Bachelor of Information Technology External Degree Programme
Faculty of Information Technology
University of Moratuwa

ITE 3832 - Probability and Statistics
Assignment 1

Answer All Questions.

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1. Given the following sample points of space S.
   $S = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}$
   Consider the following three events.
   A: the set of numbers not divisible by 3.
   B: the set of even numbers.
   C: the set of odd numbers.
   Give the sample points belonging to the following events and calculate their probabilities.

   a) $A \cap B$ b) $A \cup C'$ c) $A \cup B \cup C'$
   d) $A' \cap B$ e) $A \cap B \cap C$

2. A computer center has three printers A, B and C which print at different speeds. Programs are routed to the first available printer. The probability that a program is routed to printers A, B and C are 0.6, 0.3 and 0.1, respectively. Occasionally a printer will jam and destroy a printout. The probability that printers A, B and C will jam are 0.01, 0.05, and 0.04, respectively. Your program is destroyed when a printer jams. What is the probability that printer A is involved?

3. Using historical records, the personal manager of a plant has determined the probability distribution of X, the number of employees absent per day. It is given as follows:

X	0	1	2	3	4	5	6	7
$P(X = x)$	0.005	0.025	0.31	0.34	0.22	0.08	0.019	0.001

   Find below,

   (a) $P(2 \leq X \leq 5)$.
   (b) $P(X < 5)$.
   (c) $P(X > 4)$.
   (d) Mean of the population.
   (e) Standard deviation of the population.