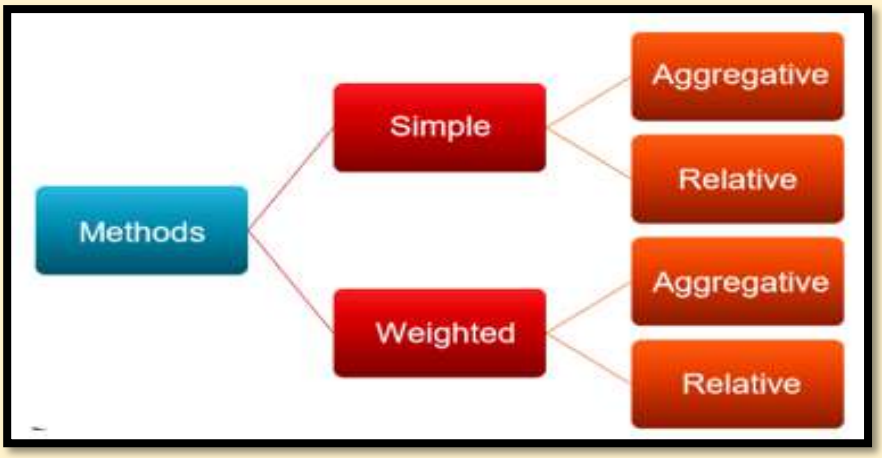
CHAPTER - 18
INDEX NUMBER

UNIT – I

INDEX NUMBER

INTRODUCTION	An index number is a ratio or an average of ratios expressed as a percentage two or more time periods are involved, one of which is base time period. The value of the base time period serves as the standard point of composition
ISSUES INVOLVED	Selection of data Selection of Base Year Types of Formula Selection of weights The data for Index Numbers Choice of Variables
Features of Index number	Specialized Averages Measure the net change in a group of related variables Measures the affect of changes over a period of time

Methods	
Price Relative	Price relatives are helpful in understanding and interpreting changing economic and business conditions over time. A price relative shows how the current price per unit for a given item compares to a base period price per unit for the same item. A price relative expresses the unit price in each period as a percentage of the unit price in the base period
Aggregate Price Indexes	An aggregate price index is developed for the specific purpose of measuring the combined change of a group of items An unweighted aggregate price index in period t,

1

Laspyre's Price index number

$$P_{01}=\frac{\sum p_1 q_0}{\sum p_0 q_0}\times 100$$

Where

- P_1=Price of the current year
- P_0=Price of the base year
- q_0=Quantity of the base year

2

Paasche's Price index number

$$P_{01}=\frac{\sum p_1 q_1}{\sum p_0 q_1}\times 100$$

- Where
- P1=Price of the current year
- P0=Price of the base year
- q1=Quantity of the current year

3

Marshall-Edgewoths's Price index number

$$\frac{\sum (q_0+q_1)\times p_1}{\sum (q_0+q_1)\times p_0}\times 100$$

- Where
- P1=Price of the current year
- P0=Price of the base year
- qo=Quantity of the current year
- q1=Quantity of the current year

4

Fisher's Price index number

$$P_{01}=\sqrt{L\times P}$$

$$P_{01}=\sqrt{\frac{\sum p_1 q_0}{\sum p_0 q_0}\times\frac{\sum p_1 q_1}{\sum p_0 q_1}}\times 100$$

