Math-2205 Class Test 03 Section C

1. In a factory, workers A and B are working with ratio of $3:2$ of the total tasks. They used to do 15% and 10% fault of their products. A concerning team found a fault in an investigation; find the probability that A will be responsible for this fault? [3]

2. Let a random experiment be the casting of a pair of fair *four-sided* dice and let X equal the minimum of two outcomes. With reasonable assumptions, find *pmf* of X. What is the corresponding *mgf*. [3]

3. Let a random variable X be the number of days that an employee needs to be in leave satisfying the *pmf* $f(x) = \frac{1}{15}(6 - x)\,; x = 1,2,3,4,5$. If the employee is to receive $\$100$ for the first two day, $\$50$ for the next two day, and have to return $\$25$ for the final day, what are the expected payment for the hospitalization and the corresponding standard deviation? [4]

Math-2205 Class Test 03 Section E

1. The glucometer is a tool to rapidly test diabetes. Of the people appearing in the test, 10% of them false-positive while 5% of them false-negative. If the people in Bangladesh 1% have diabetes, find the probability of a person suffering from diabetes, when he/she tests negative in the test. [3]

2. Let a random experiment be the casting of a pair of fair *four-sided* dice and let X equal the maximum of two outcomes. With reasonable assumptions, find *pmf* of X. What is the corresponding *mgf*. [3]

3. In a bet, the betting person wins \$1, \$2 and \$3 with probabilities 0.3, 0.2 and 0.1, and loses \$1 with probability 0.4 for each \$1 bet. Find μ, $V(x)$, $E[10 - X^2]$ and $V[10 - 2X]$. [4]

Math-2205 Class Test 03 Section K

1. D-Test is a screening procedure to test Dengue fever. The people appearing in the test, 7% of them false-positive while 4% of them false-negative. If the Dengue fever occurred among 2% people in Bangladesh, find the probability of a person who is suffering from Dengue fever, when he/she tested negative in the test. [3]

2. For $f(x) = \frac{x^2}{k}$; $x = 1,2,3,4,5$, determine the constant k for which $f(x)$ is the *pmf* for a random variable X, and then write the corresponding *mgf*. Also, sketch the line graph of the distribution. [3]

3. Line graph of a discrete random variable X is given in the figure below. Find the *pmf* of the probability distribution of X. Also, find the corresponding mean and standard deviation.[4]