Idhaya College for Women
Kumbakonam

PG & Research Department of Commerce
II BCom

Business Tools for Decision Making-
16CCCCM8
Unit – V
(2 Marks Q & A)

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Unit – V

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1. **Definition – Index Numbers:**

According to A.M.Tuttle " It is a single ratio which measures the combined change of several variables between two different times, places or situations."

2. **What are the types of Index Numbers?**
   - Price – Index Numbers
   - Quantity Index Numbers
   - Value – Index Numbers

3. **Write the Methods of constructing Index numbers**.
   - Unweighted indicies
   - Weighted Indices

4. **Write the meaning of Simple Index Number.**

A simple index number is a number that measures a relative change in a single variable with respect to a base.

5. **Write a note on Composite Index Number**.

A composite index number is a number that measures an average relative changes in a group of relative variables with respect to a base.

6. **What is meant by Price index Numbers?**

Price index numbers measure the relative changes in prices of a commodities between two periods. Prices can be either retail or wholesale.

7. **What do you mean by Quantity Index Numbers?**

These index numbers are considered to measure changes in the physical quantity of goods produced, consumed or sold of an item or a group of items.

8. **Write the meaning of Simple Aggregate Method?**

The total of current year prices for various commodities is divided by the corresponding base year price total and multiplying the result by 100.

9. What is Relatives Method?

The Price relatives P for price index number and the quantity relatives is Q, for quantity index number are calculated and their A.M or G.M.

10. What is Price Index?

A price index compares the price of a commodity in a given period of time to the price paid for the commodity at a particular point in time in the past.

11. **Write a note on Simple Price Index**.

A simple price index tracks the price of a single commodity.

12. Write a note on Aggregate Price Index

It tracks the prices for a group of commodities at a given period of time to the price paid for that group of commodities at a particular point in a time in the past.

13. **Discuss Time Reversal Test**.

A test used with index numbers that is satisfied when the new index is the reciprocal of the original index if the functions of the base period and given period are interchanged; the advantage of index numbers meeting the criteria of the test is that a symmetric comparison of the two periods is obtained and the results are consistent whether one or the other period is used as a base.

14. **Explain Factor Reversal Test**.

A test for index numbers in which an index number of quantity, obtained if symbols for price and quantity are interchanged in an index number of price, is multiplied by the original price index to give an index of changes in total value. The factor reversal test requires that multiplying a price index and a volume index of the same type should be equal to the proportionate change in the current values (e.g. the “Fisher Ideal” price and volume indexes satisfy this test, unlike either the Paasche or Laspeyres indexes).

15. What is meant by Family Budget Method?

The family budgets of a large number of people are carefully studied and the aggregate expenditure of the average family on various items is estimated. These values are used as weights. Current year's price are converted into price relatives on the basis of base year's prices and these prices relatives are multiplied by the respective values of the commodities, in the base year. The total of these products is divided by the sum of the weights and the resulting figure is the required index numbers.

16. **Discuss Cost of Living Index Numbers**.

Cost-of-living index is a theoretical price index that measures relative cost of living over time or regions. It is an index that measures differences in the price of goods and services, and allows for substitutions with other items as prices vary.

17. **Briefly explain Laspeyres Index**:

- Quantities are from the base period
- Reflects changes in prices alone
- Tends to overestimate price
- Ignores changes in consumption
- Easiest to calculate
- Consumer Price Index-modified

18. Explain Paasche Method:

- Quantities are from the given period
- Reflects changes in production consumption
- Tend to underestimate price change
- Weights have to be revised each time period
- Can be costly and time consuming

19. Elaborate Weight aggregate price index:

- Weights are from one or more representative periods

- Bureau of Labor Statistics revises weights every 10 years
- Producer Price Index
- Government agencies indicies are publishes in series (impractical to use Paasche)

20. What are the main steps in Cost of Living Index Number?

Purpose, Base year, Family Budget enquiry, Prices, Averages and Formula.

21. Explain Fisher's Formula:

It is said to be 'ideal' because it satisfies all the three tests of a good index number formula which have the drawback of computational difficulty.

22. What are the methods used to be the Aggregative Method?

1. Laspeyre's Formula
2. Paasche's Formula
3. Fisher's Formula
4. Kelly's Formula
5. Bowley's Formula and
6. Marshall – Edgeworth's Formula

Formula for calculating Index Numbers:

1. UNWEIGHTED INDEX NUMBERS

(i) Simple aggregative method

$$P_{01}=\frac{\sum p1}{\sum po}\times 100$$

(ii) Simple Average of price relative method

$$P_{01}=\frac{\sum\left(\frac{p1}{p0}\times 100\right)}{N}$$ if Arithmetic Mean is used

$$P_{01} = \text{antilog} \sum \frac{\left(\frac{p1}{p0} \times 100\right)}{N}$$ if Geometric Mean is used

2. WEIGHTED INDEX NUMBERS

I. Weighted Aggregative Indices

(i) Laspeyre's Method

The formula for constructing the index is

$$P01 = \frac{\sum p1q0}{\sum p0q0} \times 100$$

(ii) Paasche's Method

The formula for constructing the index is

$$P01 = \frac{\sum p1q1}{\sum p0q1} \times 100$$

(iii) Dorbish and Bowley's Method

The formula for constructing the index is

$$P01 = \frac{L + P}{2}$$

Where, L= Laspeyre's Index, P= Paasche's Index or

$$P01 = \frac{\frac{\sum p1q0}{\sum p0q0} + \frac{\sum p1q1}{\sum p0q1}}{2} \times 100$$

(iv) Fisher's Ideal Index

$$P01 = \sqrt{\frac{\sum p1q0}{\sum p0q0}} \times \sqrt{\frac{\sum p1q1}{\sum poq0}} \times 100$$

(v) Marshall – Edgeworth Method

$$P01 = \frac{\sum (q0 + q1)p1}{\sum (q0 + q1)p0} \times 100$$

II. Weighted Average of Relative Indices

(i) P01= $\frac{\sum PV}{\sum V}$, if Arithmetic mean is used,

(ii) P01 =Antilog $\left[\frac{\sum V \log P}{\sum V}\right]$, if Geometric mean is used,

Where, p= $\frac{p1}{p0} \times 100$

3. Quantity or Volume Index Numbers

(i) When Laspeyre's Method is used,

Q01= $\frac{\sum q1p0}{\sum q0p0} \times 100$

(ii) When Paache's formula is used

Q01= $\frac{\sum q1p1}{\sum q0p0} \times 100$

(iii) When Fisher's formula is used

Q01= $\sqrt{\frac{\sum q1p0}{\sum q0p0}} \times \sqrt{\frac{\sum q1p1}{\sum q0p1}} \times 100$

4. Value Index Numbers

Q01= $\frac{\sum p1q1}{\sum p0q0} \times 100$

Tests of Adequacy of index number

I. Unit Test

II. Time Reversal Test = $P01 \times P10 = 1$

III. Factor Reversal Test = P01 $P01 \times Q01 = \frac{\sum p1q1}{\sum p0q0}$

IV. Chain Index Numbers

= Average link relative of current year × Chain index of Pre. Year

100

5. Consumer Price Index Number

(i) Aggregate expenditure method = $\frac{\sum p1q0}{\sum p0q0} \times 100$

(ii) Family budget method = $\frac{\sum IW}{\sum W}$ if aggregate expenditure method is used

(iii) $= \text{antilog} \left[\frac{\sum W \log I}{\sum W} \right]$

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