- Where
- L= Laspyre's Price Index number
- P=Paachee's Price Index number

5

Weighted Price index number

- If Arithmetic Mean is used

$$P_{01}=\frac{\sum PV}{\sum V}\times 100 \qquad P=\frac{p_1}{p_0}\times 100$$

- Where

V=P0q0

- P1=Price of Current Year
- P0=Price of base year

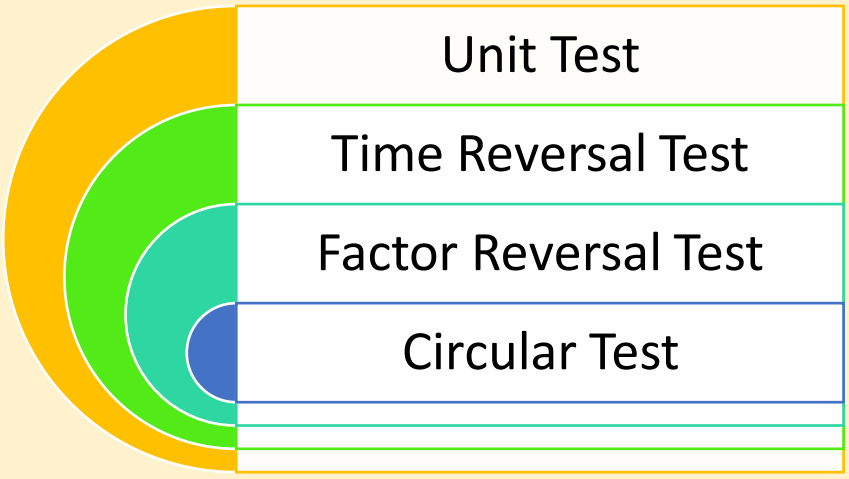
6

Weighted Price index number

- If Geometric Mean is used

$$P_{01}=\text{Anti log}\left[\frac{\sum V \log P}{\sum V}\right]\times 100$$

- Where
- P1=Price of Current Year
- P0=Price of base year
- V=P0q0

Quantity Indexes	An index that measures changes in quantity levels over time is called a quantity Index. Probably the best known quantity Index is the Index of Industrial Production.
Quantity Indexes Numbers	1. Simple Aggregate of Quantities = $\frac{\sum Q_n}{\sum Q_0}$ 2. The simple average Quantity relatives $\frac{\sum Q_n}{\frac{\sum Q_0}{N}}$ 3. Weighted Aggregate Quantity indices i. With base your weight (Laspyres's Index) $\frac{\sum Q_n p_0}{\sum Q_o p_0} \times 100$ ii. With Current year weight (Paasche's Index) $\frac{\sum Q_n p_n}{\sum Q_o n} \times 100$ iii. Geometric Mean of (1) and (2) $\sqrt{\frac{\sum Q_n P_0 \sum Q_n P_n}{\sum Q_0 P_0 \sum Q_0 P_n}} \times 100$ iv. Base year average of quantity relatives $\frac{\sum \frac{Q_n}{Q_0} \times (P_0 Q_0)}{\sum P_0 Q_0} \times 100$
Value Index Number	$\frac{\sum V_n}{\sum V_0} = \frac{\sum P_n Q_n}{\sum P_0 Q_0}$
Test of Adequacy of Index Numbers	
Unit Test	The Unit test requires that the formula for constructing an index should be independent of the units in which, prices and quantities are quoted. All formulae except thee simple (un weighted) aggregate index formula satisfy this test.

Time Reversal Test	A method satisfies time reversal test if it gives $P_{01} \times P_{10} = 1$ Where P_{01} is the price index number for the current year P_{10} is the index number of the base year, taking current year as the base, Both the indices without the factor 100.
Factor Reversal Test	A method satisfies factor reversal test if it gives $$P_{01} \times q_{01} = \frac{\sum p_1 q_1}{\sum p_0 q_0}$$ Where $P_{01}$is the price index for the currentyear q_{01} is the quantity index for the current year Fishers index umber only satisfies the factor reversal test
Chain base index numbers	Chain base index numbers is one in which the figures for each are first expressed s percentage of the preceding year. The percentage of chained together by successive multiplication to form a series of chain index, in chain base year index method the base year changes from year to year $$\frac{\text{Link realtive of current year} \times \text{chain index Previous year}}{100}$$ $$\frac{\text{Current year Price Index}}{\text{Immediate previous year price relative}} \times 100$$
Splicing	Technique of linking two or more index number series with same items and a common overlapping year but with different base period in order to form a continuous series. Splicing may be forward or backward Forward Splicing

Splicing	Index no. of old series	Index no. of new series
Backward Splicing	No change	= (Index number of old series/100)×Given index No. of new series

	Index number using new base $\frac{\text{Index Number using new base}}{\text{Index number Corresponding new base year}} \times 100$
Uses of Index Numbers	1. As the indices are constructed mostly from deliberate samples, chances of errors creeping in cannot be always avoided. 2. Since index numbers are based on some selected items, they simply depict the broad trend and not the real picture. 3. Since may methods are employed for constructing index numbers, the result gives different values and this at times create confusion. Deflated Time series using index Numbers Deleted Value = $\frac{Current\ value}{Price\ index\ of\ the\ current\ year}$ or = Current Value × $\frac{Base\ price\ (P_0)}{Current\ Price\ (P_n)}$
Limitations of Index Numbers	**As we know, our indices are of prices and quantities. The question is: does our index reflect a change in the quantity of a product or item?** **Apart from quantity changes, there are other aspects that are pertinent while we are interpreting index numbers. We have to ask whether the weights assigned to different items are appropriate.**
Methods of Constructing Consumer Price index	**Aggregate Expenditure method** **Family budget method** **Aggregate expenditure method is a weighted aggregated price index where weights are the base period quantities. (Laspyres's Index number)** **CPI** = $\frac{\sum p_1 q_0}{\sum p_0 q_o} \times 100$
Family Budget Method	**Weighted Aggregated of price relatives** **Index is obtained by taking the average of weighted price relatives and the value weights are used**

	$\text{CPI} = \frac{\sum p_v}{v}\frac{p_1}{p_0} \times 100$ $\text{V} = P_0 . Q_0$

Question 1

Construct the following indices by taking 1997 as the base:

(i) Simple Aggregative price Index

Item	A	B	C	D	E
Price Rs. (1997)	6	2	4	10	8
Price Rs. (1998)	10	2	6	12	12
Price Rs. (1999)	15	3	8	14	16

(a) 140, 186.67
(b) 120. 90, 140.6
(c) 140, 120.90
(d) 56,420

Answer: A

Explanation:

Item	P_0	P_1	P_2	$P_1 = \frac{P_1}{p_0} \times 100$	$P_2 = \frac{p_2}{P_0} \times 100$
A	6	10	15	166.67	250
B	2	2	3	100.00	150
C	4	6	8	150.00	200
D	10	12	14	120.00	140
E	8	12	16	150	200
	$\sum P_0 = 30$	$\sum P_1 = 42$	$\sum P_2 = 56$	$\sum\left(\frac{P_1}{P_0} \times 100\right) = 686.67$	$\sum\left(\frac{P_2}{P_0} \times 100\right) = 940$

Simple Aggregative Price Index:

$P_{01} = \frac{\sum p_1}{\sum P_0} \times 100 \frac{42}{30} \times 100 = 140$ (for 1998)

