Home Assignment for UG Mathematics (P)-2022
Department of Mathematics(UG & PG)
Ramananda College
Semester VI
Paper Code: SP/MTH/601/DSE-1B

(Probability and Statistics)
Full Marks 10
Answers any Two

1. a. If A and B are two independent event . Prove that A^c and B^c are also independent .

   b. Let X be a random variable with probability density function
   $$f(x) = \begin{cases} cx(5-x) & 0 \le x \le 5 \\ 0 & elsewrere \end{cases}$$
      (i)   Find the value of c .
      (ii)   Find $P(2 \le X \le 3)$.   2+3=5

2. a. Find the probability of throwing to total of 5 and 11 with two dice .

   b. The density function of X and Y is
   $$f(x,y) = \begin{cases} ky(1-x-y) & x \ge 0, y \ge 0, x+y \le 1 \\ 0 & elsewhere \end{cases}$$
      (i)   Find the value of k .
      (ii)   Find marginal density function of and Y .
      (iii) $P(X \le \frac{1}{2}, Y \le \frac{1}{2})$.   2+3=5

3. Define Population and Sample with examples. 2.5+2.5=5

4. 2. Show that distribution of sample is the statistical image of distribution of population.