RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College under University of Calcutta)

FIRST YEAR
B.A./B.SC. SECOND SEMESTER (January – June), 2012
Mid-Semester Examination, March 2012

Date : 21/03/2012   **STATISTICS (General)**

Time : 11 am – 12 noon   **Paper : II**   Full Marks : 25

1. Answer **any two** questions : [2×5]
   a) Define correlation coefficient and show that its value lies between −1 and +1.
   b) Show that Spearman's Rank correlation coefficient is actually the simple product moment correlation coefficient between the two series of ranks.
   c) Find out the angle between the two regression lines and interpret the cases when $r = 0$ and $r = \pm 1$.

2. Write down the probability density function and mean of the following random variables clearly mentioning the range and parameter restrictions : (<u>any five</u>) [2×5]
   a) Exponential   b) Laplace   c) Beta - first kind
   d) Beta – 2nd kind   e) Pareto   f) Log-normal
   g) Cauchy   h) Gamma   i) Logistic

3. Show that $E(X) = E(E(X|Y))$ and $V(X) = E(V(X|Y)) + V(E(X|Y))$ [2+3]

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