$P_{02} = \frac{\sum P_2}{\sum P_0} \times 100 \frac{56}{30} \times 100 = 186.67$ (for 1999)

Question 2

A composite price index where the prices of the item composite are weighted by their relative importance is known as the

(a) Price relative (b) CPI
(c) Weight aggregate price (d) None of these

Answer: C

Explanation:

Weight aggregate price index the ratio of the sum of weighted price of current and base time period multiplied by 100 is called weight aggregate price index. This index is calculated allocating weight to each commodity on the basis of their relative importance

Question 3

A weighted aggregate price index where the weight for each item is its current period quantity is called the

(a) Aggregate index (b) Consumer index
(c) Laspeyres index (d) Paasche index

Answer: D

Explanation:

Paasche index, index developed by German economist Herman Paasche for measuring current price or quantity levels relative to those of selected base period. It differs from the Laspeyres index in that it uses current – period weight

Question 4

An index that is designed to measure changes in quantities over time is known as the:

(a)Quantity index (b) Time index
(c) Paasche index (d) None of these

Answer: A

Explanation:

Index number. As index number is an economic data figure reflecting price or quantity compared with a standard or base value. The base usually equals 100 and the index number is usually 100 times the ratio the base value.

Question 5

Index number is expressed in:

(a) Ratio (b) Squares
(c) Percentages (d) Combination

Answer: C

Explanation:

Index number are value expressed as percentage of a single base figure. For example. If annual production of a particulars. Chemical rose by 35 % output in the second year was 135% of that in the first year. Index terms, output in the two years was 100and 135 respectively. Index number have no units

Question 6

Indices calculated by the chain base method are free from:

(a) Seasonal variation (b)Errors

(c) Percentages (d) Ratio

Answer: A

Explanation:

A value in any specific time period base on the value of the same entity in the preceding period. Changes in the value can be compared between sequential time periods. This differs from a fixed base index in which value in any period are based of the initial value.

Question 7

Consumer price index number is obtained by:

(a) Laspeyres formula (b) Fisher ideal formula

(c) Marshall Edgeworth formula (d) Paasche formula

Answer: A

Explanation:

Laspeyres formula. Laspeyres suggested this index formula in 1871, in case of calculating the price index, assuming that for individual item. Price at the base period to be $P_i 0$, and quantity at the base period to be $Q_I 0$, the following equation is called ``Laspeyres formula".

Question 8

The most appropriate average the price relatives are:

(a) Median (b) Harmonic mean

(c) Article mean (d) Geometric mean

Answer: D

Explanation:

Geometric mean index number is a multiplicative aggregation of (price or quantity) ratio with their importance exponents /weight derived from one or literature on index number theory

Question 9

The test which is lot obeyed by any of the weighted index numbers unless the weights are constant:

(a) Circular test (b) Time reversal test
(c) Factor reversal test (d) None of them

Answer: A

Explanation:

According to this rest the product of price index must be equal to the value index

Note1. Since Fisher index number satisfied both time reversal test, it is called an ideal index number, Circular test it is generalized of the time reversal test.

Question 10

Index number having upward basis is:

(a) Laspeyres index (b) Paasche`s index
(c) Fisher`s index (d) Marshall Edge worth index

Answer: B

Explanation:

Paasche index, index developed by German economist Herman Paasche for measuring current price or quantity level relative to those of a selected base period. it differs from the Laspeyres index in that uses current period weighting

Question 11

Marshall Edgeworth price index was proposed by:

(a) One English economist (b) Two English economist
(b) Three English economist (d) Many English economist

Answer: b

Explanation:

The Marshall – Edge worth index credited to Marshall (1887) and Edge worth (1925) is a weight relative of current period to base period set o price This index uses the arithmetic average of the current and based period quantities for weighted it is considered a pseudo – superlative formula and is symmetric.

Question 12

Panache`s price index number is also called

(a) Base year weight (b) Current year weight

(c) Simple aggregative index (d) Consumer price index

Answer: B

Explanation:

Passche index, index developed by German economist Herman Passche for measuring current price of quantity level to those of selected base period. it differs from the Laspeyres index in that it uses current period weight

Question 13

The major groups for whom the consumer price index number are constructed in India

(a) The industrial workers (b) The urban non- manual workers and

(c) The agricultural workers (d) All of these

Answer: D

Explanation:

Consumer price index member are having types:
The industrial worker
The urban non – manual worker and
The agriculture labors.

Question 14

From the following data construct price index of 1995 taking 1990 as base by using Average price Relative Method:

Commodity	A	B	C	D
Price in 1990 Rs.	60	45	80	25
Price in 1995 Rs.	75	50	70	40

(a) 120.90 (b) 12.60
(c) 809.56 (d) 12.888

Answer: A

Explanation:

Commodity	P_0	P_1	$\frac{P_1}{P_0} \times 100$
A	60	75	125
B	45	50	111.11
C	80	70	87.50
D	25	40	160

Total	210	235	

Question 15

Calculating weighted aggregate price index from the following data using Laspeyre`s method

Base Period	Current period			
Price	Quantity Price		Quantity	
A	2	10	4	5
B	5	12	6	10
C	4	20	5	15
D	2	15	3	10

(a) 155.09
(b) 12.60
(c) 135. 26
(d) 12.888

Answer: C

Explanation:

Commodity								
A	2	10	4	5	20	40	10	20
B	5	12	6	10	60	72	50	60
C	4	20	5	15	80	100	60	75

