Lab 4: Unit 6 Probability distributions

1. The probability that evening college student will graduate is 0.4. Determine the probability that out of 5 students

a. none

b. One

c. At most one

d. At least two graduate

e. Less than 2

f. More than 2

2. Fit the Binomial of the following data

X	0	1	2	3	4
ﷺ	28	62	46	10	4

3. Out of 20 laptops in a shop 6 are Dell laptops. A customer selects 5 computers to purchase then find the probability that

   a. Exactly 2 will be Dell laptop

   b. At least 2 will be Dell laptop

   c. At most 3 will be Dell laptop

   d. Up to 4 will be Dell laptop

   e. More than 2 will be Dell laptop

   f. None of will be Dell laptop

4. 4% of the tools produced in a certain factory turn out to be defective. Find the probability that in a sample of 10 tools chosen at random

i. Exactly 2 will be defective

ii. At least 2 will be defective

iii. At most 3 will be defective

iv. More than 2 will be defective.

5. Between the hours 2PM and 4PM the average number of phone calls per minute coming into the switch board of a company is 2.35. Find the probability that during one particular minute there will be

   i. At most 2 phone calls

   ii. At least 2 telephones calls

   iii. Exactly one phone call

   iv. Up to 4 phone calls

6. Mr. X recorded number of emails be received over a period of 150 days with the

following results

Number of emails	0	1	2	3	4
Number of days	51	54	36	6	3

a. Find the mean numbers of email per day
b. Calculate the frequencies of the Poisson distribution having the some mean

7. The lifetime of a certain electronic component is a Normal random variate with the expectation of 5000 hours and a standard deviation of 1000 hours. Compute the probabilities under the following conditions
   a. Lifetime of components is less than 5012 hours
   b. Lifetime of components is between 4000 to 6000 hours
   c. Lifetime of components is more than 5012 hours
8. The monthly production of certain types of computer parts of a company was found to be Normal random variate with the mean number of computers parts 100000 and a standard deviation of 20000. Compute the probabilities that the monthly production of computer parts is
   a. less than 125000
   b. between 105000 and 130000
   c. more than 120000.
9. In an intelligence test administered to 1000 students, the average score is 42 and standard deviation 24. Find the number of students
   a. Exceeding score 60
   b. Between score 20 and 44
   c. Score less than 30