

- NB. 1. Question number one is compulsory**
2. Attempt any three out of remaining five questions
3. Assume suitable data
4. Figures to the right indicate the maximum marks



- Q.1 Attempt any FOUR:** (20)
- Differentiate between Database Management System and File System. (05)
 - Explain aggregate functions with syntax and suitable example. (05)
 - Explain type of functional dependency with suitable example. (05)
 - Describe types of Entities with example. (05)
 - Explain Log based recovery. (05)
- Q.2 a)** Explain overall architecture of DBMS in detail with appropriate diagram. (10)
 Explain Relational Algebra-operators given below:
1. Select
 2. Project
 3. Union
 4. Rename
- (10)
- Q.3 a)** Draw EER Diagram for Hospital Management system and Map it to Relational Model (10)
b) Discuss types of Joins in sql with syntax and example.. (10)
- Q.4 a)** Write SQL queries for given database. (10)
 employee (eno, ename, bdate, title, salary, dno)
 project (pno, pname, budget, dno)
 department (dno, dname, mgreno)
 works (eno, pno, resp, hours)
- 1) Find the project number and name for projects with a budget greater than 100,000.
 - 2) Find the employees (name only) in department 'D1' ordered by descending salary.
 - 3) Find all works records where hours worked is less than 10 and the responsibility is 'Manager'.
 - 4) Find name of employees that are ending with letter 's'.
 - 5) Find total number of employee.
 - 6) Write the query to increase salary of the employees by 10%.
 - 7) Find Employee name with maximum salary.
- b)** Explain all types of integrity constraints with an example? (10)
- Q.5 a)** Define Normalization. Explain 1NF, 2NF, 3NF and BCNF with examples. (10)
b) Write note on (10)
- i) Log based protocol
 - ii) Timestamp-based protocols
- Q.6 a)** What is deadlock? Give deadlock prevention and detection with suitable example (10)
b) Explain concept of Serializability along with Conflict Serializability and View Serializability (10)