Question 16

Calculate weighted aggregate price index member from the following data by using paasches method

Commodity	Base year		Current	
	Price	Quantity	Price	Quantity
A	10	30	12	50
B	8	15	10	25
C	6	20	6	30
D	4	10	6	20

(a) 199.79
(b) 119.79
(c) 135.26
(d) 12.888

Answer: B

Explanation:

Commodity	P					
A	10	30	12	50	500	600
B	8	15	10	25	200	250

C	6	20	6	30	180	180

Question 17

Calculate Laspeyres and Passche index for the following data:

Commodity	1970		1990	
	Price	Expenditure	Price	Expenditure
A	8	100	10	90
B	10	60	11	66
C	5	100	5	100
D	3	30	2	24
E	2	8	10	20

(a) 109.73, 107.91
(b) 119.79, 169.56
(c) 135.26, 0.465
(d) 135.26, 0.465

Answer: A

Explanation:

Since we are given the expenditure and price we can obtain the quantity by dividing expenditure by the price for each commodity.

E								
A	8	12.50	10	9	100	125	72	90
B	10	6.0	11	6	60	66	60	66
C	5	20.0	5	20	100	100	100	100
D	3	10.0	2	12	30	20	36	24

Question 18

Calculate weighted average of price relative index from the following data

Item	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

(a) 215
(b) 156
(c) 965
(d) 325

Answer: B

Explanation:

Item	W	P_0	P_1	$R=\frac{p_1}{P_0}\times 100$	RW
A	40	2	4	$\frac{4}{2}\times 100=200$	8000
B	30	5	6	$\frac{6}{5}\times 100=120$	3600
C	20	4	5	$\frac{5}{4}\times 100=125$	2500
D	10	2	3	$\frac{3}{2}\times 100=150$	1500
Total					$\sum RW = 15600$

$$P_{01}=\frac{\sum RW}{\sum W}-\frac{15600}{100}-156$$

Question 19

The monthly capital expenditure incurred by worker of an industrial center during 1980 and 2005 on the following item are given below: The weights of these item are 75,10,5,6 and 4 respectively Prepare a weighted index number cost of living for 2005 with 1980as base.

Item	Price in 1980	Price in 2005
Food	100	200
Clothing	20	25
Fuel and Lighting	15	20
Music	30	40
House Rent	35	65

(a) 185
(b) 156
(c) 165
(d) 325

Answer: A

Explanation:

Item	W	P_0	P_1	$R=\frac{P_1}{P_0}\times 100$	RW
Food	75	100	200	200	15000
Clothing	10	20	25	125	1250
Fuel and Light	5	15	20	133.33	666.65
Music	6	30	40	133.33	799.98
House Rent	4	35	65	185.71	742.84

					∑PW=18459.47

CPI= $\frac{\sum RW}{\sum W}$ = $\frac{18459.47}{100}$ 184.59 = 185 (Approx)

Question20

An enquiry into the budget of the middle-class families in a certain city gave the following information:

Expenses on Item	Food 35%	Fuel 10%	Clothing 20%	Rent 15%	Music 30%
Price in 2004 (Rs.)	1500	250	750	300	400
Price in 1995 (Rs.)	1400	200	500	200	250

(a) 165.62 (b) 134.5
(c) 165.60 (d) 325.8

Answer: B

Explanation:

Item	Win %	P_0	P_1	R= $\frac{p_1}{p_0}$ × 100	R W
Food	35	1400	1500	107.14	3750
Fuel	10	200	250	125.00	1250
Clothing	20	500	750	150.00	3000
Rent	15	200	300	150.00	2250
Music	20	250	400	160.00	3200

CPI = $\frac{\sum RW}{\sum W}$ = $\frac{13450}{100}$ =134.5

Question 21

Calculate the cost of living index number using family budget method

Commodities	Wheat	Rice	Pulses	Ghee	Sugar	Oil	Fuel	Cloths
Unit consumed in	200	50	56	20	40	50	60	10
Price Rs. in Bose	1.0	3.0	4.0	20.0	2.5	10.0	2.0	15.0
Price Rs. In C. Y	1.2	3.5	5.0	30.0	5.0	15.5	2.5	18.0

(a) 166.62
(b) 136.88
(c) 165.870
(d) 325.8

Answer: B

Explanation:

Commodities	Q_0	P_0	P_1	$R=\frac{P_1}{P_0}\times 100$	$W=P_0q_0$	RW
Wheat	200	1.0	1.2	120.00	200	24000
Rice	50	3.0	3.5	116.67	150	175.00.5
Pulses	56	4.0	5.0	125.00	224	28000
Ghee	20	20.0	30.0	150.00	400	60000
Sugar	40	2.5	5.0	200.00	100	20000
Oil	50	100	15.5	155.00	500	77500
Fuel	60	2.0	2.5	125.00	120	15000
Cloths	40	15.0	18.0	120.00	600	72000
					$\sum w=22$	$\sum RW=$

CPI $= \frac{\sum RW}{\sum W} = \frac{314000.5}{2294} = 136.88$

Question 22

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

(a) 10000
(b) 13688
(c) 165870
(d) 16000

Answer: D

Explanation:

Salary required in the current year to maintain the same standard of living of base year.

