



Unit IV: MCQ

1. What is the primary objective of time series analysis?
- Prediction of future values
 - Measurement of central tendency
 - Testing hypotheses
 - Comparing groups

Answer: a. Prediction of future values

2. Which statistical method is commonly used to decompose a time series into its components such as trend, seasonality, and residual?
- Regression analysis
 - Correlation analysis
 - Moving averages
 - Autoregressive Integrated Moving Average (ARIMA)

Answer: d. Autoregressive Integrated Moving Average (ARIMA)

3. What does the term "trend" refer to in time series analysis?
- Short-term fluctuations
 - Long-term pattern
 - Random noise
 - Seasonal variation

Answer: b. Long-term pattern

4. Which of the following measures is commonly used to measure the strength and direction of a linear relationship between two time series variables?
- Mean
 - Variance
 - Correlation coefficient
 - Standard deviation

Answer: c. Correlation coefficient

5. In time series analysis, what does a positive autocorrelation coefficient indicate?
- No autocorrelation
 - Positive relationship between lagged values
 - Negative relationship between lagged values
 - Random variation

Answer: b. Positive relationship between lagged values

6. The Durbin-Watson statistic is commonly used to test for:
- Autocorrelation
 - Heteroscedasticity
 - Multicollinearity
 - Stationarity



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Answer: a. Autocorrelation

7. What is the purpose of detrending a time series?

- a. To remove outliers
- b. To stabilize the variance
- c. To eliminate seasonality
- d. To isolate the underlying trend

Answer: d. To isolate the underlying trend

8. Which of the following is a common method for measuring the accuracy of a time series forecasting model?

- a. Mean Absolute Error (MAE)
- b. Chi-square test
- c. Mann-Whitney U test
- d. Z-test

Answer: a. Mean Absolute Error (MAE)

9. In time series analysis, what is the purpose of lagging a variable?

- a. To create a trend
- b. To create seasonality
- c. To account for autocorrelation
- d. To remove outliers

Answer: c. To account for autocorrelation

10. Which of the following is NOT a component of time series decomposition?

- a. Trend
- b. Seasonality
- c. Residual
- d. Covariance

Answer: d. Covariance

11. Question: Which statistical measure is used to determine the central tendency of a dataset?

- a. Standard Deviation
- b. Mean
- c. Correlation
- d. Range

Answer: b. Mean

12. Question: What is the purpose of calculating correlation in statistics?

- a. Measure of dispersion
- b. Measure of central tendency
- c. Measure of relationship between two variables
- d. Measure of skewness



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Answer: c. Measure of relationship between two variables

13. Question: Which of the following is used to measure the strength and direction of a linear relationship between two variables?

- a. Covariance
- b. Standard Deviation
- c. Correlation coefficient
- d. Mean

Answer: c. Correlation coefficient

14. Question: In time series analysis, what does a positive trend indicate?

- a. Increasing values over time
- b. Decreasing values over time
- c. No trend
- d. Random fluctuation

Answer: a. Increasing values over time

15. Question: What does the coefficient of determination (R-squared) represent in regression analysis?

- a. Strength of correlation
- b. Percentage of the dependent variable explained by the independent variable
- c. Standard deviation
- d. Mean deviation

Answer: b. Percentage of the dependent variable explained by the independent variable

16. Question: Which statistical measure is sensitive to extreme values in a dataset?

- a. Median
- b. Mode
- c. Mean
- d. Range

Answer: c. Mean

17. Question: In a scatter plot, how is a strong positive correlation represented?

- a. Points scattered randomly
- b. Points forming a straight line sloping upwards
- c. Points forming a straight line sloping downwards
- d. Points forming a circular pattern

Answer: b. Points forming a straight line sloping upwards

18. Question: What is the purpose of a trend analysis in time series data?

- a. Measure of central tendency
- b. Identify patterns and changes over time



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- c. Measure of dispersion
- d. Calculate probabilities

Answer: b. Identify patterns and changes over time

19. Question: Which of the following measures is used to assess the spread of data points in a distribution?

- a. Median
- b. Mode
- c. Range
- d. Mean

Answer: c. Range

20. Question: What does a negative correlation coefficient indicate?

- a. Strong positive relationship
- b. No relationship
- c. Strong negative relationship
- d. Weak positive relationship

Answer: c. Strong negative relationship

answers:

Q21: What is the Chi-Square Test used for?

