Q1
1 Point

Which of the following best defines a Bernoulli distribution?

- ○ A distribution representing multiple trials with two possible outcomes
- ◉ A distribution representing a single trial with two possible outcomes
- ○ A distribution that models continuous outcomes
- ○ A distribution that represents the sum of outcomes from multiple trials

Q2
1 Point

Which of the following scenarios is best modeled by a binomial distribution?

- ◉ Flipping a coin 10 times and counting the number of heads
- ○ Guessing if a student will pass or fail an exam
- ○ Choosing 5 random cards from a deck
- ○ Measuring the height of a randomly chosen individual

Q3
1 Point

For a binomial distribution with parameters n and p, its variance σ^2 is:

- ○ $n(1-p)$
- ◉ $np(1-p)$
- ○ n/p
- ○ np

Q4
1 Point

The graph of a normal distribution is:

- ○ Uniformly flat
- ◉ Symmetric and bell-shaped
- ○ Skewed to the right
- ○ Skewed to the left

Q5
1 Point

The Z-score represents: Which of the following best defines a random variable?

- ○ The variance of the distribution
- ○ The probability of a given event
- ○ The skewness of a distribution
- ◉ The number of standard deviations that an observation falls above or below the mean

Q6
1 Point

When approximating a binomial distribution with a normal distribution, which of the following conditions is NOT strictly necessary?

- ○ $np \geq 10$
- ○ The mean μ is known
- ◉ $n > 30$
- ○ $n(1-p) \geq 10$

Q7
1 Point

The Law of Large Numbers states that:

- ○ The sum of many independent and identically distributed random variables will be normally distributed
- ◉ Larger samples always give more accurate results than smaller samples
- ○ As the number of trials in an experiment increases, the variance of the results also increases

Q8
1 Point

The Central Limit Theorem primarily asserts that:

- ◉ The distribution of a sample mean approaches a normal distribution as the sample size increases
- ○ The sum of a large number of independent and identically distributed random variables is always equal to the population mean
- ○ The mean of a large number of independent and identically distributed random variables is normally distributed
- ○ The variance of a sample becomes zero as the sample size becomes infinitely large

Q9
1 Point

If $Z_1, Z_2, ..., Z_k$ are independent standard normal random variables, then the sum of their squares is distributed as:

- ○ T-distribution
- ○ F-distribution
- ◉ Chi-squred distribution with k degrees of freedom
- ○ Normal distribution

Q10
1 Point

The t-distribution is used instead of the normal distribution when:

- (●) The sample size is small and population variance is unknown
- ( ) There are no outliers in the data
- ( ) The sample size is large
- ( ) The population variance is known

Q11
1 Point

If S_1^2 and S_2^2 are the variances of two independent samples from chi-squared distributions with d_1 and d_2 degrees of freedom, respectively, then the ratio S_1^2 / S_2^2 follows:

- ( ) A chi-squared distribution
- (●) An F-distribution with d_1 and d_2 degrees of freedom
- ( ) A standard normal distribution
- ( ) A t-distribution