Base year salary $\times \frac{CPI\ OF\ CURRENT\ YEAR}{CPI\ OF\ base\ year} = 4000 \times \frac{400}{100}$ Rs. 16,000

Current year salary = Rs. 16,000

The increase in current Year salary required = 16000- 6000 = Rs. 10,000

Question 23

Given the following data:

Year	1995-	1996-	1997-	1998-	1999-	2000-	2001-	2002-

WPI (1993	**121,6**	**127.2**	**132.8**	**140.7**	**145.7**	**155.7**	**161.3**	**161**

Calculate the inflation of year 1998 – 99

(a) 5.94% (b) 59.89%

(c) 4.4% (d) None

Answer: A

Explanation:

Year 1996-97 = $\frac{X_1 - X_{t-i}}{Xt-i} \times 100$ $\frac{127.2-121.6}{121.6} \times 100 = 4.6\%$

Year 1997-98 = $\frac{X_1 - X_{t-i}}{Xt-i} \times 100 \frac{132.8-127.2}{127.2} \times 100 = 4.40\%$

Year 1998- 99 = $\frac{X_t - X_{t-i}}{Y} \times 100 = \frac{140.-132.8}{132.8} \times 5.94\%$

Question 24

What will be the real wage of the consumer if his money wage Rs. 10 and the cost of living index is 526?

(a) 1900 (b) 1.901

(c) 2186 (d) 4664

Answer: B

Explanation:

Real wages = $\frac{\text{Money Wages}}{\text{Cost of living index}} \times \frac{10.000}{526} \times 100 = \text{Rs. } 1.901$

Question25

Index for base period is always taken as:

(a) 100 (b) 0

(c) 200 (d) 1

Answer: A

Explanation:

The index at the base period is usually scaled to 100 or 1000. for example, that the index at the chosen base period is set to 1000. if at another period is 2000 then the value indicated by the index (e.g., prices) would be estimate double what it was during the base period.

Question 26

When the prices of rice are to be compared, we compute:

(a) Volume Index (b) Value Index

(c) Price Index (d) Aggregate Index

Answer: C

Explanation:

Price index. Measure of relative price changes, consisting of a series of numbers are arranged so that a comparison between the values for any two period of places will show the average changes in price between period or the average difference in prices between places.

Question 27

Which formula is used in chain indices?

(a) $\frac{\sum P_n}{\sum P_O} \times 100$ (b) $\frac{P_n}{P_{n-1}}$

(c) $\frac{P_n}{P_O}$ (d) None

Answer: B

Explanation:

In the chain index the comparison takes place always between successive calculation periods. In the chain index the changes in two calculation periods is used to take forward the index point figure of the desired base period in the chain index the weight are changed in principal in each calculation period.

Question 28

An index number that can serve purpose is called

(a) General purpose index (b) Special purpose index

(c) Cost of living index (d) None of these

Answer: A

Explanation:

It is used measure the Changes in the wholesale price level of country over a period of time.

It is used measure the changes in the cost of living of a certain selected people living in a certain locally.

It is very much used by the government agencies to for policies on different matter viz.

Question 29

Laspeyres index = 110, Paasche index = 108 then fisher ideal index equal to:

(a) 110 (b) 108

(c) 100 (d) 109

Answer: D

Explanation:

F = $\sqrt{L \times P}$

So. $\sqrt{110 \times 108}$ = 109

Question 30

Consumer price indexes are obtained by:

(a) Paasche formula (b) Fisher`s ideal formula

(c) Marshall Edgeworth formula (d) Family budget method formula

Answer: d

Explanation:

A consumer price index (CPI) measure changes in the price level of market basket of consumer goods and services purchased by household, The CPI is a statistical estimate constructed using the price of a simple of representative item whose prices are collected periodically.

Question 31

Which of the following satisfy the time reversal test?

(a) $P_{01} = \frac{\sum P_1 q_0}{\sum P_0 q_0}$ (b) $P_{01} = \frac{\sum P_1 q_1}{\sum P_0 q_1}$

(c) $P_{01} = \sqrt{\frac{\sum P_1 q_0}{\sum P_0 q_0} \times \frac{\sum P_1 q_1}{\sum P_0 q_1}}$ (d) None

Answer: C

Explanation:

Factor reversal test time reversal test this test is proposed by living fisher According to him an index number (formula) should be such that when the base year and current year are interchanged (reversed) the resulting number should be the reciprocal of the earlier.

Question 32

Simple average method of relative method is equal to:

(a) $\frac{P_n}{P_o} \times 100$ (b) $\frac{\sum P_n}{\sum P_0} \times 100$

(c) $\sum \left(\frac{p_n}{P_0}\right) \times 100$ (d) $\frac{1}{N} \sum \left(\frac{P_n}{P_0}\right) \times 100$

Answer: D

Explanation:

In case of un weighted average of relative price relative of each commodity is first calculated and then the average (mean, median, or geometric mean)of these price relatives for all the commodities is taken average of

relatives can be calculated by taking arithmetic mean, geometric mean or median as average.

Question 33

Link relative of current year is equal to:

(a) $\frac{\text{Price of the current year}}{\text{price of the base year}} \times 100$

(b) $\frac{\text{Price of the base year}}{\text{price in the preceding year}} \times 100$

(c) $\frac{\text{Price in the current year}}{\text{price in the preceding year}} \times 100$

(d) $\frac{\text{Price in the preceding year}}{\text{price in the current year}} \times 100$

Answer: C

Explanation:

This method of finding the seasonal indices in the form of the chain relatives was

(C) $\frac{PRICE\ IN\ THE\ CURRENT\ YEAR}{PRICE\ IN\ THE\ PRCENDING\ YEAR} \times 100$

Development by Prof. Karl Person and hence this method is also known as the person method of seasonal variation Hence is correct answer.

