Chapter 9 – Index Numbers

Question 1

Arrange an index number for the year 2015 on the basis of 2010 using the simple aggregative method:

Goods	Unit	Cost	
		2011	2016
Potato	Kilo	100	500
Tomato	Kilo	400	250
Onion	Kilo	200	400
OIl	litre	4	5
Fabric	meter	2	3

Answer:

Goods	2010 Price (P_0)	2015 Price (P_1)
Potato	100	500
Tomato	400	250
Onion	200	400
OIl	4	5
Fabric	2	3
	$\Sigma P_0 = 702$	$\Sigma P_1 = 928$

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

$$P_{01} = \frac{928}{702} X\,100$$

$$P_{01} = 132$$

Question 2

Form an index number using 2010 price:

Items	***P***	***Q***	***R***	***S***	***T***	***U***
Prices (2011)	220	50	370	110	70	90
Prices (2016)	250	80	500	130	72	100

Answer:

Items	**Price in 2011** **(P_0)**	**Price in 2016** **(P_1)**
P	220	250
Q	50	80
R	370	500
S	110	130
T	70	72
U	90	100
	$\Sigma P_0 = 910$	$\Sigma P_1 = 1152$

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

$$P_{01} = \frac{1152}{910} X\,100$$

$$P_{01} = 126.59$$

Question 3

Prepare an index number for 2014 on the basis of 2010 from the below data using aggregate expenditure method.

Particulars	Quantity (kg.)	Prices	
		2010	2014
G	9	21	25
H	6	20	22
I	4	19	23
J	3	9	10
K	3	5	9

Answer:

Article	2010 Price (P_0)	2014 Price (P_1)	Quantity (Q_0)	P_0Q_0	P_1Q_0
G	21	25	9	189	225
H	20	22	6	120	132
I	19	23	4	76	92
J	9	10	3	27	30
K	5	9	3	15	27

				ΣP_0Q_0 = 427	**ΣP_1Q_0 = 506**

The consumer price index for the year 2014 is

$$\frac{\sum P_1Q_0}{\sum P_0Q_0} \times 100 \frac{506}{427} X\,100$$
= 118

Question 4

Calculate the consumer index number by using the family budget method.

Items	Quantity	Base Price Year	Current Price Year
Rent	45	200	225
Food	20	300	350
Clothing	8	150	175
Fuel	10	100	110
Misc.	17	200	250

Answer:

Items	Base Price Year (P_0)	Current Price Year (P_1)	$R = \frac{P_0}{P_1} \times 100$	Quantity (Q_0)	P_0Q_0 (A)	RA
Rent	200	225	88.8	45	9000	799200
Food	300	350	85.7	20	6000	514200
Clothing	150	175	85.7	8	1200	685
Fuel	100	110	90.9	10	1000	1909
Misc.	200	250	80	17	3400	1360
					ΣA= 20600	ΣRA = 1317354

The consumer price index for the current year

$$\frac{\sum RA}{\sum A} = \frac{1317354.6}{20600} = 63.94$$

Question 5

Arrange an index for 2015 taking 2010 using a simple average of price relatives method

Items	A	B	C	D
Year 2010 Price	20	40	50	70
Year 2015 Price	30	50	70	90

Answer:

Items	Year 2010 Price (P_0)	Year 2015 Price (P_1)	Price Relative= \(\frac{P_0}{P_1}\) X 100
A	20	30	66.6
B	40	50	80
C	50	70	71.42
D	70	90	87.5
			$\left(\frac{p_1}{p_0} \times 100\right)$ = 75

Simple Average of Price Relatives

$$= \frac{\Sigma\left(\frac{p_1}{p_0} \times 100\right)}{N}$$

P_{01} =

= 18.75