5th stats assignment - answers

Probability and statitics (National University of Computer and Emerging Sciences)

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DEGREE: BS-(AF)

SUBJECT: BUSINESS STATISTICS

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ASSIGNMENT NO: 5

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ASSIGNMENT#5

Q#1

Years	Commodities A	B	C	D	Link Relatives A	B	C	D
2014	81	77	85	98	100	100	100	100
2015	85	72	87	95	104.938	93.506	102.352	96.938
2016	95	83	91	99	111.764	115.277	104.597	104.210
2017	92	85	95	102	96.842	102.409	104.395	103.030
2018	96	93	97	109	104.347	109.411	102.105	106.862

Years	Ar. Mean	Chain Indices	Geo. Mean	Chain Indices	Median	Chain Indices
2014	100	100	100	100	100	100
2015	99.433	99.433	99.332	99.332	99.645	99.645
2016	108.962	108.344	108.859	108.131	108.180	107.795
2017	101.669	110.152	101.627	109.890	102.719	110.725
2018	105.681	116.409	105.645	116.093	105.604	116.930

Q#2

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

$75.58 = \sqrt{94.72L}$

$(75.58)^2 = \left(\sqrt{94.72L}\right)^2$

$5712.3364 = 94.72L$

$L = \underline{60.31}$

b) $P_{on} = \frac{438}{362} \times 100 = \underline{120.99\ (L)}$

$P_{on} = \frac{472}{395} \times 100 = \underline{119.49\ (P)}$

$P_{on} = \sqrt{120.99 \times 119.49}$

$P_{on} = 120.24 (F)$

Q#3

Expenses	% of exp(W)	I	IW
Food	45	410	18,450
Rent	12	150	1800
Fuel	8	343	2744
Rent	15	248	3720
Misc	20	285	5700
	$\Sigma W = 100$		$\Sigma IW = 32,414$

$$CPI = \frac{32,414}{100} \rightarrow 324.14$$

Q#4

"For 2015"

Laspyer's Price Index no.

$$P_{on} = \frac{\Sigma P_n q_0}{\Sigma P_0 q_0} \times 100$$

$$\frac{38,745}{36,578} \times 100 = 105.924$$

Paasche's Price Index no.

$$P_{on} = \frac{\Sigma P_n q_n}{\Sigma P_0 q_n} \times 100$$

$\frac{44,310}{41,654} \times 100$ $= 106.376$

Fisher's Price Index no.

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

$\sqrt{105.924 \times 106.376}$

$= 106.149$

"FOR 2016"

Laspeyer Price Index no.

$\frac{41,735}{36,578} \times 100$ $= 114.098$

Paasche's Price Index no.

$\frac{54,195}{49,264} \times 100$ $= 110.009$

Fisher's Price Index no.

$\sqrt{114.098 \times 110.009}$

$= 112.034$

Q#5

CPI = 136 $\quad\quad$ $\Sigma W = \$350$

$$CPI = \frac{(180 \times 140) + (150 \times x) + (100 \times y) + (110 \times 56) + (63 \times 80)}{350}$$

$$136 = \frac{25,200 + 150x + 100y + 6160 + 5040}{350}$$

$$47,600 = 36,400 + 150x + 100y$$

$$\frac{11,200}{50} = 3x + 2y$$

$$3x + 2y = 224 \rightarrow (1)$$

$$350 = 140 + x + y + 56 + 63$$

$$x + y = 91 \rightarrow (2)$$

multiply eq (2) by 2

$$3x + 2y = 224$$
$$2x + 2y = 182$$
$$- \quad - \quad -$$
$$x = 42$$

putting $x = 42$ in eq (2)

$$42 + y = 91$$
$$y = 49$$