1) The number of daily request for emergency assistance at a fire station in a medium sized city has the following probability distribution

x	0	1	2	3	4	5	6	7	8	9	10
P(x)	.06	.14	.16	.14	.12	.10	.08	.07	.06	.04	.03

   i) What is the probability that four or more requests will be made in a particular day?
   ii) What is the probability that the requests for assistance will be at least four but no more than six?
   iii) Find the mean and the standard deviation of the number of requests for assistance.
   iv) This city will call for assistance whenever the number of requests exceeds the mean found in part (iii). Find the probability that the city will ask for assistance.

2) In an inspection of Automobiles in a large city, 60% of all automobiles had high emission exceeding acceptable standards. For a random sample of 10 automobiles, compute the following probabilities:
   i) All 10 automobiles failed the inspection.
   ii) Exactly 6 automobiles failed the inspection.
   iii) At least 6 failed the inspection.
   iv) At most 3 passed the inspection.
   v) What assumptions did you use to compute the above probabilities?

3) A machine is programmed to cut gear wheels. The probability of not satisfying the manufacturing tolerance in each finished item is 0.1. An automatic gauging device checks the accuracy of the gear wheels and stops the machine if it is not satisfactory. What is the probability that the cutting machine has to be stopped for readjustment after cutting 5 gear wheels?

4) Widgets are produced in lots of 40. If a lot contains 6 defective widgets, what is the probability that a sample of five will contain two or more defective widgets?

5) The probability that a fuse will be defective when first installed is 0.08. If six fuses are selected at random, what is the probability that less than 2 fuses are defective?

6) Among 10 applicants for four job openings there are three females. The personnel director selected all three ladies plus one of the men. The other men filed a complaint against the personnel director, who claimed that the selection was completely random. What do you think? Give a proper probabilistic argument.

7) Accidents occur at an intersection at an average rate of 0.3 accidents per hour. Assume that the number of accidents follows a Poisson distribution, find the probability of more than 4 accidents in 10 hours.