

Index Numbers

Exercise : Solutions of Questions on Page Number : 118

Q1 :

An index number which accounts for the relative importance of the items is known as

- (i) weighted index
- (ii) simple aggregative index
- (iii) simple average of relatives

Answer :

An index number which accounts for the relative importance of the items is known as **weighted index**

An index number in which different items of the series are accorded weight age according to their relative importance is known as Weighted Index Numbers. It is the weighted average of the prices of different goods.

Q2 :

In most of the weighted index numbers the weight pertains to

- (i) base year
- (ii) current year
- (iii) both base and current year

Answer :

In most of the weighted index numbers, the weight pertains to **current year**.

In the Weighted Method of calculating index numbers, different goods are accorded weights according to the quantity brought. Laspeyre's method uses base year's quantities as weights, Paasche's method uses current year's quantities as weights and Fisher's method uses both base year as well as current year's quantities as base.

Q3 :

The impact of change in the price of a commodity with little weight in the index will be

- (i) small
- (ii) large
- (iii) uncertain

Answer :

The impact of change in the price of a commodity with little weight in the index will be **small**

A lesser important commodity is assigned lower weight as it would not have a significant effect of price change.

Q4 :

A consumer price index measures changes in

- (i) retail prices
- (ii) wholesale prices
- (iii) producers prices

Answer :

A consumer price index measures changes in **retail prices**.

Consumer Price Index (CPI) is used to measure changes in the cost of living in which the retail prices of consumer goods and services are obtained. It measures the average changes in the retail prices.

Q5 :

The item having the highest weight in consumer price index for industrial workers is

- (i) Food
- (ii) Housing
- (iii) Clothing

Answer :

The item having the highest weight in consumer price index for industrial workers is **food**

The weight schemes in CPI for Industrial Workers include food, pan, supari, tobacco, fuel and lighting, housing, clothing, and miscellaneous expenses. The food being the most important component has the highest weight. It implies that the food price changes have a significant impact on the CPI.

Q6 :

In general, inflation is calculated by using

- (i) wholesale price index
- (ii) consumer price index
- (iii) producers' price index

Answer :

In general, inflation is calculated by using **Wholesale Price Index**.

Wholesale Price Index measures the relative changes in the prices of the commodities traded in the wholesale markets. It assesses situations of overall demand and supply in the market. It focuses on the rate of inflation in the economy.

Q7 :

Why do we need an index number?

Answer :

An index number is a statistical device that is used to measure the changes in the related variables. Its importance is explained in the following points:

1. To measure change in the price level

Index numbers measure and compare prices of different commodities with the help of Wholesale Price Index (WPI). It is widely used to measure the level of inflation in an economy.

2. To study a change in the standard of living

Index numbers help to assess the living standard of people. Cost of living index measures the relative cost of living over time. If the index number has a low value, then it implies that people have low standard of living and vice-versa.

3. Useful in planning and decision making

Index numbers serve as the most important tool for business communities for drafting various plans and designing various policies. It is useful for the government and the planners to work out inflation rate with the help of consumer price index.

4. To determine the level of production

Index number of Industrial Production measures changes in the physical volume of production. Also, the production index is an important indicator to ascertain the output level.

5. To help the government in framing policy.

Index numbers are of great help to the government to frame fiscal and monetary policies. The government formulates policies regarding inflation, trade, income, salaries and allowances.

Q8 :

What are the desirable properties of the base period?

Answer :

The base period should have the following desirable properties:

- 1. The base year should not be either too short or too long:** It should not be either less than a month or more than a year for calculation purpose.
- 2. The base year should not belong to too near or too far:** Statisticians compare the current year's conditions with the conditions in the base year. So, if the base year is too far from the current year, then the comparison becomes meaningless. Similarly, if the base year is too near to the current year, then comparison fails to capture the change in the taste, preferences, fashion, etc. Thus, in order to conduct a meaningful comparison, the base year should not be either too far or too near to the current year.
- 3. The base year should be so selected that the data for the same should be available:** The data for a year should be available in order to regard that particular year to be the base year. This enables one to draw conclusions, inferences and for making comparisons.
- 4. The base period should be constantly updated:** The base year should be constantly updated due to the changes in taste, preferences and fashion otherwise; the comparison becomes misleading or inconclusive.

Q9 :

Why is it essential to have different CPI for different categories of consumers?

Answer :

The Consumer Price Index (CPI) in India includes the following three components:

1. CPI for Industrial Workers.
2. CPI for Urban Non-manual Employees.
3. CPI for Agricultural Labourers.

The three CPIs are calculated on regular basis to get the aggregate effect of the changes in retail prices. While the CPI for industrial workers and agricultural labourers are calculated and published by Labour Bureau, Shimla, the CPI for the urban non-manual employees is calculated and published by the Central Statistical Organisation (CSO). The rationale behind carrying out separate calculation of CPI for industrial and agricultural labourers and CPI for urban non-manual employees is that the consumption baskets of the former group (i.e. industrial workers and agricultural labourers) differs significantly from that of the later (i.e. urban non-manual employees). Thus, as the consumption pattern differs among the two groups and to assess the impact of the price change on the consumption pattern, CPI is calculated separately for each group.

Q10 :

What does a consumer price index for industrial workers measure?

Answer :

A Consumer Price Index for Industrial Workers measures the impact of changes in the retail prices on the cost of living of industrial workers. In a country like India, CPI for industrial workers is estimated and published by the Labour Bureau, Shimla taking 1982 as the base year for the current series. In India, CPI for industrial workers is the most popular index and is used by the government to regulate Dearness Allowance (D.A.) to compensate its employees against the price rise.

