

# Unit 6 - Week 4

## Course outline

How does an NPTEL online course work?

## Practice Assignment

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### Week 2

### Week 3

### Week 4

Lecture 31: Special Random Variables I

Lecture 32: Special Random Variables II

Lecture 33: Special Random Variables III

Lecture 34: Special Random Variables IV

Lecture 35: Special Random Variables V

Lecture 36: Probability Plots

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Quiz : Assignment 4

Assignment 4 solution

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# Assignment 4

The due date for submitting this assignment has passed.  
As per our records you have not submitted this assignment.

**Due on 2020-02-26, 23:59 IST.**

## Assignment 4

1) 1. Which of the following statements are true for Bernoulli process:

**1 point**

- Bernoulli trial consists of repeated trials with replacement.
- Bernoulli trial consists of single trial.
- The outcome of Bernoulli is either success or failure.
- Expectation of a Bernoulli random variable is the probability that the random variable equals 1.

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
Bernoulli trial consists of single trial.  
The outcome of Bernoulli is either success or failure.  
Expectation of a Bernoulli random variable is the probability that the random variable equals 1.

2) The properties of Binomial distribution is mention below. Which of the following properties holds true for Binomial distribution ?

**1 point**

- The random experiment consists of n Bernoulli trials
- Each trials results in two outcomes either 1 or 0.
- It is called "Binomial" because each trial in the experiment has only two outcomes and distribution follows binomial expansion.
- Probability of success in each trial is constant.

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
The random experiment consists of n Bernoulli trials  
Each trials results in two outcomes either 1 or 0.  
It is called "Binomial" because each trial in the experiment has only two outcomes and distribution follows binomial expansion.  
Probability of success in each trial is constant.

3) The n Bernoulli trials with random variable X equal to number of trials until the first success is

**1 point**

- Binomial distribution
- Poisson distribution
- Geometric distribution
- Hypergeometric distribution

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
Geometric distribution

4) An experiment is conducted and the outcome is said to follow Bernoulli trials. Then show which of the following statements are true.

**1 point**

- Outcome may consist of True and False
- Outcome could be True, False, and not known
- Outcome could be defective and Not defective
- Outcome could be 0, 1, 2 and 3

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
Outcome may consist of True and False  
Outcome could be defective and Not defective

5) A nursery owner told the customer that about 65% of his papaya plants are fruit bearing. The customer decided to buy 10 plants. What is the probability that at least one of the ten will be fruit bearing? (Select all correct answers)

**1 point**

- 0.99997
- 0.27580
- 0.13463
- It is a case of Binomial distribution

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
0.99997  
It is a case of Binomial distribution

6) In a 3D Atom Prob a small volume is probed consisting of m atoms. Assume that j of these are of type A. At the detector only n atoms were detected of which i were of type A. What probability distribution would random variable I would follow?

**1 point**

- Binomial Distribution
- Hypergeometric Distribution
- Geometric Distribution
- Negative Binomial distribution

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
Hypergeometric Distribution

7) In a certain powder metallurgical product, it is seen that the density function of particle size distribution is of the form

**1 point**

$$f_x(x) = k/x^5$$

Where k is a constant. Given that  $x > 1$ . In order for this function to be pdf, k should equal to

- 3
- 1
- 4
- 1/5

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
4

8) Which of the following statement is correct for the center limit theorem.

**1 point**

- I. The sampling mean and the population mean is equal .
- II. Sampling standard deviation and population standard deviation is equal.
- III. If the sample size is large the mean of sampling follows the normal distribution approximately .

- I only.
- II only.
- III only
- I, II & III

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
III only

9) Assume that the fatigue life of a steel sample under a constant load follows a Weibull distribution, with shape parameter(c) =2 , and scale paramente (a) = 100000 cycle. Determine the probability that steel sample will lasts for atleast 80000 cycle.

**1 point**

- 0.4727
- 0.5273
- 0.80
- 0.6895

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
0.5273

10) Which distribution shows 'lack of memory' property .

**1 point**

- Lognormal Distribution
- Weibull Distribution
- Exponential Distribution
- Normal Distribution

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
Exponential Distribution

11) The expression for moment generating function of the binomial distribution function is

**1 point**

- $(pe^t + 1 - p)^n$
- $(pe^t) * (1 - p)^n$
- $(p + 1 - p)^n$
- np

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 $(pe^t + 1 - p)^n$