Answer questions in the spaces provided

Q1. The following table gives pdf of X. Determine mean and variance of X and hence mean and variance of Y – 3 – 4X

x	0	1	2	3
f(x)	0.1	0.3	0.4	0.2

Q2. A and B are two independent events. If P (A)=0.5 and P(A $\cup$ B)=0.3 find P(B/A)

Q3. The pdf af a continous random variable is $f(x) = kx, 0 < x < 3$ *and* 0 *elsewhere* . Determine the value of k and compute P(-2 < X < 1)

Q4. The number of tickets issued by a meter reader for parking meter violations can be modeled by a Poisson process at a rate of 5 per hour. What is the probability that at least 2 tickets are given out during a two hour period.

Q5. Suppose X has a binomial distribution with parameters n and p. If the mean and variance of X are respectively 5 and 4, find the values of n and p and hence compute $P(X < 2)$

Q6. The weight of a mechanical component is normally distributed with a mean of 22g and a standard deviation of 0.5g

(i) What is the probability that a component weighs more than 21g

(ii) If the standard deviation remains at 0.5g, what must the mean weight be in order for the company to state that 99.9% of its components are less than 23g

Q7. In a multiple choice test consisting of 20 questions, there are 4 possible answers to each question, only one of which is correct. If a candidate guesses the answers

(i) How many correct answers would you expect

(ii) How many marks would you expect the candidate to be awarded in the test if 4 marks are given for a correct answer and 1 mark deducted for an incorrect answer