

Ques 1) Calculate Price index numbers from the following data

(I) Laspeyre's Method (II) Passche's method (III) Fisher's method

Commodity	Base Year		Current Year	
	Price	Quantity	Expenditure	Quantity
A	6	50	560	56
B	2	100	240	120
C	4	60	360	60
D	10	30	288	24
E	8	40	432	36

Solution: Expenditure = Price x Quantity

Commodity	$P_0$	$Q_0$	$P_1 Q_1$	$Q_1$	$P_1$	$P_0 Q_0$	$P_0 Q_1$	$P_1 Q_0$
A	6	50	560	56	10	300	336	500
B	2	100	240	120	2	200	240	200
C	4	60	360	60	6	240	240	360
D	10	30	288	24	12	300	240	360
E	8	40	432	36	12	320	388	480
			$\Sigma P_1 Q_1 = 1880$			$\Sigma P_0 Q_0 = 1360$	$\Sigma P_0 Q_1 = 1344$	$\Sigma P_1 Q_0 = 1900$

$$(I) \text{ Laspeyre's Price Index: } P_{01} = \frac{\Sigma P_1 Q_0}{\Sigma P_0 Q_0} \times 100 = \frac{1900}{1360} \times 100$$

$$= \frac{190}{136} \times 100 = 1.3970 \times 100$$

$$P_{01} = 139.70$$

$$(II) \text{ Passche's Price Index: } P_{01} = \frac{\Sigma P_1 Q_1}{\Sigma P_0 Q_1} \times 100 = \frac{1880}{1344} \times 100$$

$$= 1.3988 \times 100 = 139.88$$

$$(III) \text{ Fisher's Price Index: } P_{01} = \sqrt{L \times P} = \sqrt{139.70 \times 139.88}$$

$$= \sqrt{17541.286} = 139.79 \text{ Ans}$$

Ques (2) From the following data calculate Walsh's Price Index

Commodity	Base year		Current year	
	Price	Quantity	Price	Quantity
A	10	100	12	150
B	8	80	10	100
C	5	60	10	72
D	24	30	18	33

Solution:

Commodity	$P_0$	$Q_0$	$P_1$	$Q_1$	$Q_0 Q_1$	$\sqrt{Q_0 Q_1}$	$P_0 \sqrt{Q_0 Q_1}$	$P_1 \sqrt{Q_0 Q_1}$
A	10	100	12	150	15000	122.47	1224.70	1469.64
B	8	80	10	100	8000	89.44	715.52	894.40
C	5	60	10	72	4320	65.73	328.65	657.3
D	24	30	18	33	990	31.46	755.04	755.04
							$\Sigma P_0 \sqrt{Q_0 Q_1}$ = 3023.91	$\Sigma P_1 \sqrt{Q_0 Q_1}$ = 3587.62

$$\text{Walsh's Price Index } P_{01} = \frac{\Sigma P_1 \sqrt{Q_0 Q_1}}{\Sigma P_0 \sqrt{Q_0 Q_1}} \times 100$$

$$P_{01} = \frac{3587.62}{3023.91} \times 100$$

$$= 1.1864 \times 100 = 118.64 \text{ Ans}$$

Ques (3) From the following data calculate Kelly's Price Index for 2005 using 2000 as the base period

Commodity	Quantity consumed	Price in (Rs)	
		2000	2005
A	10	140	180
B	7	400	550
C	6	100	250
D	8	125	150
E	4	200	200

Solution:

Commodity	Q	P <sub>0</sub>	P <sub>1</sub>	P <sub>0</sub> Q	P <sub>1</sub> Q
A	10	140	180	1400	1800
B	7	400	550	2800	3850
C	6	100	250	600	1500
D	8	125	150	1000	1200
E	4	200	300	800	1200
				6600	9550

$$\begin{array}{l} \downarrow \quad \downarrow \\ \Sigma P_0 Q = 6600 \quad \Sigma P_1 Q = 9550 \end{array}$$

$$\begin{aligned} \text{Kelly's Price Index} &= \frac{\Sigma P_1 Q}{\Sigma P_0 Q} \times 100 = \frac{9550}{6600} \times 100 \\ &= 144.7 \times 100 \\ &= 14470 \text{ Ans} \end{aligned}$$