Seminar 27 (Suggested Solution)

1i. Laspeyre Price Index:

Item	P_1	P_1Q_2	P_2	$\mathbf{Q_2}$	P_2Q_2	P_3	P_3Q_2
A	12	1320	14	**110**	1540	17	1870
B	200	6000	189	**30**	5670	195	5850
C	51	8670	55	**170**	9350	56	9520
Total		15990			16560		17240
Laspeyre Index		15990/16560 **= 96.56**			16560/16560 **= 100**		17240/16560 **= 104.11**

1ii. Paasche Price Index:

Item	P_1	Q_1	P_1Q_1	P_2	P_2Q_1	P_2Q_3	P_3	Q_3	P_3Q_3
A	12	100	1200	14	1400	1610	17	115	1955
B	200	25	5000	189	4725	6615	195	35	6825
C	51	180	9180	55	9900	8250	56	150	8400
Total			15380		16025	16475			17180
Paasche Index			15380/16025 **=95.98**		**100**	**100**			17180/16475 **= 104.28**

1.iii. Laspeyre Quantity Index:

Item	Q_1	Q_1P_2	$\mathbf{P_2}$	Q_2	P_2Q_2	Q_3	P_2Q_3
A	100	1400	**14**	110	1540	115	1610
B	25	4725	**189**	30	5670	35	6615
C	180	9900	**55**	170	9350	150	8250
Total		16025			16560		16475
Laspeyre Index		16025/16560 x **= 96.77**			16560/16560 x **= 100**		16475/16560 **= 99.49**

1.iv. Paasche Quantity Index:

Item	P_1	Q_1	P_1Q_1	Q_2	P_1Q_2	P_3Q_2	P_3	Q_3	P_3Q_3
A	12	100	1200	110	1320	1870	17	115	1955
B	200	25	5000	30	6000	5850	195	35	6825
C	51	180	9180	170	8670	9520	56	150	8400
Total			15380		15990	17240			17180
Paasche Index			15380/15990 **=96.19**		**100**	**100**			17180/17240 **= 99.65**

v. Fisher Price index = $\sqrt{L_p P_p}$

Fisher Price index in 1992 = $\sqrt{(96.56)(95.98)}$ =**96.27**

Fisher Price index in 1993 = $\sqrt{(100)(100)}$ =**100**

Fisher Price index in 1994 = $\sqrt{(104.11)(104.28)}$ =**104.19**

2. Compare Laspeyre with Paasche Indexes:

   i. Paasche Index requires the quantities to be measured each year and this can be a costly exercise. Laspeyre Index only requires them for the base year.

   ii. The denominator $\sum p_0 q_n$ in the Paasche Index changes each year, we can only compare one year's Paasche Index with the base year. For Laspeyre Index, the denominator $\sum p_0 q_0$ is fixed then each year's index can be compared with any other year's index.

   iii. Because of (ii) above, Laspeyre Index number for several different year can be directly compared, whereas with the Paasche Index comparisons can only be drawn directly between the current year and the base year.

   iv. Paasche Index keeps current purchasing patterns updated as it continually updates the items in the shopping basket. The weights for Laspeyre Index becomes out of date.

3 i. Index Numbers are usually only approximation of changes in price or quantity over time, and must be interpreted with care.

   ii. Weightings become out of date as time passes. Unless a Paasche Index is used, the weightings will gradually cease to reflect current reality.

   iii. New products or items may appear, and old ones cease to be significant. for example spending has changed in recent years, to include new items such as domestic computers and video recorders, whereas demand for black & white televisions has declined. These changes would make the weightings of a retail prices index for consumer goods out of date and the base of the index would need revision.

   iv. Sometimes, the data used to calculate index numbers might be incomplete, out of date, or inaccurate. For example the quantity indices of imports and exports are based on records supplied by traders which may be prone to error or even falsification.

   v. The base year of an index should be a normal year, but there is probably no such thing as a perfectly normal year. Some error in the index will be caused by untypical values in the base period.

   vi. the "basket of items" in an index is often selective. For example the Retail Prices Index (RPI) is constructed from a sample of households and, more importantly, from a basket of only about 600 items.

   vii. A national index cannot necessarily be applied to an individual town, or an region. for example if the national index of wages rises from 100 to 115, we cannot assume that the wages of people in Glasgow have gone by 15%.

   viii. It does not reflect the quality of products.