Question 34

Marshall Edge worth price index was proposed by:

(a) Only English economist

(b) Two English economist

(c) Three English economist

(d) May English economist

Answer: B

Explanation:

The Marshall Edgeworth index credited to Marshall (1887) and Edgeworth (1925) is a weighted relative current period to base period seats of prices this index uses the arithmetic a pseudo- superlative formula and is symmetric.

Question 35

Write down formula calculating inflation rate:

(a) $\frac{X_1 X_{t-1}}{X_{1-1}} \times 100$

(b) $\frac{\sum P_n q_n}{\sum P_o q_o} \times 100$

(c) $\frac{P_a}{P_{a-1}} \times 100$

(d) None

Answer: A

Explanation:

Inflation rate = $\frac{X_t - X_{t-i}}{x_{t-i}} \times 100$

Where X_t refers to WPI for the $(t)^{th}$ week

X_t refers to WPI for the $(t-1)^{th}$ week.

Question 36

If all the values are not equal importance the index number is called

(a) Simple (b) Un weighted
(c) Weighted (d) None

Answer: C

Explanation:

When all commodities are not equal importance, we assign to each commodity relative to its importance and the index computed from the weight is called weighted index number

Question 37

In fixed base method the base period should be:

(a) For away (b) Abnormal
(c) Unreliable (d) Normal

Answer: D

Explanation:

The value in any specific time period is based on the value in the initial time period and this base remains unchanged through the index. This is different from chain base index in which values in any period are based on the preceding time period

Question 38

How many types are used in the calculation number?

(a) 2 (b) 3
(c) 4 (d) 5

Answer: B

Explanation:

Index number are used as an indicate the changes in economic activity they also provide framework for decision making and to period future event. There are three types of index number are generally used they are price index, quantity index, and value index.

Past Examination Questions

MAY - 2018

Question 1

A series of numerical figure show the relative position is called:

(a) Index number (b) Relative number
(c) Absolute number (d) None

Answer: A

Explanation:

A series of numerical figures which show the relative called Index Number:

Question 2

P01 is the index for time:

(a) 1 on 0 (b) 0 on 1
(c) 1 on 1 (d) 0 on 0

Answer: A

Explanation:

P01 is the index number 1 on 0.

Question 3

if $\sum P_0 Q_0 = 1360$, $\sum P_n Q_0 = 1990$, $\sum P_0 Q_0 = 1344$, $\sum P_0 Q_n = 1880$ then the Laspeyra`s index number is:

(a) 0. 71 (b) 1. 39
(c) 1. 75 (d) None

Answer: B

Explanation:

if $\sum P_0 Q_0 = 1360$, $\sum P_0 Q_0 = 1990$, $\sum P_0 Q_n = 1344$, $\sum P_0 Q_n = 1880$ then the Laspeyra`s index

No. $\frac{\sum P_n Q_0}{\sum P_0 Q_0} = \frac{1900}{1360} = 1.3970$

Question 4

Price relative is expressed in term of

(a) $P = \frac{P_n}{P_0}$ (b) $P = \frac{P_0}{P_n}$
(c) $P = \frac{P_1}{P_0} \times 100$ (d) $P = \frac{P_0}{P_n} \times 100$

Answer: C

Explanation:

Price relative $P = \frac{P_1}{P_0} \times 100$

Question 5

Circular test is satisfied by:

(a) Leapeyre`s index number (b) Paasche index number
(c) The simple geometric mean of price relatives and the weighted aggregative weight (b) None of these

Answer: C

Explanation:

Circular test is satisfied by the simple geometric mean an of price relative weighted aggregative with fixed weighted

Question 6

If the 1970 index with base 1956 is 200 and 1965 index weighted 150 the index 1970 on base 1960 will be:

(a) 700 (b) 300
(c) 500 (d) 600

Answer: B

Explanation:

Let 1960 1965 1970
P_0 P_1 P_2

Index no. of 1965 with base year 1960

$P_0 = \frac{P_2}{P_1} \times 100 = 150$

$\frac{P_1}{P_0} = \frac{150}{100}$

Index no of 1970 with the base 1965

$P\infty = \frac{P_2}{p_1} \times 100 = 200$

$\frac{P_2}{p_1} = \frac{200}{100}$

Multiply equation (1) (2)

$\frac{P_1}{P_0} \times \frac{p_2}{p_1} = \frac{150}{100} \times \frac{200}{100}$

$\frac{p_2}{p_0} = 3$

$\frac{P_1}{P_0} = 100$

$\frac{p_2}{p_1} \times 100 = 3 \times 100$

$P\infty = 300$

Question 7

Time reversal & factor reversal are:

(a) Quantity Index **(b) Ideal Index**

(c) Price Index **(d) Test of consistency**

Answer: D

Explanation:

Time reversal of numerical figures which shows the relative position is called Index Number

Question 8

The number to test of adequacy is :

(a) 2 (b) 5

(c) 3 (d) 4

Answer: D

Explanation:

The number to test of adequacy is 4

Question 9

The circular test is an extension of

(a) 1 on 0 (b) 0 on 1

(c) 1 on 4 (d) 0 on 0

Answer: a

Explanation:

The circular test is extension of Time reversal test

Question 10

The multiplicative time series model is

(a) y = T + S + C + I **(b) y = TSCI**

(c) y = a +bx **(d) $y = a + bx + cx^2$**

Answer: b

Explanation:

The multiplication time series model is y = T × S × C × I

Where T is trend variation

S is seasonal variation

C is cyclical variation

I is or irregular variation

Nov - 2018

Question 1

Which of the following statement is true?