- a. Testing the difference between two means
- b. Testing the association between two categorical variables
- c. Comparing variances of two groups
- d. Testing the difference between two proportions

Answer: b. Testing the association between two categorical variables

Q22: In a Chi-Square Test, the observed frequencies are compared to:

- a. The expected frequencies
- b. The median values
- c. The mode values
- d. The range of values

Answer: a. The expected frequencies

Q23: What is the null hypothesis in a Chi-Square Test?

- a. There is no association between the variables
- b. There is a significant association between the variables
- c. The means of the groups are equal
- d. The variances of the groups are equal

Answer: a. There is no association between the variables



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Q24: Which of the following is the formula for calculating the Chi-Square statistic?

- a. $\chi^2 = \frac{\text{observed frequency} - \text{expected frequency}}{\text{standard deviation}}$
- b. $\chi^2 = \sum \frac{(\text{observed frequency} - \text{expected frequency})^2}{\text{expected frequency}}$
- c. $\chi^2 = \frac{\text{observed frequency}}{\text{expected frequency}}$
- d. $\chi^2 = \frac{\text{observed frequency} + \text{expected frequency}}{\text{variance}}$

Answer: B

Q25: What is the degrees of freedom in a Chi-Square Test for independence in a 3x2 contingency table?

- a. 4
- b. 5
- c. 6
- d. 8

Answer: a. 4

Q26: As the Chi-Square statistic increases, the p-value:

- a. Increases
- b. Decreases
- c. Remains constant
- d. Becomes negative

Answer: b. Decreases

Q27: The Chi-Square Test is applicable when data is:

- a. Nominal
- b. Ordinal
- c. Interval
- d. Ratio

Answer: a. Nominal

Q28: Which statistical distribution is used to determine the critical value for the Chi-Square Test?

- a. Normal distribution
- b. Poisson distribution
- c. F distribution
- d. Chi-Square distribution

Answer: d. Chi-Square distribution

Q29: In a Chi-Square Test, a p-value less than the significance level (e.g., 0.05) leads to:

- a. Rejecting the null hypothesis
- b. Failing to reject the null hypothesis
- c. Accepting the alternative hypothesis
- d. Revising the research question



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Answer: a. Rejecting the null hypothesis

Q30: What is the main limitation of the Chi-Square Test?

- a. It is sensitive to outliers
- b. It can only be applied to small sample sizes
- c. It assumes independence of observations
- d. It is not suitable for analyzing categorical data

Answer: c. It assumes independence of observations

Q31: What does independence of attributes refer to in statistics?

- a. The independence of two variables
- b. The dependence of two variables
- c. The correlation between two variables
- d. The standard deviation of two variables

Answer: a. The independence of two variables

Q32: In a contingency table, how is independence between two categorical variables tested?

- a. T-test
- b. ANOVA
- c. Chi-square test
- d. Regression analysis

Answer: c. Chi-square test

Q33: What is the null hypothesis in a chi-square test for independence?

- a. There is a significant relationship between variables
- b. There is no relationship between variables
- c. The variables are perfectly correlated
- d. The variables are independent and unrelated

Answer: b. There is no relationship between variables

Q34: What is the expected frequency in a chi-square test for independence?

- a. The frequency observed in the sample
- b. The frequency expected based on chance
- c. The frequency expected under the assumption of independence
- d. The frequency expected in a perfect scenario

Answer: c. The frequency expected under the assumption of independence

Q35: In a chi-square test, what is the degrees of freedom for a contingency table with r rows and c columns?

- a. r
- b. c



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- c. $r + c$
- d. $(r - 1) * (c - 1)$

Answer: d. $(r - 1) * (c - 1)$

Q36: Goodness of fit is a statistical test used to compare:

- a. Two independent variables
- b. Observed and expected frequencies in one categorical variable
- c. Means of two groups
- d. The variance of two samples

Answer: b. Observed and expected frequencies in one categorical variable

Q37: In a goodness of fit test, what is the null hypothesis?

- a. The data fits the expected distribution
- b. The data does not fit the expected distribution
- c. The sample mean is equal to the population mean
- d. The sample variance is equal to the population variance

Answer: a. The data fits the expected distribution

Q38: Which distribution is commonly used in goodness of fit tests?

- a. Normal distribution
- b. Poisson distribution
- c. Chi-square distribution
- d. Binomial distribution

Answer: c. Chi-square distribution

Q39: What is the test statistic used in a goodness of fit test involving categorical data?

