

RAMAKRISHNA MISSION VIDYAMANDIRA

(A Residential Autonomous College under University of Calcutta)

First Year, Second Semester (January – June), 2011

Mid-Semester Examination, March, 2011

STATISTICS (General)

Date : 11 March 2011

Full Marks : 25

Time : 11am – 12noon

(Use separate Answer Script for each group)

Answer any five questions taking at least 2 questions from each group.

Group – A

1. Define correlation coefficient. Show that the correlation coefficient is independent of origin and scale. [5]
2. Why do we need two regression lines? [5]
3. Show that Spearman's rank correlation coefficient is actually the simple correlation coefficient of the ranks. [5]
4. Write short notes on— [2½×2]
 - a) Correlation ratio
 - b) Correlation index

Group – B

5. The systolic blood pressure X (in mm Hg) of an individual selected at random from a certain population is normally distributed with a mean of 120 mm Hg and an s.d of 10 mm Hg. If 10,000 persons are selected at random from that population how many would you expect to have a systolic blood pressure above 140?
Given $\Phi(2) = 0.9772$. [5]
6. Write down the p.d.f. of an exponential distribution with parameter θ and find its expectation. [1+4]
7. Write down the p.d.f of the following distribution. [1×5]
 - a) Beta distribution of the second kind
 - b) Lognormal distribution
 - c) Laplace distribution
 - d) Pareto distribution
 - e) Cauchy distribution
8. Show that $E(E(X|Y)) = E(X)$ [5]

