are

(d) are not

b

Choose the most appropriate option (a) (b) (c) or (d).

Que. 35 There is no such thing as unweighted index numbers

(a) false

(b) true

(c) both

(d) none

a

Choose the most appropriate option (a) (b) (c) or (d).

Que. 36 Theoretically, G.M. is the best average in the construction of index numbers but in practice, mostly the A.M. is used

(a) false

(b) true

(c) both

(d) none

b

Choose the most appropriate option (a) (b) (c) or (d).

Que. 37 Laspeyre's or Paasche's or the Fisher's ideal index do not satisfy

(a) Time Reversal Test

(b) Unit Test

(c) Circular Test

(d) none

Choose the most appropriate option (a) (b) (c) or (d).

Que. 38 _____ is concerned with the measurement of price changes over a period of years, when it is desirable to shift the base

- (a) Unit Test**
- (b) Circular Test**
- (c) Time Reversal Test**
- (d) none**

b

Choose the most appropriate option (a) (b) (c) or (d).

Que. 39 The test of shifting the base is called

- (a) Unit Test**
- (b) Time Reversal Test**
- (c) Circular Test**
- (d) none**

Choose the most appropriate option (a) (b) (c) or (d).

Que. 40 The formula for conversion to current value

(a) Deflated value = $\frac{\text{Price Index of the current year}}{\text{previous value}}$

(b) Deflated value = $\frac{\text{current value}}{\text{Price Index of the current year}}$

(c) Deflated value = $\frac{\text{Price Index of the previous year}}{\text{previous value}}$

(d) Deflated value = $\frac{\text{Price Index of the previous year}}{\text{previous value}}$

b

Choose the most appropriate option (a) (b) (c) or (d).

Que. 41 Shifted price Index = $\frac{\text{Original Price} \times 100}{\text{Price Index of the year on which it has to be shifted}}$

(a) True

(b) false

(c) both

(d) none

a

Choose the most appropriate option (a) (b) (c) or (d).

Que. 42 The number of test of Adequacy is

(a) 2

(b) 5

(c) 3

(d) 4

d

Choose the most appropriate option (a) (b) (c) or (d).

Que. 43 We use price index numbers

- (a) To measure and compare prices**
- (b) to measure prices**
- (c) to compare prices**
- (d) none**

a

Choose the most appropriate option (a) (b) (c) or (d).

Que. 44 Simple aggregate of quantities is a type of

(a) Quantity control

(b) Quantity indices

(c) both

(d) none

b

Choose the most appropriate option (a) (b) (c) or (d).

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b) true

c) both

d) none

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- b) absolute**
- c) relative**
- d) none**

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Choose the most appropriate option (a) (b) (c) or (d).

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b) class

c) sample

d) none

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- b) Base period**
- c) Estimation**
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Choose the most appropriate option (a) (b) (c) or (d).

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- (a) Relative Price Index**
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- (c) both**
- (d) none**

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(b)
$$\frac{\text{link relative of previous year} \times \text{chain index of the current year}}{100}$$

(c)
$$\frac{\text{link relative of current year} \times \text{chain index of the previous year}}{100}$$

(d)
$$\frac{\text{link relative of previous year} \times \text{chain index of the previous year}}{100}$$

Choose the most appropriate option (a) (b) (c) or (d).

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(c) Deflated value = $\frac{\text{Price Index of the previous year}}{\text{previous value}}$

(d) Deflated value = $\frac{\text{Price Index of the previous year}}{\text{previous value}}$

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- (c) both
- (d) none

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