(a) Passhe`s is index number is based on the base year quantity

(b) Fisher index number is the arithmetic mean of Laspeyre`s index number and Paasche`s index number

(c) Arithmetic mean is the most appropriate average for constructing the index number

(d) Fisher index number is an ideal index number

Answer: D

Explanation:

Fisher index number is an ideal index NO.

Question 2

It Laspeyre`s index number is 250 and Paasche index number is 160 then Fisher index number is:

(a) 40,000

(b) $\frac{25}{16}$

(c) 200

(d) $\frac{25}{16}$

Answer: C

Explanation:

Laspeyre`s index NO. (l) = 250

Paasche index NO. (p) = 160

Fisher index NO. (F) $=\sqrt{L \times P}$

$=\sqrt{250 \times 160}$

$=\sqrt{40{,}000}$

= 200

Question 3

The sample average method is used to calculate

(a) Trend variation

(b) Cyclical Variation

(c) Seasonal variation

(d) Irregular variation

Answer: C

Explanation:

The simple Average Method is used to calculate `seasonal variation

Question 4

If $\sum P_0 Q_0 = 240$, $\sum P_0 Q_1 = 480$, $\sum P_1 Q_0 = 600$, $\sum P_1 Q_1 = 192$ the Laspyres's index number is:

(a) 250

(b) 300

(c) 350

(d) 200

Answer: A

Explanation:

If $\sum P_0 Q_0 = 240$, $\sum P_0 Q_1 = 480$, $\sum P_1 Q_0 = 600$, $\sum P_1 Q_1 = 192$

Laspeyra`s index no. $\frac{\sum P_1 Q_0}{\sum P_0 Q_0} = \frac{600}{240} \times 100$

$= 250$

Question 5

The sale of Cold Drink would go up in summers and go down in the winters is an example of

(a) Trend variation (b) Cyclical Variation

(c) Seasonal variation (d) Irregular variation

Answer: c

Explanation:

The sale of Cold Drink would go up in summers and go down in the winters is an example of Seasonal variation

MAY - 2019

Question 1

The prices and quantities of 3 commodities in base and current year are as follow:

P_0	P_1	Q_0	Q_1
12	14	10	20
10	8	20	30
8	10	30	10
30	**32**	**60**	**60**

The Laspeyres price index is:

(a) 128. 13 (b) 107. 14

(c) 120. 10 (d) None

Answer: B

Explanation:

$LA = \frac{\sum P_1 Q_0}{\sum P_0 Q_0} \times 100$

$= \frac{32 \times 60}{30 \times 60} = \frac{1920}{1800} = 1.0777 \times 100$

$= 107.4$

Question 2

Which is called an ideal index number?

(a) Laspeyre's index number (b) Paasche index number
(c) Fisher index number (d) Marshall Edgeworth number

Answer: C

Explanation:

The reason the fisher index is called the ideal index is twofold because the Paasche index and the Laspeyre's index. the index satisfies the time reversal test and the factor reversal test

Question 3

If Laspeyre's index is L and P Paasche index is P then Fisher index F is F_2 = 1 × P

(a) F = L × P (a) F2= L × P
(c) F2 = $\sqrt{L+P}$ (d) F = $\frac{1}{L\times P}$

Answer: B

Explanation:

If Laspeyre's index is L and Paasche index is P then Fisher index F is F2= L × p

Question 4

Semi average method if the number of values is odd then we drop

(a) First value (a) Last value
(c) Middle value (d) Middle two value

Answer: C

Explanation:

If the number of observations is even the division into halves will be straight forward however if the number of observations is odd then the middle most item i.e. $\left(\frac{n+1}{2}\right)$is dropped the two points so obtained are joined through a straight line which show the trend

Nov - 2019

Question 1

Fisher`s index does not satisfy:

(a) Circular test (b) Time reversal test
(c) Factor reversal test (d) Unit test

Answer: A

Explanation:

Fisher`s ideal formula for calculating index no. satisfies unit test as unit test require that the formula should be independent of the unit in which or for which

prices and quantities are quoted and that is full filed by fisher1s ideal index
Factor reversal test hold when the product of price index and quantity index should be equal to corresponding value index i.e.

$$\frac{P_1Q_1}{P_0Q_0}$$

$P_{01} \times Q_{01} = \frac{P_1Q_1}{P_0Q_0}$

Hence it is satisfied by Fisher`s Ideal index
Time reversal test is a test to determine whether a given method will work both ways in time forward and backward So fisher`s satisfies this test
Circular test: It is concerned with the measurement of price change over a period of year this is not met by Fisher ideal index no.

Question 2

The index number of prices at place in the year 2008 is 225 with 2004 as the base then there is

(a) 125% increase (b) 225% increase
(c) 100% increase (d) 25% increase

Answer: A

Explanation:

Let the index no. of price of base year be 100
Year index no.
2004 = 100
Increase = 225 – 100 = 25
So there is 125% increase.

