

- (B) Obtain two regression equations from the following data (08)

Sales	91	97	108	121	67	124	51	73	111	57
Purchase	71	75	69	97	70	91	39	61	80	47

OR

- Q.2 (A) Define regression and regression co-efficients. Also give properties of regression co-efficients. (07)

- (B) Obtain regression line y on x and x on y and estimate x for $y=90$ and y for $x=45$. (08)

$$\sum x = 140, \quad \sum y = 380, \quad n = 4, \quad \sum xy = 11800,$$

$$\sum x^2 = 5400, \quad \sum y^2 = 40630$$

- Q.3 (A) Explain different types of variations observed in time series. (07)

- (B) Fit a straight line to the following data and estimate the production for the year 2015. (08)

Year	2005	2006	2007	2008	2009	2010	2011
Production (In 100 tons)	2	3	5	6	10	14	15

OR

- Q.3 (A) Find seasonal indices from the following data. (07)

Year	Season			
	Q1	Q2	Q3	Q4
2009	40	42	49	54
2010	50	54	56	60
2011	58	59	64	69
2012	64	68	75	80
2013	73	72	82	87

- (B) Taking four yearly moving average find trend and short term variation for the following time series. (08)

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Sales	68	62	61	63	65	58	56	61	68	63	63	67	70	59	56	62

- Q.4 (A) (i) Why Fisher's index number is considered as Ideal index number? (07)
(ii) Explain Time Reversal Test.