- a. Z-statistic
- b. T-statistic
- c. F-statistic
- d. Chi-square statistic

Answer: d. Chi-square statistic

Q40: If the p-value in a goodness of fit test is less than the significance level (e.g., 0.05), what does it indicate?

- a. Reject the null hypothesis
- b. Fail to reject the null hypothesis
- c. The data fits the expected distribution perfectly
- d. The test is inconclusive

Answer: a. Reject the null hypothesis

Q 41: What is probability?

- a) The likelihood of an event happening



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- b) The total number of outcomes
- c) The average of a set of numbers
- d) The range of a dataset

Answer: a) The likelihood of an event happening

Q42: In probability, what is an event?

- a) An uncertain outcome
- b) A favorable outcome
- c) An observed result
- d) All of the above

Answer: a) An uncertain outcome

Q43: If the probability of an event A is 0.4, what is the probability of the complement of A?

- a) 0.6
- b) 0.4
- c) 1.0
- d) 0.0

Answer: a) 0.6

Q44: The Addition Rule in probability is used to calculate the probability of:

- a) Independent events
- b) Mutually exclusive events
- c) Dependent events
- d) All events

Answer: b) Mutually exclusive events

Q45: If $P(A) = 0.3$ and $P(B) = 0.5$, what is $P(A \text{ or } B)$ for mutually exclusive events A and B?

- a) 0.15
- b) 0.8
- c) 0.2
- d) 0.5

Answer: b) 0.8

Q46: What is the probability of the intersection of two independent events A and B?

- a) $P(A) + P(B)$
- b) $P(A) * P(B)$
- c) $P(A) / P(B)$
- d) $P(A) - P(B)$



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Answer: b) $P(A) * P(B)$

Q47: If events A and B are mutually exclusive, what is $P(A \text{ and } B)$?

- a) 1.0
- b) 0.0
- c) Cannot be determined
- d) $P(A) + P(B)$

Answer: b) 0.0

Q48: What does the complement rule state in probability?

- a) $P(A \text{ and } B) = P(A) * P(B)$
- b) $P(A') = 1 - P(A)$
- c) $P(A \text{ or } B) = P(A) + P(B)$
- d) $P(A | B) = P(A) / P(B)$

Answer: b) $P(A') = 1 - P(A)$

Q49: If $P(A) = 0.6$ and $P(B) = 0.7$, what is $P(A \text{ and } B)$ for independent events A and B?

- a) 0.42
- b) 1.2
- c) 0.18
- d) 0.42

Answer: a) 0.42

Q50: What is the probability of an event that is certain to occur?

- a) 0.0
- b) 1.0
- c) 0.5
- d) 0.1

Answer: b) 1.0

Q.51. What does the Probability Multiplication Rule state?

- a. $P(A \text{ or } B) = P(A) + P(B)$
- b. $P(A \text{ and } B) = P(A) \times P(B)$
- c. $P(A | B) = P(A) + P(B)$
- d. $P(A \text{ and } B) = P(A) - P(B)$

Answer: b. $P(A \text{ and } B) = P(A) \times P(B)$



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Q.52. If the events A and B are independent, what is the probability of both events occurring?

- a. $P(A \text{ and } B) = P(A) + P(B)$
- b. $P(A \text{ and } B) = P(A) \times P(B)$
- c. $P(A \text{ and } B) = P(A) - P(B)$
- d. $P(A \text{ and } B) = P(A) / P(B)$

Answer: b. $P(A \text{ and } B) = P(A) \times P(B)$

Q.53. The Probability Multiplication Rule is applicable when:

- a. Events A and B are mutually exclusive.
- b. Events A and B are dependent.
- c. Events A and B are independent.
- d. Events A and B are complementary.

Answer: c. Events A and B are independent.

Q.54. If $P(A) = 0.6$ and $P(B) = 0.4$, what is the probability of both A and B occurring if they are independent?

- a. 0.24
- b. 0.10
- c. 0.06
- d. 0.15

Answer: a. 0.24

Q.55. The Probability Multiplication Rule can be extended to more than two events for independent events. What is the formula for three independent events A, B, and C?

- a. $P(A \text{ and } B \text{ and } C) = P(A) \times P(B) \times P(C)$
- b. $P(A \text{ or } B \text{ or } C) = P(A) + P(B) + P(C)$
- c. $P(A | B | C) = P(A) + P(B) + P(C)$
- d. $P(A \text{ and } B \text{ and } C) = P(A) + P(B) + P(C)$

Answer: a. $P(A \text{ and } B \text{ and } C) = P(A) \times P(B) \times P(C)$

Q.56. In the multiplication rule, what does $P(A | B)$ represent?

