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Denial no: 08

Ans to qus no1

Year	Income	Five Yearly total	Five Yearly avg	Trend values
2008	43	158	52.67	52.67-10.55=92.11
2009	51			92.11+10.55=52.67
2010	64			52.67+10.55=63.22
291	76	253	84.33	63.22+10.55=73.77
2012	81			73.77+10.55=84.32
2013	76			84.32+10.55= 94.87

Now,

Difference between the central years = 2012 - 2007
= 5

Difference between the semi-avg = 84.33 - 52.67
= 31.66

Increase in trend value for one year = $\frac{31.66}{3}$
= 10.55

Ans to qu no 2

3 year ~~moving~~ Moving Average

Year	Loan	3 year sent total	3 year sent avg
2004	90	- - - -	- - - -
2005	92	121	90.33
2006	39	106	35.33
2007	25	71	30.33
2008	27	103	34.33
2009	51	106	35.33
2010	28	105	35
2011	26	85	28.33
2012	31	87	27
2013	70	107	36.33
2014	98	- - - -	- - - -

Ans to Qn 03

The transition probability matrix

$$P = \begin{bmatrix} P_{00} & P_{01} \\ P_{10} & P_{11} \end{bmatrix} = \begin{bmatrix} 0.6 & 0.4 \\ 0.8 & 0.2 \end{bmatrix}$$

we need for 5 days

$$P^2 = \begin{bmatrix} 0.6 & 0.4 \\ 0.8 & 0.2 \end{bmatrix} \begin{bmatrix} 0.6 & 0.4 \\ 0.8 & 0.2 \end{bmatrix}$$

$$= \begin{bmatrix} 0.68 & 0.32 \\ 0.64 & 0.36 \end{bmatrix}$$

$$P^4 = \begin{bmatrix} 0.68 & 0.32 \\ 0.64 & 0.36 \end{bmatrix} \begin{bmatrix} 0.68 & 0.32 \\ 0.64 & 0.36 \end{bmatrix}$$

$$= \begin{bmatrix} 0.6672 & 0.3328 \\ 0.6656 & 0.3344 \end{bmatrix}$$

$$P^5 = \begin{bmatrix} 0.66672 & 0.33328 \\ 0.66656 & 0.33344 \end{bmatrix} \begin{bmatrix} 0.6 & 0.4 \\ 0.8 & 0.2 \end{bmatrix}$$

$$= \begin{bmatrix} 0.666656 & 0.333344 \\ 0.666688 & 0.333312 \end{bmatrix}$$

The probability is 0.666656

Ans.

Answer 4

(i) more than 4 minute

$$P(t>1) = e^{-1t} = e^{-2\times1} = 0.1353$$

(ii) less than 2 minute

$$P(T<2) = 1 - e^{-1t}$$
$$= 1 - e^{-2\times2}$$
$$= 1 - e^{-4}$$
$$= 0.9616$$

(iii) between 1 to 2 minute,

$$P(1<t<2) = e^{-\lambda t_1} - e^{\lambda t_2}$$
$$= e^{-2\times1} - e^{2\times2}$$
$$= 0.117 \text{ hr.}$$