



NARSIMHAREDDY ENGINEERING COLLEGE
(UGC AUTONOMOUS)

II B.Tech I Semester (NR25)

MATHEMATICAL AND STATISTICAL FOUNDATIONS (25MA301)

UNIT-III

Continuous Distributions and Sampling

Multiple Choice Questions

1. In a uniform distribution, every value in the interval has [c]
A) Different probability
B) Zero probability
C) **Equal probability density**
D) Infinite probability
2. The graph of a continuous uniform distribution is [c]
A) Bell-shaped
B) Triangular
C) **Rectangular**
D) Circular
3. The normal distribution is also called the [d]
A) Uniform distribution
B) Binomial distribution
C) Poisson distribution
D) **Gaussian distribution**
4. The normal distribution is [c]
A) Right-skewed
B) Left-skewed
C) **Symmetric about the mean**
D) Uniform
5. In a normal distribution, the mean, median, and mode are [d]
A) Different
B) Mean is greater than median
C) Median is greater than mode
D) **Equal**

6. Approximately what percentage of observations lie within one standard deviation of the mean in a normal distribution [b]

- A) 50%
- B) **68%**
- C) 90%
- D) 99%

7. Approximately what percentage of observations lie within two standard deviations of the mean [c]

- A) 68%
- B) 90%
- C) **95%**
- D) 99.9%

8. The standard normal distribution has [c]

- A) $\mu = 1, \sigma = 1$
- B) $\mu = 1, \sigma = 0$
- C) **$\mu = 0, \sigma = 1$**
- D) $\mu = 0, \sigma = 0$

9. A normal approximation to the binomial distribution is appropriate when [c]

- A) n is very small
- B) $p = 0$ or 1
- C) **n is large and np and nq are sufficiently large**
- D) $n = 1$

10. Random sampling means [c]

- A) Choosing only large values
- B) Choosing only small values
- C) **Every population member has an equal chance of selection**
- D) Selecting observations alphabetically

11. A sampling distribution is the distribution of [c]

- A) Population values
- B) Sample observations
- C) **A sample statistic**
- D) Random numbers only

12. Which of the following is a sample statistic [c]

- A) Population mean (μ)
- B) Population variance (σ^2)
- C) **Sample mean ($\bar{x}$)**
- D) Population size (N)

13. The sampling distribution of the sample mean has mean equal to [c]

- A) Sample size
- B) Population variance

C) **Population mean (μ)**

D) Standard deviation

14. The Central Limit Theorem states that, for sufficiently large samples, the sampling distribution of the sample mean is approximately [d]

A) Uniform

B) Binomial

C) Poisson

D) **Normal**

15. The standard deviation of the sampling distribution of the sample mean is called the [c]

A) Population variance

B) Mean deviation

C) **Standard error**

D) Sample range

Fill in the Blanks

1. In a continuous uniform distribution, all values within the interval are _____ likely.

Answer: equally

2. The graph of a uniform distribution is _____ in shape.

Answer: rectangular

3. The normal distribution is also known as the _____ distribution.

Answer: Gaussian

4. A normal distribution is perfectly _____ about its mean.

Answer: symmetric

5. In a normal distribution, the mean, median, and mode are _____.

Answer: equal

6. About _____% of the data lie within one standard deviation of the mean in a normal distribution.

Answer: 68

7. About _____% of the data lie within two standard deviations of the mean.

Answer: 95

8. The standard normal distribution has mean _____ and standard deviation _____.

Answer: 0, 1

9. A binomial distribution can be approximated by a _____ distribution when the sample size is large.

Answer: normal

10. A sample selected so that every population member has an equal chance of selection is called a _____ sample.

Answer: random

11. The distribution of a sample statistic is called the _____ distribution.

Answer: sampling

12. The average calculated from a sample is called the sample _____.

Answer: mean

13. According to the Central Limit Theorem, the sampling distribution of the sample mean approaches a _____ distribution as the sample size increases.

Answer: normal

14. The standard deviation of the sampling distribution of the sample mean is called the standard _____.

Answer: error

15. The Central Limit Theorem is useful for making _____ about population parameters from sample data.

Answer: inferences