- a. Probability of event A occurring given that B has occurred.
- b. Probability of either A or B occurring.
- c. Probability of A and B occurring simultaneously.
- d. Probability of event B occurring given that A has occurred.

Answer: a. Probability of event A occurring given that B has occurred.

Q.57. If events A and B are dependent, what is the formula for the probability of both events occurring?



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- a. $P(A \text{ and } B) = P(A) + P(B)$
- b. $P(A \text{ and } B) = P(A) \times P(B)$
- c. $P(A \text{ and } B) = P(A) - P(B)$
- d. $P(A \text{ and } B) = P(A | B) \times P(B)$

Answer: d. $P(A \text{ and } B) = P(A | B) \times P(B)$

Q.58. If $P(A) = 0.3$, $P(B | A) = 0.6$, what is $P(A \text{ and } B)$?

- a. 0.18
- b. 0.15
- c. 0.30
- d. 0.36

Answer: a. 0.18

Q.59. The Probability Multiplication Rule is used to calculate the probability of:

- a. At least one event occurring.
- b. Two or more independent events occurring together.
- c. Complementary events.
- d. Mutually exclusive events.

Answer: b. Two or more independent events occurring together.

Q.60. If $P(A) = 0.5$, $P(B) = 0.4$, and events A and B are independent, what is $P(A \text{ or } B)$?

- a. 0.2
- b. 0.9
- c. 0.7
- d. 0.1

Answer: c. 0.7

Q.61. Question: What is conditional probability?

- a) Probability of an event occurring
- b) Probability of an event occurring given that another event has already occurred
- c) Joint probability of two events
- d) Complementary probability

Answer: b) Probability of an event occurring given that another event has already occurred

Q.62. Question: If $P(A) = 0.4$ and $P(B|A) = 0.3$, what is $P(A \text{ and } B)$?

- a) 0.12
- b) 0.3
- c) 0.4
- d) 0.09



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Answer: a) 0.12

Q.63. Question: Two events A and B are independent if:

- a) $P(A \text{ and } B) = P(A) + P(B)$
- b) $P(A | B) = P(A)$
- c) $P(A)P(B) = P(A \text{ and } B)$
- d) $P(A | B) = P(A \text{ and } B)$

Answer: c) $P(A)P(B) = P(A \text{ and } B)$

Q.64. Question: If events A and B are mutually exclusive, then:

- a) $P(A \text{ and } B) = 0$
- b) $P(A \text{ or } B) = P(A) + P(B)$
- c) $P(A | B) = P(A)$
- d) $P(A \text{ and } B) = P(A)P(B)$

Answer: a) $P(A \text{ and } B) = 0$

Q.65. Question: The formula for conditional probability is given by:

- a) $P(A \text{ and } B) = P(A)P(B)$
- b) $P(A | B) = P(B | A)P(A)$
- c) $P(A | B) = P(A)P(B)$
- d) $P(A \text{ and } B) = P(A) + P(B)$

Answer: b) $P(A | B) = P(B | A)P(A)$

Q.66. Question: If $P(B) = 0.2$ and $P(A | B) = 0.6$, what is $P(A \text{ and } B)$?

- a) 0.12
- b) 0.2
- c) 0.06
- d) 0.3

Answer: c) 0.06

Q.67. Question: If $P(A) = 0.6$ and $P(B) = 0.4$, what is $P(A \text{ or } B)$ for independent events A and B?

- a) 0.24
- b) 0.6
- c) 0.4
- d) 0.8

Answer: b) 0.6

Q.68. Question: If $P(A) = 0.7$ and $P(B | A) = 0.2$, what is $P(B)$?

- a) 0.2



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- b) 0.14
- c) 0.7
- d) 0.4

Answer: b) 0.14

Q.69. Question: In a deck of playing cards, what is the probability of drawing a red card (heart or diamond) given that the card drawn is a face card?

- a) $1/6$
- b) $1/4$
- c) $1/3$
- d) $1/2$

Answer: c) $1/3$

Q.70. Question: If $P(A) = 0.5$ and $P(B | A') = 0.3$, what is $P(A \text{ and } B)$? (A' is the complement of A)

- a) 0.15
- b) 0.35
- c) 0.25
- d) 0.2

Answer: a) 0.15

Q71: What is Bayes' Theorem used for in statistics?

