

School of University Polytechnic**Diploma in Computer Science and Engineering
Semester End Examination - Jun 2024****Duration : 180 Minutes
Max Marks : 100****Sem IV - N1DF405B - N1DF402B - Relational Database Management Systems**General Instructions*Answer to the specific question asked**Draw neat, labelled diagrams wherever necessary**Approved data hand books are allowed subject to verification by the Invigilator*

- 1) Define a primary key in the context of a database, and explain its importance. K1(2)
- 2) Describe the advantages of using "Indexes" in a database and how they improve query performance. K2(4)
- 3) Explain the role of "Data Integrity Constraints" in maintaining data accuracy and consistency in a database. K2(6)
- 4) Write the significance of the DISTINCT clause in SQL queries and its impact on query results. K3(9)
- 5) Implement the concept of Multi-valued Dependencies (MVDs) and their role in database normalization. K3(9)
- 6) Evaluate the three-level architecture of a DBMS and explain the role of each level (External Level, Conceptual Level, Internal Level) in database management. K5(10)
- 7) Intent the purpose and benefits of using indexes in a relational database system. Explain how indexes improve query performance and provide examples of situations where indexes would be useful. K4(12)
- 8) Evaluate the concept of degree and cardinality in the relational model. Provide examples to illustrate each concept. K5(15)
- 9) Evaluate the key characteristics of Codd's 12 rules for relational databases and their significance in ensuring data integrity. K5(15)
- 10) Design a scalable and fault-tolerant database architecture for an e-commerce platform handling a large volume of online transactions. Consider factors such as data partitioning, replication, and disaster recovery planning to ensure high availability and data reliability in a distributed computing environment. K6(18)