

Question Paper

Exam Date & Time: 27-Jun-2022 (02:00 PM - 05:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

Manipal School of Information Sciences (MSIS), Manipal
Second Semester Master of Engineering - ME (Cloud Computing) Degree Examination - June 2022

Java Web Technology and Database [CDC 5204]

Marks: 100

Duration: 180 mins.

Monday, June 27, 2022

Answer all the questions.

- 1) Explain the Servlet Lifecycle - illustrate when and how you will use the Servlets in your application with appropriate example. (TLO 1.1) (10 Marks) (10)
- 2) Consider a database with the following relations and write the SQL query statements (TLO 1.2) (2 marks each) (10)

loan (loan-number, branch-name, amount)
customer (customer-name, customer-street, customer-city)
depositor (customer-name, account-number)
borrower (customer-name, loan-number)
account (account-number, branch-name, balance)
branch (branch-name, branch-city, assets)

a) Find all customers who have both a loan and an account
b) Find all customers who have an account but no loan.
c) Find the average account balance at the Perryridge branch.
d) Find the number of tuples in the customer relation.
e) Find the number of depositors in the bank
- 3) Answer following (TLO 1.2) (5 Marks each) (10)

a. Explain the significance of Primary Key and Foreign Key constraints in a database table definition.
b. Illustrate the significance of joins used as part of SQL Queries
- 4) Explain the importance of Schedules in the realization of Concurrency. Illustrate the difference between Deadlock and Starvation with appropriate example of schedule. (TLO 2.1) (5+5 Marks) (10)
- 5) Explain the significance of Two-phase commit and working principle. Come up with a typical application to illustrate the usage and your implementation details. (TLO 2.1) (3+7 Marks) (10)
- 6) Answer the following (TLO 2.2) (5 Marks each) (10)
a) Compare BASE and ACID
b) Distinguish between CA and CP with respect to CAP theorem
- 7) Describe 4 prominent types of No SQL databases giving key characteristics and typical scenario each type will be preferred. (TLO 2.2) (10 Marks) (10)
- 8) Answer following . (TLO 3.1) (5 Marks each) (10)
a. Write a brief note on structure of JSON object and data types of JSON.
b. Explain the parsing techniques employed for JSON objects
- 9) Illustrate the functioning of Web sockets and explain the steps involved in setting up a application with web socket using Java (TLO 3.1) (10 Marks) (10)

10) Explain the Advantages of using Distributed Database systems. (TLO 3.2) (10 Marks) (10)

-----End-----