OPEN STUDENT FOUNDATION

Date : 28-02-2024 | STD 12 Commerce Statistics | Total Marks : 61

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* Answer The Following Questions In One Sentence. **[1]**

1. The linear equation fitted using the data of 7 weeks for a variable y is ŷ = 25.1-1.3t. Estimate the value of y for the eighth week.

* Answer The Following Questions as Directed. **[12]**

2. Fit a linear equation from the following data for variable (y) of a time series: n = 4, Σy = 270, Σty = 734

3. Obtain the linear equation for trend for a time series with $n = 8, \Sigma y = 344, \Sigma ty = 1342$

4. Find the trend using five yearly moving averages for the following data about yearly production (in tons) of a factory.

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Productions(tones)	112	106	93	90	114	159	170	130	108	113	115

5. The number of accounts opened in different weeks in a branch of a certain bank are given below. Find the trend using three-weekly moving averages.

$Week$	1	2	3	4	5	6	7	8	9	10
$No.\,of accounts opened$	26	27	26	25	22	24	25	23	22	21

* Answer The Following Questions as Directed. **[8]**

6. Find the trend using four monthly moving averages for the following data showing monthly sales (in lakh ₹) of a shop.

$Month$	$March$	$April$	May	$June$	$July$	$August$	$Sept.$	$Oct.$	$Nov.$	$Dec.$
$Sales(lakh.)$	5	3	7	6	4	8	9	10	8	9

7. The quantity index numbers of consumption of edible oil in a state are given in the following table. Find the trend using five yearly moving averages.

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Index No.	115	121	119	120	117	119	120	118	116	124	125

* Calculate The Following Sums In Detail. **[40]**

8. The profit earned (in lakh ₹) by a company making computers is as follows. Find the linear equation for the trend from these data by least square method and estimate the profit for the year 2017.

$Year$	2011	2012	2013	2014	2015
$Profit(Lakh.)$	31	35	39	41	44

9. The dropout rate of students of standard 1 to 5 from primary schools of a district is as follows :

Year	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16

Dropout rate	3.24	2.98	2.29	2.2	2.09	2.07	2.04

Estimate the dropout rate for students from standard 1 to 5 for the year 2016-17 and 2017-18 by fitting a linear equation for trend.

10. The data of population (in lakh) of a taluka are given in the following table. Fit a linear equation for the data and find the trend value for each year. Also find the trend estimate for the population in the year 2021 .

$Year$	1951	1961	1971	1981	1991	2001	2011
$Population(lakh)$	15.1	16.9	18.7	20.1	21.6	25.7	27.1

11. The information about death rate of a state in different years is given in the following table. Fit a linear equation to find trend and hence estimate the death rate for the year 2017.

Year	2009	2010	2011	2012	2013	2014	2015
Death rate	7.6	6.9	7.1	7.3	7.2	6.9	6.9

12. The number of two wheelers registered (in thousand) in a city in different years is as follows. Use the method of fitting linear equation to these data to obtain the estimates for the number of vehicles registered in the year 2016 and 2017. Also find the trend values for each year.

Year	2010	2011	2012	2013	2014	2015
No. of vehicles (thousand)	69	75	82	91	101	115

13. Find the trend by three yearly moving averages from the following data about the sales (in ten lakh ₹) of a company:

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Sales (ten lakh) ₹	3	4	8	6	7	11	9	10	14	12

14. The average monthly closing prices of shares of a company in the year 2016 are given in the following table. Find the trend using four monthly moving averages.

Month	January	February	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
Share price (₹)	253	231	350	261	262	266	263	261	281	278	278	272

15. The wholesale price index numbers for different quarters (9) of a year are obtained as follows. Find the trend by four quarterly moving averages.

Year	2013				2014				2015			
Quarter	Q_1	Q_2	Q_3	Q_4	Q_1	Q_2	Q_3	Q_4	Q_1	Q_2	Q_3	Q_4
Index No.	110	110	125	135	145	152	155	168	131	124	132	153

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