- A. Descriptive statistics
- B. Probability theory
- C. Inferential statistics
- D. Regression analysis

Answer: B. Probability theory

Q72: Bayes' Theorem is named after which statistician?

- A. Sir Ronald A. Fisher
- B. Thomas Bayes
- C. Karl Pearson
- D. William S. Gosset

Answer: B. Thomas Bayes

Q73: In Bayes' Theorem, $P(A)$ represents:

- A. Prior probability
- B. Posterior probability
- C. Likelihood
- D. Marginal probability



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Answer: A. Prior probability

Q74: What does $P(B|A)$ denote in Bayes' Theorem?

- A. Prior probability
- B. Posterior probability
- C. Likelihood
- D. Marginal probability

Answer: C. Likelihood

Q75: In Bayes' Theorem, what does $P(A|B)$ represent?

- A. Prior probability
- B. Posterior probability
- C. Likelihood
- D. Marginal probability

Answer: B. Posterior probability

Q76: The denominator in Bayes' Theorem is also known as:

- A. Prior probability
- B. Posterior probability
- C. Likelihood
- D. Normalizing constant

Answer: D. Normalizing constant

Q77: Bayes' Theorem is particularly useful in situations involving:

- A. Deterministic events
- B. Independent events
- C. Conditional probability
- D. Exclusive events

Answer: C. Conditional probability

Q78: What is the formula for Bayes' Theorem?

- A. $P(A|B) = \frac{P(B|A) \cdot P(A)}{P(B)}$
- B. $P(B|A) = \frac{P(A|B) \cdot P(B)}{P(A)}$
- C. $P(A|B) = \frac{P(B) \cdot P(A)}{P(B|A)}$
- D. $P(B|A) = \frac{P(B)}{P(A)} \cdot P(A|B)$

Answer : A



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Q79: In Bayes' Theorem, what does the term "Posterior probability" refer to?

- A. Probability of event A occurring before any data is collected
- B. Probability of event B occurring before any data is collected
- C. Probability of event A occurring after considering the observed data
- D. Probability of event B occurring after considering the observed data

Answer: C. Probability of event A occurring after considering the observed data

Q80: Bayes' Theorem is widely used in which field?

- A. Astrophysics
- B. Machine learning
- C. Medicine
- D. All of the above

Answer: D. All of the above

81. Question: What is the probability distribution used to describe the number of successes in a fixed number of independent Bernoulli trials?

- a) Normal Distribution
- b) Poisson Distribution
- c) Binomial Distribution
- d) Exponential Distribution

Answer: c) Binomial Distribution

Q82. Question: In which theoretical distribution is the mean equal to the standard deviation squared?

- a) Poisson Distribution
- b) Exponential Distribution
- c) Normal Distribution
- d) Gamma Distribution

Answer: d) Gamma Distribution

Q83. Question: What is the shape of the probability density function (PDF) for a standard normal distribution?

- a) Bell-shaped curve
- b) Exponential curve
- c) Uniform curve
- d) U-shaped curve

Answer: a) Bell-shaped curve

Q84. Question: Which distribution is commonly used to model the time until an event occurs in a continuous time frame?



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- a) Poisson Distribution
- b) Binomial Distribution
- c) Exponential Distribution
- d) Chi-square Distribution

Answer: c) Exponential Distribution

Q85. Question: What is the sum of probabilities in a probability distribution?

- a) 1
- b) 0
- c) 100
- d) Infinity

Answer: a) 1

Q86. Question: In a normal distribution, what percentage of data falls within one standard deviation from the mean?

- a) 68%
- b) 95%
- c) 99%
- d) 50%

Answer: a) 68%

Q87. Question: What is the mean of the Poisson distribution?

- a) λ
- b) $\lambda/2$
- c) λ^2
- d) $1/\lambda$

Answer: a) λ

Q88. Question: Which distribution is the sampling distribution of the sample mean for large sample sizes?

- a) Normal Distribution
- b) Binomial Distribution
- c) Poisson Distribution
- d) Exponential Distribution

Answer: a) Normal Distribution

Q89. Question: What is the shape of the chi-square distribution?

- a) Bell-shaped curve
- b) J-shaped curve
- c) U-shaped curve



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d) Skewed to the right

Answer: b) J-shaped curve

Q90: In which distribution is the area under the curve to the left of the mean equal to 0.5?