The weight schemes in CPI for Industrial Workers include food, pan, *supari*, tobacco, fuel and lighting, housing, clothing, and miscellaneous expenses. Food being the most important component has the highest weight. Thus, it implies that the food price changes have a significant impact on the CPI.

Q11 :

What is the difference between a price index and a quantity index?

Answer :

Price Index	Quantity Index
1. Price Index Number is calculated by two methods, namely a. Simple Aggregative Method b.	1. Quantity Index Number is calculated by two methods, namely a. Weighted Average of Price Relative Method

Q12 :

Is the change in any price reflected in a price index number?

Answer :

No, the change in any price is not reflected in a price index number. In fact, only the relative change or the percentage change in the price level is reflected in the price index number. Index numbers of prices are not simply a statement of prices at different dates, but they present the estimates of relative changes in the prices over the years with reference to a particular base year.

Q13 :

Can the CPI number for urban non-manual employees represent the changes in the cost of living of the President of India?

Answer :

The CPI for the urban non-manual employees cannot represent the changes in the cost of living of the President of India. This is because the consumption basket of the non-manual employees consists of different items than those of the consumption basket of President of India. In fact, in India CPI for industrial workers is the most popular index. This is used by the government to regulate Dearness Allowance (D.A.) to compensate its employees against the price rise. Hence, the CPI for the industrial workers cannot represent the changes in the cost of living of the President of India.

Q14 :

The monthly per capita expenditure incurred by workers for an industrial centre during 1980 and 2005 on the following items are given below. The weights of these items are 75, 10, 5, 6 and 4 respectively. Prepare a weighted index number for cost of living for 2005 with 1980 as the base.

Items	Price in 1980	Price in 2005
Food		

Answer :

Items	Price in 1980 P_0	Price in 2005 P_1	Weight W	$R = \frac{P_1}{P_0} \times 100$	RW
Food	100	200	75	$\frac{200}{100} \times 100 = 200$	15,000

Q15 :

Read the following table carefully and give your comments.

**INDEX OF INDUSTRIAL PRODUCTION
BASE 1993 - 94**

Industry	Weight (in 1996 - 97 %)
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Answer :

The following conclusions can be made by analysing the above table.

1. Manufacturing Industry has the highest weight of 79.58% as compared to the Mining and Quarrying and Electricity Industries that accounts for 10.73% and 10.69% respectively.
2. The production of Manufacturing Industry is higher than that of the Mining and Quarrying and Electricity Industries in both the years 1996-97 and 2003-04.
3. Mining and Quarrying has the least growth performance while that of the Manufacturing Industry is the highest.
4. The General Index is comparatively higher in the year 2003-04 than 1996-97.

Q16 :

Try to list the important items of consumption in your family.

Answer :

The following items constitute the total consumption needs of our family

- | | |
|--------------------|-----------------------------------|
| (i) Food | (ii) Clothing |
| (iii) Electricity | (iv) House Rent |
| (v) Transportation | (vi) Entertainment and Recreation |
| (vii) Education | (viii) Miscellaneous expenses |

Q17 :

If the salary of a person in the base year is Rs 4,000 per annum and the current year salary is Rs 6,000, by how much should his salary rise to maintain the same standard of living if the CPI is 400?

Answer :

Base *CPI* = Rs 100

Current *CPI* = Rs 400

Base Year Salary = Rs 4,000

Current Year Salary = Rs 6,000

When Base *CPI* is Rs 100, then the salary is = Rs 4,000

When Base *CPI* is Rs 100, then the salary is = $\frac{4,000}{100}$

When Current *CPI* is Rs 400, then the salary should be = $\frac{4,000}{100} \times 400 = \text{Rs } 16,000$

Thus, his salary should be Rs 16,000. Therefore, in the current year his salary should increase by Rs 10,000 (i.e. Rs 16,000 - Rs 6,000) so as to maintain the same level of living in the current year as that of the base year.

Q18 :

The consumer price index for June, 2005 was 125. The food index was 120 and that of other items 135. What is the percentage of the total weight given to food?

Answer :

Items	Index	Weights	<i>WI</i>
Food	120	W_1	$120 W_1$
Other Items	135	W_2	$135 W_2$

Q19 :

An enquiry into the budgets of the middle class families in a certain city gave the following information;

Expenses on items	Food	Fuel	Clothing	
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Answer :

Items	Weight W	Price in 1995 P_0	Price in 2004 P_1	$R = \frac{P_1}{P_0} \times 100$	<i>WR</i>
Food	35	1400	1500		

Q20 :

Record the daily expenditure, quantities bought and prices paid per unit of the daily purchases of your family for two weeks. How has the price change affected your family?

Answer :

Week I

	Potato			Onion	Total Expenditure (Rs)
Days	Price (per kg) P_{wt}	Quantity Q_{wt}	Expenditure $P_{wt} Q_{wt}$		

Q21 :

Given the following data:

Year	CPI of Industrial Workers (1982 = 100)	CPI of Urban Non-manual
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Answer :

(i)

a)

Year	CPI of Industrial Workers (1982 = 100)	Inflation Rate (in %) $= \frac{A_2 - A_1}{A_1} \times 100$
1995-96	313	$\frac{313 - 100}{100} \times 100 = 213$
1996-97	342	