FYBA stats practical 11/03/2020 XYZDAP

Q.1. a. Calculate the correlation coefficient from the following information: **(5)**
Sum of x series = 20, Sum of y series = 35, n = 5, Sum of squares of x = 90, Sum of squares of y = 299, Sum of products of x and y = 163.
Later it was found that instead of (1, 8) wrong observation of (3, 5) was taken. Find the corrected correlation coefficient.

b. Calculate Spearman's rank correlation coefficient for the following data. **(5)**

Score by judge 1	50	35	42	11	18	18	67	26	18	59
Score by judge 2	15	15	26	8	17	6	22	11	8	21

c. The coefficient of correlation between income and expenditure for a group of families was found to be 0.8. The average income and expenditure were Rs. 3250 and Rs. 2830 respectively, with the standard deviations Rs. 103 and Rs. 93 respectively. Estimate the income when expenditure is Rs. 2785 **(5)**

Q.2 a. Estimate trend values from the data given below using 4 yearly moving averages. **(5)**

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Production	464	515	518	467	502	540	557	571	586	612

b. For the following data fit a straight line trend by method of least square. Calculate trend values. Estimate the production for the year 2015. **(5)**

Year	2008	2009	2010	2011	2012	2013	2014
Production	75	82	85	90	98	102	120

c. Using following data calculate quarterly seasonal indices by simple average method. **(5)**

Year	Production in thousands of tones in year			
	Ist Quarter	IInd Quarter	IIIrd Quarter	IVth Quarter
2001	72	68	80	70
2002	76	70	82	74
2003	74	66	84	80
2004	76	74	84	78
2005	78	74	86	82

Q.3. a. From the following data calculate : I_L, I_P, I_F, I_{DB}, I_{ME} **(5)**

	Base Year		Current Year	
Commodity	Price	Quantity	Price	Quantity
Rice	4	15	5	20
Pulses	8	20	12	30
Sugar	6	25	8	20
Oil	14	10	21	15

b. From the following data, calculate the consumer's price index number for the year 2015 by the family budget method.

Group	Prices in 2012	Prices in 2015	Weight
Food	10	24	60
Clothing	32	60	5
Fuel	20	50	10
House Rent	40	120	15
Miscellaneous	36	72	10

c. Calculate the real income for the following data- **(5)**

Year	2006	2007	2008	2009	2010	2011	2012	2013
Monthly wages	15000	22000	24000	35000	36000	36000	37000	37500
Cost of living index	100	110	160	280	290	300	320	330

Q.4. a. The regression equations of the variables (x, y) are $8x - 10y + 66 = 0$ and $40x - 18y = 214$. **(5)**
Find:
(i) The mean values of x and y.
(ii) Both the regression coefficients and correlation coefficient.

b. Fit a parabolic curve of degree 2 to following data. Estimate y when $x = 6$. **(5)**

X	0	1	2	3	4	5
Y	2.1	7.7	13.6	27.2	40.9	61.1

c. Following are the marks obtained by 10 students in 2 subjects X and Y. **(5)**

x	28	30	27	26	32	29
y	24	25	24	20	28	26

(i) Write R program to draw a scatter diagram
(ii) Write R program to find the correlation coefficient between X and Y.

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