



MCA DEGREE EXAMINATIONS: NOV/DEC 2018

(Regulation 2017)

Second Semester

MASTER OF COMPUTER APPLICATIONS

P17CAT2002: Database Management System

COURSE OUTCOMES

- CO1:** Use the techniques, components and tools of a typical database management system.
CO2: Understand basic database concepts, including the structure and operation of the relational data model.
CO3: Understand the concepts of open source databases like MySQL and MongoDB.
CO4: Design and implement a small database project using open source databases.
CO5: Design a database information system and implement the design in SQL/NoSQL.

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 2 = 20 Marks)

(Answer not more than 40 words)

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| 1. Compare file system and database management system in security and maintenance. | CO1 | [K ₃] |
| 2. What is the need of primary key and foreign key in a table? | CO2 | [K ₂] |
| 3. Differentiate 3NF with BCNF. | CO2 | [K ₂] |
| 4. Write any two front end and back end design software. | CO4 | [K ₁] |
| 5. Give the syntax for creating a table with necessary constraints in ORACLE. | CO5 | [K ₂] |
| 6. List the special features of MongoDB. | CO3 | [K ₁] |
| 7. Give one example for transaction with read and write operation. | CO5 | [K ₃] |
| 8. Mention the two different phases in locking protocol. | CO5 | [K ₂] |
| 9. Write any two real time applications of active databases. | CO1 | [K ₂] |
| 10. How to create a trigger? Give one example. | CO4 | [K ₃] |

Answer any FIVE Questions: -

PART B (5 x 16 = 80 Marks)

(Answer not more than 400 words)

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|--|-----|-------------------|
| 11. Case Study – Banking Business Scenario | CO1 | [K ₅] |
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Assumptions:

- i) There are multiple banks and each bank has many branches. Each branch has multiple customers.
- ii) Customers have various types of accounts.
- iii) Some customers also have taken different types of loans from these bank branches.
- iv) One customer can have multiple accounts and loans.

Describe the basic components and steps for E-R Modeling. Draw the E-R diagram for this scenario with necessary symbols and notations.

12. What is normalization? Explain the 1NF, 2NF and 3NF with examples. CO2 [K₂]
13. Given the following relations: CO5 [K₅]
TRAIN (TNAME, START, DEST)
TICKET (TNAME, PNRNO., START, DEST, FARE)
PASSENGER (NAME, ADDRESS, PNRNO.)
Write SQL expressions for the following queries:
(i) List the names of passengers who are travelling from the start to the destination station of the train.
(ii) List the names of passengers who have a return journey ticket.
(iii) Insert a new train, Kovai Express train from Coimbatore to Bangalore.
(iv) Cancel the ticket of Dinesh.
14. a) Explain the Aggregate Data Model with example. (8) CO3 [K₂]
b) Discuss the NoSQL Implementation in Key Value Database (8) CO3 [K₄]
15. What is lock based concurrency control? Explain the Strict two phase locking method for concurrency control. CO4 [K₃]
16. a) Draw and explain the mobile computing architecture. (8) CO5 [K₃]
b) Explain the multimedia database with its issues and limitations. (8) CO5 [K₂]
