

Hall Ticket Number:

Y 1 8 A C S 5 3 7

III/IV B.Tech (Regular) DEGREE EXAMINATION

Common for CSE & IT

November, 2020

Forth Semester

Time: Three Hours

Database Management Systems

Maximum : 50 Marks

(1X10 = 10 Marks)

(4X10=40 Marks)

Answer ALL Questions from PART-A.

Answer ANY FOUR questions from PART-B.

Part - A

(1X10=10 Marks)

1. Answer all questions

- What are the responsibilities of a DBA?
- Differentiate between database schema and database state.
- What is a weak entity type?
- What is a foreign key?
- What is outer join?
- Differentiate between B-tree and B+-tree.
- What is Multivalued Dependency?
- What is a strict schedule?
- What is a timestamp?
- What is a transaction?

Part - B

- 2.a Discuss the advantages of using database approach. 5 M
- 2.b Draw and explain the three schema architecture of a database system. What is data independence? 5 M
- 3.a Write about the centralized and client/server architectures for DBMSs. 5 M
- 3.b Discuss the concepts used in ER data modeling. 5 M
- 4.a Write notes on relational model constraints. 5 M
- 4.b Illustrate the basic set of relational algebra operators.
5. Employee(Fname, Minit, Lname, Ssn, Bdate, Address, Sex, Salary, SuperSSN, Dno)
 Department(Dname, Dnumber, MgrSSN, Mgr_Ssn_Date)
 Dept_Locations(Dnumber, Dlocation)
 Project(Pname, Pnumber, Plocation, Dnum)
 Works_On(Essn, Pno, Hours)
 Dependent(Essa, Dependent_name, Sex, Bdate, Relationship)
 Specify the following queries in SQL on the relational database schema shown in the above figure:
 a) Retrieve the names of all employees in department 5 who work more than 10 hours per week on the ProductX project. 10M
 b) List the names of all employees who have a dependent with the same first name as themselves.
 c) Find the names of all employees who are directly supervised by 'Franklin Wong'.
 d) For each department whose average employee salary is more than \$30,000, retrieve the department name and the number of employees working for that department.
 e) Retrieve the names of all employees who work in the department that has the employee with the highest salary among all employees.
- 6.a Discuss in detail about the various types of index structures used in database management systems. 5M
- 6.b Construct a B+ tree of order 5 by inserting the following keys: 5 M
 12, 34, 28, 43, 27, 87, 39, 48;
- 7.a What is normalization? Explain different types of normal forms from first normal form to BCNF. 6 M
- 7.b What is closure of Functional Dependency? Explain how to find it. 4 M
- 8.a What are the ACID properties of a transaction? Describe each. 5 M
- 8.b What is a schedule? Explain different types of schedules based on recoverability. 5 M
- 9.a Describe how to control concurrency using locking. 5 M
- 9.b Write in detail about mandatory access control.