- a) Normal Distribution
- b) Exponential Distribution
- c) Poisson Distribution
- d) Uniform Distribution

Answer: a) Normal Distribution

Q91. What type of random variable does the Poisson distribution model?

- A. Continuous
- B. Discrete
- C. Normal
- D. Binomial

Answer: B. Discrete

Q92. The Poisson distribution is often used to model the number of:

- A. Successes in a fixed number of trials
- B. Heads in a coin toss
- C. Events occurring in a fixed interval of time or space
- D. Observations in a sample

Answer: C. Events occurring in a fixed interval of time or space

Q93. The mean and variance of a Poisson distribution are:

- A. Equal
- B. Proportional
- C. Always zero
- D. Unrelated

Answer: A. Equal

Q94. In the Poisson distribution, if λ is the average rate of events, what is the probability of observing exactly k events in a given interval?

- A. $\lambda^k * e^{(-\lambda)} / k!$
- B. $e^{(-\lambda)} / k!$
- C. λ / k
- D. k^λ

Answer: A. $\lambda^k * e^{(-\lambda)} / k!$



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Q95. The parameter λ in the Poisson distribution represents:

- A. Standard deviation
- B. Variance
- C. Mean
- D. Probability

Answer: C. Mean

Q96. As the value of λ increases in a Poisson distribution, what happens to the shape of the distribution?

- A. Skewness decreases
- B. Distribution becomes more skewed
- C. Distribution becomes more symmetric
- D. The shape remains unchanged

Answer: B. Distribution becomes more skewed

Q97. The Poisson distribution can be used as an approximation to the binomial distribution when:

- A. The number of trials is large, and the probability of success is small
- B. The number of trials is small, and the probability of success is large
- C. The number of trials is large, and the probability of success is large
- D. The number of trials is small, and the probability of success is small

Answer: A. The number of trials is large, and the probability of success is small

Q98. What is the sum of probabilities in a Poisson distribution?

- A. 1
- B. 0
- C. ∞
- D. Depends on λ

Answer: A. 1

Q99. In a Poisson distribution, if the average rate of events per unit of time is 5, what is the probability of observing 3 events in a given unit of time?

- A. 0.1008
- B. 0.1503
- C. 0.1755
- D. 0.1404

Answer: A. 0.1008



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Q.100. The Poisson distribution is named after the French mathematician Siméon Denis Poisson. In which century did he live?

- A. 17th century
- B. 18th century
- C. 19th century
- D. 20th century

Answer: C. 19th century

Q101: What is the shape of the probability density function (PDF) of a standard normal distribution?

- a) Uniform
- b) Exponential
- c) Bell-shaped
- d) Skewed

Answer: c) Bell-shaped

Q102: In a normal distribution, what percentage of data falls within one standard deviation from the mean?

- a) 25%
- b) 50%
- c) 68%
- d) 95%

Answer: c) 68%

Q103: The standard normal distribution has a mean of:

- a) 0
- b) 1
- c) -1
- d) Any real number

Answer: a) 0

Q104: What is the area under the standard normal curve between $z = -1$ and $z = 1$?

- a) 34%
- b) 50%
- c) 68%
- d) 95%

Answer: c) 68%

Q105: The z-score is a measure of:

- a) Variability
- b) Probability



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- c) Distance from the mean in standard deviations
- d) Skewness

Answer: c) Distance from the mean in standard deviations

Q106: What is the relationship between the mean, median, and mode in a normal distribution?

- a) They are all equal.
- b) Mean > Median > Mode
- c) Mode > Median > Mean
- d) Median > Mean > Mode

Answer: a) They are all equal.

Q107: In a normal distribution, approximately what percentage of data falls within two standard deviations from the mean?

- a) 34%
- b) 50%
- c) 68%
- d) 95%

Answer: d) 95%

Q108: If a random variable follows a normal distribution, what can be said about the shape of its probability density function?

- a) It is always symmetric.
- b) It is always skewed.
- c) It may be symmetric or skewed.
- d) It is always uniform.

Answer: a) It is always symmetric.

Q109: The standard deviation of a normal distribution determines the:

- a) Spread of the distribution
- b) Skewness of the distribution
- c) Kurtosis of the distribution
- d) Central tendency of the distribution

Answer: a) Spread of the distribution

Q110: The empirical rule states that approximately what percentage of data falls within three standard deviations from the mean in a normal distribution?

- a) 68%
- b) 95%
- c) 99%



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d) 99.7%

Answer: d) 99.7%