DEC - 2020

Question 1

Index Number are expressed as _____

(a) Squares (b) Ratios
(c) Percentages (d) Combinations

Answer: C

Explanation:

Index numbers provide a simple way of representing changes over time. Each value is expressed as a percentage of a base value which is the value that occurred in a base period. The index numbers below show how average earnings in different sectors changed between 2000 and 2006.

Question 2

If Laspeyre's index number is 110 and Fisher's ideal Index number is 109. Then Paasche's Index number is

(a) 108 (b) 110
(c) 109 (d) 118

Answer: A

Explanation:

Laspeyre's Index (L.I.) =110
Paasche's Index (P.I.) =108
Fisher's Ideal Index = $\sqrt{L.I. \times P.I.}$
$= \sqrt{110 \times 109}$
= 108

JAN - 2021

Question 1

The cost of living index is always

(a) Price index number (b) Quantity index number
(c) Weighted index number (d) Value index number

Answer: C

Explanation:

The cost of living index is always Weighted index number - The cost-of-living index, or general index, shows the difference in living costs between cities. The cost of living in the base city is always expressed as 100. The cost of living in the destination is then indexed against this number.

Question 2

Fisher's index number does not satisfy.

(a) Unit test (b) Circular Test
(c) Time reversal test (d) Factor reversal test

Answer: B

Explanation:

The circular test is satisfied by. Fisher's index number.

Question 3

When the prices for quantities consumed of all commodities are changing in the same ratio, then the index numbers due to Laspyres's and Paasche's will be

(a) Equal (b) Unequal

(c) Reciprocal of Marshall Edge worth index number
(d) Reciprocal of Fisher Index number

Answer: A

Explanation:

When the prices for quantities consumed of all commodities are changing in the same ratio, then the index numbers due to Laspyres's and Paasche's will be equal

JULY - 2021

Question 1

The consumer price Index goes up from 120 to 180 when salary goes up from 240 to 540, what is the increase in real terms?

(a) 80
(b) 150
(c) 120
(d) 240

Answer: Options (c)

Question 2

The weighted aggregative price index numbers for 2001 with 2000 as the base year using Paashe,s Index Number is

Commodity	Price (in ₹)		Quantities	
	2000	2001	2000	2001
A	10	12	20	22
B	8	8	16	18
C	5	6	10	11
D	4	4	7	8

(a) 112.32
(b) 112.38
(c) 112.26
(d) 112.20

Answer: Options (d)

Explanation:

Commodity	2000		2001			
	Price P_0	Qty Q_0	Price P_1	Qty Q_1	P_0Q_1	P_1Q_1
A	10	20	12	22	220	264
B	8	16	8	18	144	144
C	5	10	6	11	55	66
D	4	7	4	8	32	32
					$\sum P_0Q_1$	$\sum P_1Q_1$

			= 451	= 506

Paasche Index No. $= \frac{\sum P_1Q_1}{\sum P_0Q_1} \times 100$

$= \frac{506}{451} \times 100$

$= 112.20$ (Approx)

Question 3

The weighted aggregative price index numbers for 2001 with 2000 as the base year using Marshal - Edge worth Number is

Commodity	Price (in ₹)		Quantities	
	2000	2001	2000	2001
A	10	12	20	22
B	8	8	16	18
C	5	6	10	11
D	4	4	7	8

(a) 112.26 (b) 112.20

(c) 112.32 (d) 112.38

Answer: Options (a)

Explanation:

Commodity	2000	2001						
	Price	Qty	Price	Qty	P_0Q_0	P_0Q_1	P_1Q_0	P_1Q_1
	P_0	Q_0	P_1	Q_1				
A	10	20	12	22	200	220	240	264
B	8	16	8	18	128	114	128	144
C	5	10	6	11	50	55	60	66
D	4	7	4	8	28	32	28	32
					$\sum P_0Q_0$ = 406	$\sum P_0Q_1$ = 451	$\sum P_1Q_0$ = 456	$\sum P_1Q_1$ = 506

M.E. Index No. $= \left(\frac{\sum P_1Q_0 + \sum P_1Q_1}{\sum P_0Q_0 + \sum P_0Q_1}\right) \times 100$

$= \left(\frac{456+506}{406+451}\right) \times 100$

$= 112.26$

Question 4

The weighted aggregative price index numbers for 2001 with 2000 as the base year using Fisher's Index Number is

Commodity	Price (in ₹)		Quantities	
	2000	2001	2000	2001
A	10	12	20	22
B	8	8	16	18
C	5	6	10	11
D	4	4	7	8

(a) 12.26 (b) 112.20
(c) 112.32 (d) 112.36

Answer: Options (d)

Explanation:

Commodity	2000 Price Qty	2001 Price Qty	P_0Q_0	P_0Q_1	P_1Q_0	P_1Q_1
	P_0Q_0	P_1Q_1				
A	10 20	12 22	200	220	240	264
B	8 16	8 18	128	14	128	144
C	5 10	6 11	50	55	60	66
D	4 8	4 8	8	32	24	32
			$\sum P_0Q_0$ = 406	$\sum P_0Q_1$ = 451	$\sum P_1Q_0$ = 456	$\sum P_1Q_1$ = 506

$$\text{Fisher Index No.} = \sqrt{\frac{\sum P_1Q_0}{\sum P_0Q_0} \times \frac{\sum P_1Q_1}{\sum P_0Q_1}} \times 100$$

$$= \sqrt{\frac{456}{406} \times \frac{506}{451}} \times 100$$

$$= 112.36$$