

10. The following data relate to the age of 10 employees and the number of days on which they reported sick in a month :

Age :	20	30	32	35	40	46	52	55	58	62
Sick days :	1	2	0	3	4	6	5	7	8	9

Calculate Karl Pearson's coefficient of correlation and interpret its value.

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NOVEMBER 2016

STATISTICS FOR MANAGERS

(For those who joined in July 2013)

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.

(5 × 20 = 100)

1. Explain the various probability distributions with suitable example.

2. One-fifth percent of the blades produced by a blade manufacturing factory turn out to be defective. The blades are supplied in packets of 10. Use Poisson distribution to calculate the approximate number of packets containing no defective, one defective and two defective blades respectively in a consignment of 1,00,000 packets. (Given $e^{0.02} = 0.0183$)

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3. Discuss the sampling distribution mean and proportion of populations.
4. Explain how to determine the sample size under population parameters.
5. Prices of shares of a company on the different days in a month were found to be : 66, 65, 69, 70, 69, 71, 70, 63, 64 and 68. Discuss whether the mean price of the shares in the month is 65. Apply *t*-test.
6. The following tables gives the number of good and bad parts produced by each of three shifts in a factory :

Shift	Good	Bad	Total
Day	900	130	1,030
Evening	700	170	870
Night	400	200	600
Total	2,000	500	2,500

Is there any association between the shift and the quality of parts produced? Apply Chi-square test.

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7. The following table shows the scores of a sample of 20 student pilots on their Federal Aviation Agency written examination arranged according to which method was used in their training: video cassette, audio cassette or classroom training. The FAA is interested in evaluating the effectiveness of these three training methods. Specifically, it wants to test at the 0.10 level of significance the hypothesis that the mean written examination scores of student pilots trained by each of these methods are equal use Kruskal-wallis test.

Video cassette : 74, 88, 82, 93, 55, 70

Audio cassette : 78, 80, 65, 57, 89

Class room : 68, 83, 50, 91, 84; 77, 94, 81, 92

8. Discuss the Baye's theorem of probability with suitable example.

9. Fit a straight line trend for the following data :

Year :	2002	2003	2004	2005	2006	2007	2008
Production in tonnes :	62	70	75	81	89	93	104

Also find the trend values for the given years and estimate the trend value for the year 2011.

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