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- 4. Show that for normal distribution the quartile deviation, mean deviation and standard deviation are approximately 10:12:15. [15]
- 5.a) Determine the mean and standard deviation of the sampling distribution of means of 300 random samples each of size 36 are drawn from a population of size 1500 which is normally distributed with mean 22.4 and standard deviation 0.048, if sampling is done i) with replacement and ii) without replacement.
 - b) Construct 95% confidence interval for the true proportion of computer literates if 47 out of 150 persons from rural areas are computer literates. [8+7]

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- 6.a) A normal population has a mean 0.1 and a standard deviation of 2.1. Find the probability that the mean of simple sample of 900 members will be negative.
- b) In a study conducted for 500 days, only on 4 days it was recorded that 'lead' content in a famous river exceeded 200mg/cm. Construct an upper 99% confidence limit for the probability that the 'lead' content in the river will exceed 200mg/cm on any one day. [7+8]
- 7.a) A briefcase manufacturing company claims that 80% of executives carried briefcases produced by them. Verify its claims if in a random sample of 900 executives, 675 used the company's briefcases. Use 5% level of significance.
 - b) Explain, stating clearly the assumptions involved, the t-test for testing the significance of the difference between the two sample means. [7+8]
- 8. The tangent of the angle between two regression lines is 0.6 and if $\sigma_x = \frac{1}{2}\sigma_y$, find the correlation coefficient between x and y. [15]

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