

B.Tech.
Database Management System
Sub Code- CS-305
Paper ID-A0466

Time 3Hrs

MAX.MARKS-60

Note: Section A is compulsory. Attempt any four questions from Section B, and any two from Section C.

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| QI | Section A | | 10*2 |
| | (a) | Define a relation? How it differs from a table? | |
| | (b) | Is there any difference between logical record and conceptual record? Explain. | |
| | (c) | What is contained in the data dictionary in DBMS? For two databases, how many data dictionaries will be created and by whom? | |
| | (d) | Define BCNF? Write its applications. | |
| | (e) | Write a query in tuple calculus and domain calculus, to retrieve a single attribute from a table of three attributes? | |
| | (f) | What are the differences between candidate key, super key and primary key? Write their usefulness. | |
| | (g) | Write the syntax of SQL statements to delete one tuple from the table, and display the structure of the table. | |
| | (h) | Discuss about the different states of the transaction? | |
| | (i) | What do you mean by Granularity of items? | |
| | (j) | What is the difference between deadlock and starvation? | |
| Section B | | | |
| QII. | Discuss about different types of database management systems? | 5 | |
| QIII | Consider the following schema: Employee(<u>EmpNo</u> , Name, Dno, salary, headno) department(<u>Dno</u> , deptt_name) Children (<u>EmpNo</u> , child_name, DOB, sex) In the above schema, domain of headno is same as that of EmpNo. The underlined attributes act as primary key in the relation. Write queries in SQL to: i) Create Employee and department tables. ii) Modify the name of research department to science in department table. iii) Retrieve the name of all the employees, whose name end with letter "a". iv) Count the female dependents of each employee. v) Add a new constraint on salary; salary should not be <500. | 5 | |
| QIV | What is the objective of normalization? Discuss 1NF, 2NF and 3NF. | 5 | |
| QV | What is conflict serializability? How the serializability of schedules can be tested, Explain with example. | 5 | |
| QVI | Explain the database security issues? | 5 | |
| Section C | | | |
| QVII | a) Explain briefly, the different components of Database Management Systems? | 4 | |
| | b) Consider the database schema given in QIII, write queries in relational algebra and relational calculus to: (i) retrieve the details of each Employee. (ii) retrieve the employee names getting salary < 1000 (iii) retrieve the children details of each employee. | 6 | |
| QVIII | Why concurrency control is required? Explain. Locking and Time stamp based concurrency control techniques? | 10 | |
| QIX | Write short note on the following: a) Hierarchical and Network Model b) Recovery technique based on Immediate update c) granting and revoking of privileges in SQL | 10 | |