Short Questions

Unit - III:

1. What are some examples of widely used NoSQL databases?
2. How do document-oriented databases differ from key-value stores in NoSQL?
3. Can you explain the role of column-family stores in NoSQL databases?
4. Discuss the advantages of using graph databases in NoSQL systems.
5. What factors contribute to the growing adoption of NoSQL databases in the industry?
6. How does the ACID property differ between SQL and NoSQL databases?
7. Explain the BASE principle in the context of NoSQL databases.
8. What are the main challenges in migrating from SQL to NoSQL databases?
9. How do NewSQL databases address the limitations of traditional SQL databases?
10. Describe the architecture of NewSQL databases.
11. How does NewSQL ensure scalability while maintaining ACID compliance?
12. What are the primary motivations for organizations to adopt NewSQL solutions?
13. Discuss the performance characteristics of NewSQL databases compared to traditional SQL databases.
14. How does the sharding technique enhance scalability in NewSQL databases?
15. What role does distributed computing play in NewSQL database systems?
16. Can you provide examples of popular NewSQL databases?
17. Explain the concept of horizontal scaling in NewSQL databases.
18. What are the trade-offs between consistency, availability, and partition tolerance in NewSQL systems?
19. How does the architecture of NewSQL databases enable efficient transaction processing?
20. Discuss the impact of NewSQL databases on traditional relational database vendors.
21. What are some considerations for organizations when transitioning to NewSQL solutions?
22. How does NewSQL address the challenges of handling large-scale transactions?
23. Describe the support for SQL queries in NewSQL databases.

24. What are the implications of NewSQL for data warehousing and analytics?
25. How does NewSQL contribute to the evolution of database technologies in the era of big data?

Unit -IV:

26. What is MongoDB and why is it necessary in modern data management?
27. How does MongoDB differ from traditional relational databases?
28. What are some key terms used in MongoDB and how do they relate to RDBMS concepts?
29. Can you explain the concept of collections in MongoDB?
30. What is the significance of documents in MongoDB?
31. How does MongoDB handle relationships between data?
32. Describe the role of indexes in MongoDB.
33. What are the common data types supported by MongoDB?
34. How does MongoDB store data compared to RDBMS?
35. Explain the structure of a MongoDB document.
36. What is the primary key equivalent in MongoDB?
37. How does MongoDB ensure data integrity and consistency?
38. What is the purpose of the ObjectId in MongoDB?
39. Can you differentiate between embedding and referencing in MongoDB?
40. Describe the benefits of using embedded documents in MongoDB.
41. How does MongoDB handle schema flexibility?
42. What is the role of the MongoDB query language?
43. Explain the syntax of MongoDB queries.
44. How does MongoDB support CRUD operations?
45. What is the significance of the find() method in MongoDB?
46. Can you provide examples of MongoDB query operators?
47. What is the purpose of the $in operator in MongoDB queries?
48. Explain the aggregation framework in MongoDB.
49. How does MongoDB handle joins compared to relational databases?
50. Describe the Map-Reduce functionality in MongoDB.
51. What are some common MongoDB aggregation pipeline stages?
52. How does MongoDB handle indexing for query optimization?
53. What is the purpose of the explain() method in MongoDB?
54. Explain the concept of sharding in MongoDB.
55. How does MongoDB ensure high availability and fault tolerance?

56. Describe the architecture of a MongoDB replica set.
57. What is the role of the primary and secondary nodes in a MongoDB replica set?
58. How does MongoDB handle data distribution in a sharded cluster?
59. What are the key considerations for scaling MongoDB deployments?
60. How does MongoDB handle concurrency and locking?
61. What is the significance of the WiredTiger storage engine in MongoDB?
62. Explain the concept of document-level locking in MongoDB.
63. How does MongoDB handle write operations in a sharded environment?
64. Describe the process of migrating data to MongoDB from a relational database.
65. What tools are available for monitoring and managing MongoDB deployments?
66. How does MongoDB handle backup and disaster recovery?
67. What security features does MongoDB offer for data protection?
68. Explain the role of authentication and authorization in MongoDB.
69. How does MongoDB ensure data encryption at rest and in transit?
70. What are some best practices for optimizing MongoDB performance?
71. How does MongoDB handle schema design for efficient query execution?
72. Describe the process of deploying a MongoDB cluster in a production environment.
73. What considerations are important for capacity planning in MongoDB deployments?
74. How does MongoDB support multi-document transactions?
75. What are the limitations of MongoDB, and how can they be mitigated in deployment?

Unit - V:

76. What is R programming, and what are its key features?
77. Explain the concept of operators in R programming and provide examples.
78. How do control statements work in R, and what are their types?
79. What is a function in R programming, and how is it defined?
80. Describe the process of interfacing with R from other programming languages.
81. What are vectors in R, and how are they created?
82. Explain the concept of matrices in R and provide examples.

83. What is a list in R, and how does it differ from vectors and matrices?
84. How are data frames created in R, and what is their significance?
85. What are factors in R, and how are they used?
86. Explain the purpose of tables in R and how they are created.
87. How does R handle input and output operations?
88. Describe the process of creating graphs in R.
89. What is the R apply family, and what functions does it include?
90. How does the apply() function work in R, and what are its arguments?
91. Explain the role of lapply() function in R, and provide examples.
92. What is the purpose of sapply() function in R, and how is it used?
93. Describe the functionality of vapply() function in R programming.
94. How does tapply() function work in R, and what does it do?
95. Explain the concept of mapply() function in R, and provide use cases.
96. What is the difference between apply(), lapply(), and sapply() functions in R?
97. How does R handle missing values in apply family functions?
98. Describe the process of creating histograms in R.
99. What is the significance of bar plots in data visualization with R?
100. How are scatter plots created in R, and what insights do they provide?
101. Explain the purpose of box plots in statistical analysis using R.
102. Describe the functionality of line plots in R, and provide examples.
103. How are pie charts created in R, and when are they useful?
104. What are the steps involved in creating a heatmap in R?
105. Explain the concept of correlation plots in R, and how are they generated?
106. How does R handle data manipulation tasks using vectors?
107. Describe the process of indexing and subsetting in R matrices.
108. What are named lists in R, and how are they created?
109. Explain the purpose of merging data frames in R, and provide methods.
110. How does R handle missing values in data frames?
111. Describe the process of reshaping data frames in R.
112. What is the significance of factors in statistical analysis with R?
113. Explain the purpose of converting factors to numeric values in R.
114. How are contingency tables created in R, and what insights do they provide?
115. Describe the process of reading and writing CSV files in R.

116. What are the advantages of using R for statistical analysis and data visualization?
117. Explain the concept of correlation analysis in R, and how is it performed?
118. How does R handle linear regression analysis, and what are its components?
119. Describe the functionality of logistic regression analysis in R.
120. What are the steps involved in conducting hypothesis testing using R?
121. Explain the purpose of clustering analysis in R, and provide examples.
122. How does R handle time series analysis, and what packages are available?
123. Describe the process of conducting survival analysis in R.
124. What are the steps involved in conducting ANOVA in R, and what does it determine?
125. How does R support machine learning algorithms, and what packages are commonly used?